UNIVERSITETET
I OSLO

Til: Universitetsstyret
Fra: Universitetsdirektøren

Sakstype: Informasjonssak
Møtesaksnr: I-sak 13-24
Møtenr: 4/2024
Møtedato: 18.06.2024
Notatdato: 31.05.2024
Arkivsaksnr:
Saksbehandler: Ingrid Sogner

Norsk Senter for Molekylærmedisin etter 2024

Hovedproblemstillingen i saken
Universitetsstyret ble i mai d.å. orientert om Norsk senter for molekylærmedisin (NCMM)s rolle inn i den faglige utviklingen innen livsvitenskap i Livsbygget (I-sak 11-24). NCMM skal utføre vitenskapelig forskning på høyt internasjonalt nivå, utvikle forskertalenter og gi tilgang til betydningsfulle kjernefasiliteter. NCMM er tilknyttet European Molecular Biology Laboratory (EMBL) og er ett av fire nordiske EMBL-noder i et nordisk samarbeid, se bakgrunnsnotat.

UiO har siden oppstart stått for hoveddelen av finansieringen av NCMM med en kombinasjon av 26,5 mill. kr i varig tildeling og 8,5 mill. kr. i midlertidige satsingsmidler. Norges Forskningsråd og Helse Sør-Øst har vært betydelige med medfinansiører, men dette opphører ved utgangen av 2024. (V-sak 36-2023). Med bakgrunn i de endrede forutsetningene oppnevnte Universitetsstyret en arbeidsgruppe for å utarbeide forslag for et videreutviklet NCMM, herunder faglig profil, organisering og kvantitative og kvalitative mål for enheten. Arbeidsgruppen avleverte sin rapport 15. april, se vedlegg.

I fordelingssaken i dette møtet er det gjort rede for å omprioritere de midlertidige satsingsmidlene til andre formål, men at dette gjøres over tid.

Fortsatt store ambisjoner
Arbeidsgruppen har levert en grundig rapport for hvordan enheten kan videreføres med et nedskalert budsjett, med fortsatt tilknytning til EMBL og som satsing i Livsvitenskapsbygget. Anbefalingene gir retning i forhold til faglig profil, styringsstruktur og organisering, rekruttering av gruppeledere, og måloppnåelse. Arbeidsgruppen har tatt utgangspunkt i evalueringene av NCMM som er gjort og som er vedlagt her.

Målene for satsingen er fortsatt ambisiøse. Den framtidige enhetens faglige profil skal bygge på innovativ forskning, utvikling av nye teknologier, og vektlegging av tverrfaglig samarbeid. Gjennom tverrfaglig innsats skal enheten adressere problemstillinger som spenner fra intrikate cellulære mekanismer i biologi og

biomedisin til de store utfordringene knyttet til menneskers helse og økosystemer. Enhetens relevans for andre fagmiljøer ved UiO foreslås styrket mellom dens gruppeledere og de øvrige livsvitenskapmiljøene ved UiO. Den vitenskapelige strategien til den fornyede enheten vil følge og utfylle EMBLs strategi 'Molecules to Ecosystems'. Det forventes at enheten blir viktig for at UiO når de faglige målene med Livsvitenskapsbygget hvor konvergens, verdensledende forskning og innovasjon står sentralt.

NCMM vil være en meget viktig aktør i det nye Livsvitenskapsbygget og universitetsledelsen vil fortsatt arbeide med å skaffe ny ekstern finansiering til satsingen.

- Fordi en nedskalering av NCMM forutsetter drøfting, vil universitetsdirektøren komme tilbake til styret med en vedtakssak.

Arne Benjaminsen
universitetsdirektør

Ingrid Sogner
avdelingsdirektør

Vedlegg

- **Videreutvikling/reorientering av NCMM** - Rapport fra arbeidsgruppen for videreutvikling av Norsk Senter for Molekylærmedisin, 15. april 2024, med følgende vedlegg:
  - Vedlegg 1 Oppnevningsbrev fra Universitetsstyret 19.10.2023, saksnr. 2023/32076
  - Vedlegg 2 Bakgrunnsnotat 28. august 2023 for vurdering av videreutvikling/reorientering av Norsk senter for molekylærmedisin
  - Vedlegg 3 Oppsummering av NCMMs samarbeid med MED og MN i perioden 2019-2024
  - Vedlegg 4 EMBLs modell for rekruttering av gruppeledere
  - Vedlegg 5 Prosedyre for evaluering og forlengelse av gruppeledere
  - Vedlegg 6 Retningslinjer for forlengelse og tilsetting av gruppeledere
- Rammeavtale med EMBL
- Evaluation of the Centre for Molecular Medicine Norway (NCMM)
- NCMM self evaluation
- NCMM selvevaluering – MEDs uttalelse
- NCMM selvevaluering – MNs uttalelse

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Videreutvikling/reorientering av NCMM

Rapport fra arbeidsgruppen for videreutvikling
av Norsk Senter for Molekylærmedisin

15. april 2024

Innholdsfortegnelse

1 Innledning

Arbeidsgruppen har utarbeidet anbefalinger vedrørende temaet videreutvikling/reorientering av Norsk Senter for Molekylærmedisin (NCMM) i henhold til mandat i universitetsdirektørens Notat av 19.10.2023, Saksnr. 2022/32076, Vedlegg 1.

Arbeidsgruppen har bestått av

- Jan G. Bjålie, forskningsdekan, Det medisinske fakultet - MED (leder)
- Bjørn Jamtveit, forskningsdekan, Det matematisk-naturvitenskapelige fakultet - MN
- Janne Elin Reseland, forskningsdekan, Det odontologiske fakultet - OD
- Janna Saarela, direktør, NCMM
- Harald Alfred Stenmark, professor, Institutt for klinisk medisin, MED
- Marianne Fyhn, professor, Institutt for biovitenskap, MN
- Sarah Younes, etterfulgt av Olav Stanly Kyrvestad fra 15. januar 2024, representanter for tjenestemannsorganisasjonene
- Martha-Elisabeth Brigg, etterfulgt av Rune Larsen fra 1. februar 2024, sekretærfunksjon og assistanse med utarbeidelse av rapporten, MED

Arbeidsgruppens anbefalinger er utarbeidet med utgangspunkt i mandatet, herunder:

- Faglig profil - Forslag til en tilstrekkelig og nødvendig spisset faglig profil basert på nivået av UiOs bidrag til dagens budsjett
- Styringsstruktur - Forslag til organisering og styringsstruktur med ulike grader av felles lokalisering
- Rekruttering av gruppeledere - Forslag til prosess for oppnevning av gruppeledere som sikrer dynamikk og faglig utvikling
- Måloppnåelse - Målformuleringer med kvantitative og kvalitative indikatorer for måloppnåelse

I henhold til de oppgitte prinsippene for arbeidet er det tatt hensyn til at enheten skal være tilknyttet EMBL og at den vitenskapelige rammen skal være forenlig med EMBLs nye strategi «Molecules to Systems». Dette har gitt føringer for rapporten som helhet.

Kapittel 4 er skrevet på engelsk siden arbeidsgruppen hadde dette som arbeidsspråk for dette kapittelet, og konsensus ble etablert for denne teksten på engelsk.

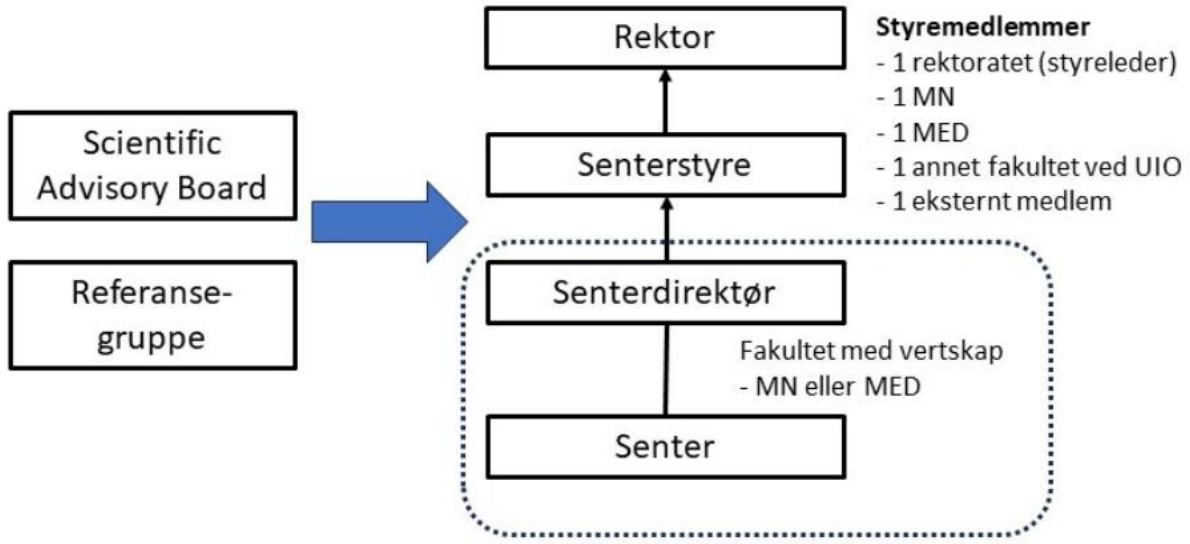
Arbeidsgruppen oversendte rapporten første gang 27. mars 2024. I denne utgaven av rapporten er det addert noe informasjon i Tabell 2, kap. 9.1, som manglet ved første oversendelse

2 Sammendrag

Arbeidsgruppen foreslår at det fremtidige senterets faglige profil skal bygge på innovativ forskning, utvikling av nye teknologier, og vektlegging av tverrfaglig samarbeid. Gjennom tverrfaglig innsats skal senteret adressere problemstillinger som spenner fra intrikate cellulære mekanismer i biologi og biomedisin til de store utfordringene knyttet til menneskers helse og økosystemer.

Arbeidsgruppen foreslår at en fremtidig styringsstruktur (Figur 1) baseres på et styre, to rådgivende organer og en senterdirektør. Styret foreslås sammensatt av et medlem oppnevnt av rektorat (styreleder), et medlem oppnevnt av MED, et medlem oppnevnt a MN, et medlem fra et av de øvrige fakultetene og et eksternt medlem. Styret rapporterer til rektor. MN eller MED er vertskap for senteret. En senterdirektør står for daglig ledelse med liknende mandat som i dagens NCMM. Senterets relevans for andre fagmiljøer ved UiO foreslås styrket med opprettelse av en referansegruppe bestående av forskningsgruppeledere fra MED og MN. Referansegruppen kommer i tillegg til senterets vitenskapelige rådgivende styre (Scientific Advisory Board – SAB) og vil sikre den faglige tilknytningen mellom senterets gruppeledere og de øvrige livsvitenskapmiljøene ved UiO. Senteret vil lokaliseres i Livsvitenskapbygget.

Det anbefales at senteret gjøres åpent for bidrag fra og samarbeid med andre relevante institusjoner og at styresammensetningen justeres i den grad samarbeidspartnere bidrar med vesentlig grunnfinansiering til senteret.



Figur 1. Arbeidsgruppens anbefalinger: Komponenter i senterets styringsstruktur.

Arbeidsgruppen foreslår at prosedyrer for rekruttering og forlengelse av gruppeledere videreføres slik de har vært praktisert i NCMM. Prosessene er i samsvar med EMBLs retningslinjer.

Arbeidsgruppen foreslår at det skilles mellom indikatorer for måloppnåelse for senteret som helhet og måloppnåelse for de enkelte gruppeledere. For senteret som helhet vil UiOs indikatorer for forskning og vektlegging av balansen mellom samarbeid med forskere ved MN og MED være veiledende. For de enkelte gruppeledere anbefales det å følge EMBLs etablerte regler og praksis for evalueringer.

3 Bakgrunn

Norsk senter for molekylær medisin (NCMM) og Bioteknologisenteret i Oslo (BiO) ble formelt slått sammen til ett senter under navnet NCMM den 2. januar 2017. NCMM ble opprinnelig etablert i 2008 som en node i *Nordic European Molecular Biology Laboratory (EMBL) Partnership for Molecular Medicine*. Bioteknologisenteret har sin opprinnelse fra 1989 og var samlokalisert med NCMM i Forskningsparken. NCMM hadde en faglig profil spisset mot molekylærmedisin, mens Bioteknologisenteret hadde en bredere faglig profil. Begge sentrene var tidligere organisert under den tverrfakultære satsingen «Molecular Life Science». Ved fusjoneringen i 2017 ble senteret organisert under Det medisinske fakultet. Ca. ¾ av grunnfinansieringen før fusjonen kom fra Bioteknologisentret. Bakgrunnsnotat av 28. august 2023 (Vedlegg 2) gir en nærmere beskrivelse av historie og bakgrunn for NCMM og Bioteknologisenteret.

Selvevalueringene av NCMM fra 2022 viste en noe divergerende oppfatning av senterets rolle og involveringen av UiOs øvrige enheter i senteret. Senterdirektøren har gått gjennom de nåværende gruppelederes samarbeid med MN og MED siden 2019, og dette er presentert i Vedlegg 3. Gjennomgangen viser at majoriteten av ph.d.-studentene tilknyttet NCMM er tatt opp på MNs doktorgradsprogram, mens gruppelederne har en betydelig overvekt av prosjektsamarbeid med forskere ved MED. Gruppeledernes sampublisering med forskere på MN og MED er forholdsvis jamnbyrdig.

UiO har stått for hoveddelen av grunnfinansieringen av senteret, med Norges Forskningsråd og Helse Sør-Øst som betydelige med medfinansiører. Grunnfinansieringen fra Forskningsrådet opphører ved utgangen av 2024 og det er ikke bekreftet at finanseringen fra Helse Sør-Øst fortsetter. Med bakgrunn i de endrede forutsetningene oppnevnte Universitetsstyret en arbeidsgruppe som skulle utarbeide forslag for et videreutviklet NCMM, herunder faglig profil, organisering og kvantitative og kvalitative mål for senteret. Arbeidsgruppens sammensetning, mandat og avgrensinger/prinsipper for arbeidet er beskrevet i oppnevningsbrev av 19.10.2023 (2023/32076), Vedlegg 1.

3.1 Arbeidsgruppens arbeid

Gruppen har avholdt totalt 8 møter i perioden 7. desember 2023 til 22. mars 2024. Arbeidsgruppen ble inndelt i to mindre grupper for å arbeide med spesifikke punkter i mandatet. Marianne Fyhn, Janna Saarela og Harald Stenmark arbeidet med et utkast til notat om senterets faglige profil og strategi. Jan Bjålie, Bjørn Jamtveit og sekretær arbeidet med utkast til notat om styringsstruktur og øvrige deler av rapporteng. Senterdirektør har fremskaffet flere dokumenter og data knyttet til NCMMs virksomhet, inkludert budsjett, prosedyrer for ansettelse av gruppeledere og oppsummering av samarbeid med miljøer ved MN og MED. Undergruppenes notater har vært diskutert og kommentert på møtene og bearbeidet av gruppen som helhet.

4 Faglig profil

4.1 Introduction

The concept of convergence, uniting diverse research fields for a common goal, is the notion which underpins the endeavors planned in the Life science building at UiO. Co-location of many of the UiO research environments in the building provides new opportunities for convergence and synergies and erases divisions between research fields such as biology and medicine, chemistry, physics and computer science. UiO hosts many world-leading research groups in various branches of life sciences and the convergence in the Life Science building will be an incubator for more penetrant studies in the life sciences.

Relocation to the Life Science Building will bring the renewed center to the core of the UiO's life science environment and thus increase opportunities for interaction with research at the faculties. The center's commitment to convergence will leverage interdisciplinary collaborations and methodological innovations, which will broaden the scope of understanding biological processes and their interactions. The focus on synergies and methodological advancements provides the ground for the center's future strategy, aiming to push the boundaries of science for societal benefit.

NCMM follows the EMBL model in terms of its organization, assessment of scientific quality, and international recruitment of early-career talented researchers to non-tenured positions (up to 9 years). This model enables the recruitment of international talent to Oslo and Norway and provides a greenhouse for early-career researchers to build their independent research lines under the umbrella of NCMM's scientific focus areas. Recruitment of successful group leaders to the faculties, when they rotate out of the Centre, can safeguard retaining talents and technological capabilities within the university. Furthermore, the EMBL model ensures renewal and flexibility of the center in terms of enabling strategic recruitments in new research focus areas and emerging technologies, thereby supporting UiO's strategy and strengthening and reviving life science at UiO. Moreover, the international profile and open, excellence-based recruitment increase diversity and equality at the university.

Since the establishment of NCMM, 50% of the group leaders have rotated to faculty positions at UiO, and 71% of the trainees (PhD students and post docs) have remained in Norway, rotating to academic (55%) and industry (26%) positions in Oslo. However, the current research focus of the centre, biased towards biomedicine (of 46 ongoing collaborations with faculties, 5 are interdisciplinary, 10 with MN and 31 with MED, Vedlegg 3) is not optimal for the desire to provide permanent positions for group leaders that are expected to rotate out to the many departments within the life science domain in the three faculties, MED, MN and OD.

4.2 New opportunities

The scientific strategy of the renewed center will comply, complement, and synergize with EMBL's Action plan 'Molecules to Ecosystems'. It will address fundamental challenges within 'molecular mechanisms of biology, health and disease' under the umbrella of '*Molecular Life Science*' by exploiting and developing state-of-the-art technologies and collaborating across traditional research fields. To gain a critical mass of scientists, build synergies and cultivate deep expertise in distinct focus areas, the center will cooperate with and involve established researchers from the faculties in its operations. The move to the Life Science Building and the planned internal reference group of faculty representatives will support the development of a balanced research profile providing connection points to UiO faculties and to international research environments.

The mission of the renewed center will be to delve into the core of interdisciplinary life sciences, addressing key questions that span from the intricacies of cellular mechanisms of biology and biomedicine to the broad challenges facing human health and ecosystems.

At the core of its strategy, the center seeks to:

- Uncover fundamental molecular mechanisms of life through innovative research.
- Apply these findings to address broader scientific questions in the domain of life sciences including UN Sustainable Development Goals with potential translation into innovations, clinical applications and solutions to a challenged natural ecosystems as long-term objectives.
- Cultivate an environment of excellence in research and training for emerging scientists.

These strategic goals will serve as a vanguard for UiO's life science research within the Life Science Building and beyond. The Centre will recognize the importance of selectively focusing on particular research areas to recruit new scientists, and input from the SAB and the internal reference group will form the basis for group leader recruitment. In recruiting group leaders, the center will cover diversity, fostering a dynamic research environment where groundbreaking discoveries in basic biology and molecular medicine, as well as development of new interdisciplinary research areas can be accomplished. This will ensure recruitment of group leaders that can rotate into a variety of positions at UiO once their tenure in the center comes to an end.

The center's research portfolio will focus on key research themes, including:

- **Cellular and Molecular Biology:** Investigating the molecular and cellular foundations for how living organisms develop and adapt to their environment and how such processes are disrupted in disease.
- **Phenotype-Genotype Paradigm:** Exploring the dynamic interplay between genetic information and phenotypic expression as drivers to evolution in response to changing environments and to disease, emphasizing epigenetics, functional genomics, and the architecture of genomes.
- **Technology Development:** Utilizing and developing cutting-edge experimental approaches alongside computational biology to decode complex biological data, enhancing our exploration of molecular mechanisms and biological processes.

The center will foster a culture of collaboration and integration, committed to bringing together researchers from various disciplines of molecular life sciences including biology and medicine, as well as other natural sciences such as chemistry, physics, mathematics, and informatics, capitalizing on the wealth of expertise at UiO and beyond. This interdisciplinary ethos is not just about broadening the center’s research scope but about creating a synergistic environment where insights from different domains intersect to spark discovery and innovation.

While the primary focus remains on groundbreaking basic science, the Centre will acknowledge the importance of translating basic findings into practical applications and innovation. Therefore, the Center will undertake and develop translational and more applied ‘mission’ research projects through establishing strategic partnerships locally, nationally, and internationally.

In conclusion, the scientific strategy of the renewed Centre focuses on pushing the boundaries of molecular life science by bridging traditional disciplines. It is dedicated to deepening the understanding of fundamental biological processes through innovative research, developing new technologies, and strongly emphasizing collaborative work. The goal is to make meaningful contributions to the scientific community, providing insights into the molecular basis of life that could inform future studies and applications, suggest solutions to the UN SDGs and strengthen life science research and innovation at UiO.

5 Styringsstruktur

Vurderingene av styringsstruktur og organisering bygger på prinsipper, tilgjengelig informasjon og tolkninger av forutsetninger i forbindelse med oppnevningen av arbeidsgruppen. Forutsetningene som er lagt til grunn er:

- Det reorganiserte senteret vil primært finansieres av nivå 1 ved UiO.
- Grunnfinansieringen fra Norges forskningsråd og Helse Sør-Øst vil falle bort. inansiering av basis fra Forskningsrådet, Helse Sør-Øst eller andre aktører er fortsatt ønskelig, men det er ingen identifiserte bidragsytere på det nåværende tidspunkt.

- Senteret skal vært knyttet til EMBL. Dette medfører visse forutsetninger knyttet til organiseringen og størrelsen av senteret.
- Tilknytninger til senteret og merverdi for andre relevante fagmiljøer ved UiO skal sikres.
- Det er planlagt arealer for NCMM i Livsvitenskapsbygget.

5.1 Styre eller råd

Arbeidsgruppen har vurdert om et fremtidig senter bør ha et styre med et mandat og gitte fullmakter eller kun ha et råd med representasjon fra interessenter ved UiO. **Arbeidsgruppen vurderer at et styre med rapportering til rektor og representasjon fra fakultetene vil være mest hensiktsmessig og i tråd med senterets finansiering fra nivå 1 ved UiO.** Et styre vi gi senteret faglig selvstendighet og strategisk handlingsrom innenfor de økonomiske rammene som allokeres av UiO på linje med de øvrige fagenhetene ved UiO. Organisering med et senterråd vil etter arbeidsgruppens mening ikke gi en tilsvarende tydelig styringsstruktur. Dersom det er ønskelig å vurdere etablering av et råd anbefales det å bygge på erfaringene fra det tverrfakultære samarbeidet knyttet til *Veksthuset for verdiskaping*.

5.2 Styresammensetning

Arbeidsgruppen foreslår følgende styresammensetning:

- Styreleder oppnevnt av rektoratet
- Styremedlem oppnevnt av MN
- Styremedlem oppnevnt av MED
- Styremedlem fra et av de øvrige fakultetene ved UiO. Oppnevnt av rektoratet etter anbefaling fra Forskningskomiteen
- Et eksternt styremedlem med relevant faglig bakgrunn, samt erfaring og kompetanse fra strategisk arbeid og innovasjon. Medlemmet oppnevnes av rektoratet etter forslag fra MN og MED

Det foreslås en styresammensetning med representasjon fra nivå 1 (styreleder, oppnevnt av rektoratet) og fra fakultetene (3 medlemmer), med tillegg av en eller to eksterne medlemmer. UiO nivå 1 vil ha betydelige interesser i enheten blant annet ved å stå for grunnfinansieringen av senteret. MED og MN har betydelige faglige interesser og bør derfor være representert med et styremedlem hver. Representasjon fra øvrige fakulteter bør også sikres ved at disse samlet er representert med et styremedlem. Videre er det viktig med et eksternt blikk på virksomheten. Følgelig bør det oppnevnes et styremedlem uten tilknytning til UiO som har relevant faglig bakgrunn, samt erfaring og kompetanse fra strategisk arbeid og innovasjon.

Andre organisasjoner eller stiftelser som bidrar med betydelig grunnfinansiering bør også ha styrerepresentasjon. Dersom en organisasjon, stiftelse eller annen aktør bidrar med betydelig grunnfinansiering foreslår arbeidsgruppen at denne organisasjonen også blir representert med et medlem i styret.

Styremedlemmene oppnevnes for en tidsbestemt periode. Personlige varamedlemmer oppnevnes for hvert styremedlem fra den enheten de representerer. Styret skal videre ha en balansert fagsammensetning med representasjon fra medisinske og matematisk-naturvitenskapelige miljøer.

Senterdirektøren forbereder saker for styret i samråd med styreleder og er styrets sekretær.

5.3 Styrets oppgaver og mandat

Styret skal i samarbeid med senterdirektøren ha et overordnet ansvar for drift, koordinering og senterets strategi. Styret har følgende oppgaver og beslutningsmyndighet:

- Veilede og overvåke senterets virksomhet, inkludert oppfyllelse av overordnede strategiske mål ved UiO som bærekraftsmålene, helse- miljø og sikkerhet, og likestilling og mangfold
- Godkjenne senterets økonomi, årsplaner og budsjett
- Godkjenne senterets strategiske mål og prioriteringer
- Godkjenne tilsetting av nye gruppeledere

Styremedlemmer som oppnevnes av fakultetene forventes å forankre sitt arbeid i styret med sine respektive fakultetsledelser.

5.4 Rådgivende organer

Arbeidsgruppen foreslår at styret og senterdirektøren mottar råd fra to rådgivende organer.

- En nyopprettet referansegruppe bestående av erfarne forskere fra MN og MED med relevant kompetanse og fagbakgrunn
- Et SAB - «Scientific Advisory Board» - med samme funksjon som i dagens NCMM - bestående av eksterne internasjonale forskere med relevant fagbakgrunn

5.4.1 Referansegruppe

Arbeidsgruppen foreslår å etablere en referansegruppe bestående av minst 8 forskere oppnevnt av MED og MN. Medlemmene skal ha faglig ekspertise og har oppnådd anerkjennelse innenfor sine spesifikke forskningsområder. Fordelingen mellom MN og MED skal være lik. Referansegruppen skal også ha balansert sammensetning i forhold til kjønn og karrierenivå. Medlemmene oppnevnes av de respektive dekanater i samråd med de relevante instituttene ved MN og MED.

Referansegruppens oppgaver vil være:

- Rådgivende overfor styret og senterdirektør om senterets faglige virksomhet og strategiske utvikling.
- Rådgivende overfor senterets gruppeledere om faglig konvergens, nettverksbygging og integrering av gruppenes forskning med andre livsvitenskapelige miljøer ved UiO, prosjektledelse og karriereutvikling.
- Bidra i samarbeidsprosjekter med senterets gruppeledere

5.4.2 Scientific Advisory Board

I henhold til partnerskapsavtalen med EMBL skal senteret ha et SAB. SAB skal ha minst 4 sentrale internasjonale forskere innenfor senterets fagområde. Minst ett av medlemmene skal være en forsker ved en annen EMBL-institusjon. Gruppen skal gi råd til styret og direktøren om fagstrategier og forskningen ved senteret i henhold til EMBLs anvisninger. SAB skal også evaluere forskningen og rapportere til styret om senterets vitenskapelige progresjon. SAB oppnevnes av styret i samråd med senterdirektør.

5.5 Senterleder

Senteret skal ledes av en direktør med professorkompetanse og relevant fagbakgrunn. Senterdirektøren er senterets daglige leder, og leder og koordinerer utviklingen av senterets forskning, formidling og øvrige faglige virksomhet. Senterdirektøren rapporterer til styreleder og på løpende basis til den eller de personer som styreleder delegerer ansvar for oppfølging; dette kan være dekanene ved MED og MN.

5.6 Vertskapsrollen og innplassering ved UiO

MN eller MED bør ha vertskapsrollen for senteret gitt at den faglige virksomheten organiseres på nivå 3 eller lavere nivå ved UiO. Selv om senteret er organisatorisk plassert under ett av fakultetene, bør senteret ha som målsetting å ha lik andel gruppeledere med primær tilknytning til MN og MED.

En fremtidig innplassering av et senter vil enten måtte være tilsvarende et institutt, slik NCMM er plassert ved MED i dag, eller tilsvarende en avdeling under et institutt. Ved MN finnes eksempler på senterkonstruksjoner som er bygd inn i institutter, men med høy grad av selvstendighet (f.eks. HISP ved IFI). SFFer er også vanligvis plassert under institutter. Det nylig opprettede SUSTAINIT ved MED blir også innplassert under et institutt. Arbeidsgruppen konstaterer at det finnes flere velprøvde alternative løsninger for innplassering av et senter. Siden organisering ved MN og MED er ulik, bør vertsfakultetet i dialog med MN/MED avgjøre den endelige organiseringen og innplassering av enheten. **Arbeidsgruppen anbefaler en plassering av senteret på nivå med et institutt** og mener plassering på et lavere nivå ikke vil være optimalt for profileringen og driften av senteret, gitt bredden av aktiviteter og senterets kontekst.

Vertskapsrollen er hovedsakelig av organisatorisk karakter og ilegger ikke vertsfakultetet faglig styringsrett eller økonomiske forpliktelser. Senteret vil kunne benytte seg av de administrative fellestjenestene ved et fakultet eller institutt mot at kostnadene ved dette kompenseres. Arbeidsgruppen konstaterer at MED og MN har noe ulik organisering av sine administrative funksjoner, med større grad av desentralisering ved MED. Som en følge av disse forskjellene oppfatter arbeidsgruppen det slik at et senter plassert ved MED vil måtte ha viktige nøkkelfunksjoner for HR og økonomi i egen enhet, tilsvarende dagens NCMM, eller være plassert under et institutt som kan ha ansvar for å levere de nødvendige administrative tjenestene. Et senter plassert ved MN vil eventuelt kunne støtte seg til sentraliserte administrative funksjoner på fakultetsnivå, alternativt være plassert under et institutt. Uansett innplassering påløper kostnader som senteret må dekke. Arbeidsgruppen har ikke forutsetninger for å vurdere om det er mest hensiktsmessig med en plassering ved MED eller MN og mener dette må avgjøres i dialog mellom fakultetene.

6 Økonomi

Det fremtidige reorganiserte senteret forventes i hovedsak å ha sin grunnfinansiering fra UiO sentralt. Dermed er det naturlig at UiOs nivå 1 er økonomisk ansvarlig for senteret og gjennom senterets styre (herunder styreleder oppnevnt av rektoratet) er betydelig involvert i langsiktig planlegging og oppfølging av senterets virksomhet.

Medlemskapet i EMBL legger føringer på størrelsen av grunnfinansiering av senteret. Forespeilet finansiering fra UiO på 38 millioner oppfyller et minimumskrav for medlemskapet. Dette tilsvarer et senter med 6 gruppeledere med tilhørende budsjett for å rekruttere tidlig-karriereforskere, to permanente stillinger (senterdirektør og assisterende direktør), teknikere og driftsmidler, to kjernefasiliteter, samt en liten administrasjon. En styrket grunnfinansiering vil kunne øke antall gruppeledere i senteret, og/eller finansiere bistillinger ved senteret.

Et bidrag til grunnfinansiering fra andre kilder enn UiO, for eksempel fra Helse Sør-Øst eller andre offentlige eller private aktører, vil også kunne øke senterets størrelse og ambisjonsnivå. Arbeidsgruppen forventer at styret og senterledelsen vil arbeide med mulige aktører som kan bidra med grunnfinansiering.

Gruppeledere forventes også å skaffe betydelig ekstern prosjektfinansiering fra nasjonale og internasjonale finansieringskilder.

6.1 Budsjett

Arbeidsgruppen har med utgangspunkt i erfaringer fra NCMM og en redusert ramme diskutert fordelingen av den tilgjengelige grunnfinansieringen mellom ulike kostnadskategorier. Tabell 1 viser kostnadskategoriene, aspekter som er diskutert og anbefalt budsjett innenfor 4 hovedkategorier.

Tabell 1. Vurderinger av fremtidig budsjett ved senteret og fordeling på kostnadskategorier

Budsjettkategori	Vurderinger	Anbefalt årlig tildeling
Roterende gruppeledere - lønn til gruppeledere - ansatte i gruppen - midler til drift og utstyr	Det anbefales å legge opp til at senteret til enhver tid har 6 roterende gruppeledere: 3 i oppstartsfase (5 år) og 3 i forlengelse (inntil 4 år). Dette antallet er i henhold til minimumsforventninger fra EMBL. Det anbefales at finansieringen holdes på omtrent samme nominelle nivå som i de senere år, eventuelt at det legges opp til en moderat økning.	Minimum 18,3 mill. NOK fordelt på 6 gruppeledere. Dette svarer til finansering på samme nivå som NCMMs gruppeledere har hatt i senere år.
Vitenskapelig utstyr -Investeringer i vitenskapelig utstyr utover gruppenes egne anskaffelser og utstyrs-bevilgninger fra UiO, inkludert egenandeler i forbindelse med bevilgninger fra UiO	Senteret vil ha behov for å dekke egenandeler i forbindelse med utstyrsbevilgninger fra andre budsjetter. Det vil også være behov for å fullfinansiere enheter som gruppene kan ha behov for ved oppstart.	2 mill. NOK Dette tilvarer finansering på samme nivå som NCMM har hatt til dette formålet i senere år.
Kjernefasiliteter -lønn -drift -mindre utsyrsannsskaffelser	Senteret har p.t. ansvar for to kjernefasiliteter: Zebrafiskenhet og «Chemical biology» enhet. Det anbefales at senteret fortsetter å drifte og utvikle disse enhetene med egne ansatte.	4 mill NOK Basisfinansiering til to kjernefasiliteter i Livsvitenskaps-bygget: Zebrafisk og «Chemical Biology».
Ledelse, senterleders og nestleders forskningsgruppe, administrasjon og forsknings-støtte: - Senterleder og nestleder (egen lønn og lønn til ansatte i forskningsgruppen, midler til drift og utstyr) -Senterets administrasjon -Generell drift -Frikjøp av inntil 2 ansatte ved USIT (generell IT-drift og vitenskapelig applikasjons-støtte)	Det anbefales at fordelingen mellom øvrige formål forhandles i forbindelse med oppstart av det reorganiserte senteret. Kostnader ved administrasjon må vurderes i forhold til reduserte behov ved at senteret blir mindre enn tidligere, og i forhold til plassering av senteret og organisering av administrasjonen. Det må foretas prioriteringer mellom de ulike kostnadskategoriene.	Resterende budsjettmidler

6.2 Overgangsfinansiering

Senteret forventes å ha et mindreforbruk ved utgangen av 2024. Disse midlene vurderes som tilstrekkelige til å dekke merkostnader knytte til midlertidig videreføring av aktiviteter inntil et nytt nedskalert nivå er oppnådd.

7 Felles lokalisering og integrasjon med andre livsvitenskapsmiljøer

Livsvitenskapsbygget vil medføre større integrasjon og samlokalisering med øvrige livsvitenskapsmiljø ved UiO og miljøer tilknyttet Helse Sør-Øst (HSØ). Senterets forskere vil både forventes å realisere minst to kjernefasiliteter (Zebrafiskenhet og "Chemical biology" enhet) samt benytte øvrige kjernefasiliteter og teknologiplattformer i bygget.

Det har vært ønskelig at et større antall gruppeledere og forskningsledere ved UiO for øvrig ble nærmere knyttet til senteret for å bidra til senterets virksomhet og mentorering av gruppeledere. Lokaliseringen av det videreføre senteret i Livsvitenskapsbygningen vil legge til rette for slike interaksjoner. Utover dette sikres tilknytning til forskere fra MN og MED gjennom opprettelsen av en referansegruppe (se 5.4.1).

8 Rekruttering av gruppeledere

8.1 Ansettelse av nye gruppeledere

En overordnet målsetting ved rekruttering av gruppeledere er å gi talentfulle tidlig-karriereforskere mulighet til å utvikle sin karriere og bli ledende innen sitt fagfelt. Nye gruppeledere velges hovedsakelig etter en vurdering av deres vitenskapelige fremragenhet (scientific excellence) i en åpen og internasjonal søknadsprosess. Rekruttering og tilsetting av gruppeledere forslås å følge prosedyrer som NCMM har benyttet i forutgående år og som er i tråd med EMBLs retningslinjer. En forenklet beskrivelse av rekrutteringsprosessen er:

1. Styret godkjenner utlysning av stilling, herunder eventuell faglig innretting og forskningsområde det ønskes rekruttert innenfor.
2. Stillingen annonseres internasjonalt
3. Kandidatene vurderes på vitenskapelige meritter, forskningspotensial og kvalitet på foreslått forskning som kandidaten planlegger gjennomført som gruppeleder. Evalueringen bygger både på søknad, samt presentasjon og intervju av kandidatene.
4. Evalueringskomiteen oppnevnes av styret etter anbefaling fra referansegruppen og SAB.
5. Evalueringskomiteen innstiller kandidater overfor styret som tar endelig beslutning om hvilken kandidat som tilbys stilling som gruppeleder

Formelt har kandidater blitt ansatt av tilsettingsutvalget i henhold til enhver tid gjeldene delegasjonstabell ved Det medisinske fakultet. EMBLs retningslinjer for rekruttering av gruppeledere er beskrevet i Vedlegg 4.

8.2 Forlengelse av gruppeledere

Gruppeledere ansettes for en periode på 5 år og engasjementet kan forlenges ytterligere 4 år. Forlengelse bygger på en grundig evaluering av resultatene oppnådd etter første periode. Arbeidsgruppen foreslår å videreføre NCMMs veletablerte prosedyre for forlengelse. Gjeldene prosedyrer for evaluering og forlengelse av gruppeledere i tråd med EMBLs retningslinjer:

1. Gruppeledere evalueres innen fem år etter ansettelse. Evalueringen bygger på en mappe som gruppeleder setter sammen bestående blant annet av CV, publikasjonsliste, ekstern finansiering, samt en beskrivelse av planlagt forskning de neste årene
2. Direktør foreslår i samråd med SAB inntil fire eksperter for å vurdere gruppelederens prestasjoner i henhold til kvalitative og kvantitative indikatorer for forskningen. Gruppelederen gis anledning til å foreslå evaluatorer, samt navngi potensielle forskere som de ikke ønsker bli evaluert av.

3. Styret godkjenner evalueringskomiteen og kan også oppnevne eksperter de ønsker skal delta i evalueringen.
4. Senterdirektør og SAB gjennomgår evalueringskomiteens vurderinger og gjennomfører sin egen evaluering av gruppeleders progresjon, og fremmer forslag til styret om gruppeleder skal forlenges

Utfyllende beskrivelse av prosedyre og prinsipper for forlengelse er angitt i henholdsvis Vedlegg 5 og Vedlegg 6.

9 Måloppnåelse

Arbeidsgruppen anbefaler at det skilles mellom måloppnåelse helhetlig for senteret og individuelt for de enkelte gruppeledere.

9.1 Senteret som helhet

Senteret forventes å rapportere på de til enhver tid gjeldende forskningsindikatorer for enheter ved UiO.

Produksjonen av doktorgrader forventes opprettrettholdt på samme nivå som i senere år, mens fordeling av doktorgrader mellom MN og MED er ujevn (Vedlegg 3). I den kommende 5-årsperioden bør antallet doktorgrader som utgår fra MN og MED være det samme.

Senteret har et betydelig omfang av samarbeidsprosjekter og sampublikasjoner med andre enheter ved UiO (Vedlegg 3). I den kommende 5-årsperioden bør antallet samarbeidsprosjekter som utgår fra MN og MED være omtrent på samme nivå, justert for det reduserte antallet gruppeledere i senteret. Arbeidsgruppen ser det ikke som hensiktsmessig å måle sampublikasjoner på samme måte da det er store forskjeller mellom publiseringspraksis og muligheter mellom prosjekter.

Senteret har et betydelig innslag av «oppstartsvirksomhet» sammenliknet med andre enheter ved UiO innen liknende fagområder. Isolert sett taler dette for at forventningene til ekstern finansiering settes lavere enn for andre enheter som har et større omfang av veletablert forskningsvirksomhet. Den betydelige grunnfinansieringen av gruppene i senteret bør forventes å kompensere for dette ved å gi raskere oppstart bedre muligheter til ekstern finansiering enn hva som kan forventes av enheter med mindre omfang av grunnfinansiering. Arbeidsgruppen anbefaler derfor at forventningene til senteret skal settes til samme nivå som for sammenliknbare enheter, dvs. ekstern finansiering bør ligge på omtrent samme nivå som grunnfinansieringen. De foreslåtte måleindikatorene er vist i Tabell 2

Tabell 2. Forslag til indikatorer for og måloppnåelse for senteret som helhet

Måleindikatorer	Utgangspunkt	Ønsket resultat
Doktorgrader	Antall doktorgrader utgått fra senteret siste 5 år (2019 - 2023): **15.** Gjennomsnittlig antall doktorgrader utgått fra hver av gruppene i senteret siste 5 år (2019 – 2023): **1,5**	Det forventes av produksjonen opprettholdes. Gjennomsnittlig antall doktorgrader utgått fra hver av gruppene i senteret i de neste 5 årene (2025 - 2029): **1,5**
Fordeling av doktorgrader med MN og MED	En overvekt av senterets doktorgrader har utgått fra MN. For tiden er 15 kandidater tatt opp på doktorgradsprogrammet ved MN og 5 ved MED.	Det forventes en tilnærmet lik fordeling av doktorgrader utgått fra MN og MED.

Fordeling av samarbeidsprosjekter mellom MN og MED	En overvekt av senterets samarbeidsprosjekter med andre grupper ligger ved MED.	Det forventes en tilnærmet lik fordeling av samarbeidsprosjekter med MN og MED.
Ekstern finansering	Samlet årlig grunnfinansiering (UiO, NFR, HSØ) i perioden 2022-2024: **151 millioner** Samlet ekstern finansiering i perioden 2022-2024: **101 millioner** Konkurranseutsatt ekstern finansiering har utgjort **40 %** av senterets totale finansiering. Institutter ved UiO innen samme fagområde som senteret har i størrelsesorden 50 % ekstern finansering.	Det forventes at senteret skal ha et omfang av ekstern finansiering på om lag samme nivå som grunnfinansieringen.

9.2 Gruppeledere

For de enkelte gruppeledere i senteret anbefaler arbeidsgruppen at allerede innarbeidede prosedyrer for evaluering av måloppnåelse videreføres (8.2, Vedlegg 5). Evalueringene er i henhold til EMBLs krav og foretas av eksterne eksperter og SAB. Kriteriene som benyttes er omtalt i Vedlegg 6 og består oppsummert av:

- Oppbygging av en forskningsgruppe
- Etablering av et forskningsområde og en selvstendig forskningsprofil
- Ekstern finansiering
- Bidrag til forskerutdanning
- Bidrag til translasjonsforskning (for gruppeledere der denne tematikken er aktuell)
- Bidrag til UiOs profiler og utvikling av aktiviteter som gir synergier ved institusjonen, herunder utvikling og drift av infrastrukturer

Arbeidsgruppen anbefaler også at gruppeledere skal bidra til konvergens og interdisiplinær forskning innen livsvitenskap for å løse samfunnsutfordringer inne helse og miljø. Dette i tråd med universitetets strategisk satsing UiO:Livsvitenskap.

De grunnleggende prinsippene for evalueringene følger The San Francisco Declaration on Research Assessment (DORA) fra 2012 og The Coalition for Advancing Research Assessment (CoARA) fra 2022 (https://www.embl.org/about/research-assessment/).

10 Vedlegg

Rapporten inneholder følgende vedlegg

Vedlegg 1	Oppnevningsbrev fra Universitetsstyret 19.10.2023, saksnr. 2023/32076
Vedlegg 2	Bakgrunnsnotat 28. august 2023 for vurdering av videreutvikling/reorientering av Norsk senter for molekylærmedisin
Vedlegg 3	Oppsummering av NCMMs samarbeid med MED og MN i perioden 2019-2024
Vedlegg 4	EMBLs modell for rekruttering av gruppeledere
Vedlegg 5	Prosedyre for evaluering og forlengelse av gruppeledere
Vedlegg 6	Retningslinjer for forlengelse og tilsetting av gruppeledere

10.1 Vedlegg 1

UNIVERSITETET I OSLO

Notat

Til:
MN Det matematisk-naturvitenskapelige fakultet
MED Det medisinske fakultet
NCMM
Akademikerne - UiO

Dato: 19.10.2023
Saksnr..: 2022/32076 ELISASET

NCMM - arbeidsgruppe for videreutvikling

Vi viser til dialog om saken og til universitetsstyrets behandling av sak vedr. videreutvikling/reorientering av Norsk Senter for Molekylærmedisin (NCMM) i møte 6. september 2023. Universitetsstyret fattet følgende vedtak:

- Det nedsettes en arbeidsgruppe som skal utvikle et forslag til videreutvikling av enheten, med prinsipper, medlemmer og mandat som beskrevet i saken.
- Universitetsstyret vil få saken tilbake etter at arbeidsgruppen har ferdigstilt arbeidet.

På denne bakgrunn oppnevnes en arbeidsgruppe med følgende sammensetning:

- Jan G. Bjålie, forskningsdekan, Det medisinske fakultet (leder)
- Bjørn Jamtveit, forskningsdekan, Det matematisk-naturvitenskapelige fakultet
- Janne Elin Reseland, forskningsdekan, Det odontologiske fakultet
- Janna Saarela, direktør, NCMM
- Harald Alfred Stenmark, professor
- Marianne Fyhn, professor
- Sarah Younes, representant for tjenestemannsorganisasjonene (Akademikerne)
- Martha-Elisabeth Brigg (sekretær)

Mandat for arbeidsgruppen:

- utarbeide forslag til en tilstrekkelig og nødvendig spisset faglig profil basert på nivået UiOs bidrag til dagens budsjett
- utarbeide et forslag til organisering og styringsstruktur hvor ulike grader av felles lokalisering vurderes og som munner ut i en konkret anbefaling
- utarbeide et forslag til prosess for oppnevning av gruppeledere som sikrer dynamikk og faglig utvikling
- utarbeide målformuleringer med kvantitative og kvalitative indikatorer for måloppnåelse

Universitetsdirektøren
Postadresse: Postboks 1072 Blindern 0316 OSLO
Besøksadresse: Lucy Smiths hus, Problemveien 7
Tlf: +47 22 85 50 50
Faks:
E-post: postmottak@admin.uio.no
http://www.uio.no/
Org.nr.: 971 035 854

UNIVERSITETET I OSLO

Notat

2

Arbeidsgruppen skal basere sitt arbeid på følgende prinsipper:

- Enheten skal være knyttet til EMBL
- Vitenskapelig ramme skal være EMBLs nye strategi «Molecules to ecosystems»
- Enheten skal vurdere om det er ønskelig å opprettholde en nasjonal posisjon/rolle, og det må belyses hva dette vil innebære
- Forholdet til det nordiske partnerskapet NCMM i dag er en del av, må vurderes på et senere tidspunkt
- Senterordningen skal sikre at de som er tilknyttet identifiserer seg med og har betydelige fordeler av enheten, samtidig som tilknytning og merverdi for andre relevante fagmiljøer sikres f.eks. ved å knytte senior-professorer fra fakultetene til enheten.

Frist for arbeidet: Arbeidsgruppen bes levere slik at det kan fattes vedtak i saken våren 2024.

Vi takker for at dere har påtatt dere å bidra inn i arbeidsgruppen og ser fram til videre dialog.

Med hilsen

Arne Benjaminsen (signatur)
universitetsdirektør

Ingrid Sogner
avdelingsdirektør

Dette dokumentet er godkjent elektronisk ved UiO og er derfor ikke signert.

Saksbehandler:
Elisabeth Authen Sethre
e.a.sethre@admin.uio.no

10.2 Vedlegg 2

UNIVERSITETET
I OSLO

Norsk senter for molekylærmedisin

Bakgrunnsnotat 28. august 2023 for vurdering av videreutvikling/reorientering av Norsk Senter for Molekylærmedisin

Innholdsfortegnelse

1. Bakgrunn

1.1 Hovedproblemstillinger

Norsk senter for molekylærmedisin (NCMM) er pr i dag et nasjonalt senter fokusert på kompetansebygging i molekylærmedisin og translasjonsforskning og utvikling av unge talenter. Senteret er finansiert av Universitetet i Oslo (UiO) med bidrag fra Forskningsrådet og Helse Sør-Øst RHF. NCMM har som oppgave og mål å utføre vitenskapelig forskning på høyt internasjonalt nivå, utvikle forskertalenter og gi tilgang til betydningsfulle kjernefasiliteter. NCMM er tilknyttet European Molecular Biology Laboratory (EMBL) og er *ett* av fire nordiske EMBL- noder i et nordisk samarbeid.

NCMM er finansiert ut 2024 og en eventuell videreføring/reorientering må vurderes. Forskningsrådet har besluttet at de ikke vil opprettholde finansieringen i sin nåværende form etter 31.12.2024 Helse Sør-Øst RHF har signalisert det samme.

Kunnskapsdepartementet[1] finansierer norsk medlemsskap i moderorganisasjonen (EMBL) med 28,5 mill NOK pr år. Det er ingen tegn til at dette medlemsskapet vil termineres.

UiO må uavhengig av Forskningsrådet og Helse Sør-Øst RHF vurdere sin posisjon. Gitt tap av finansiering fra de andre partnerne må UiO særlig vurdere:

- *Avvikling NCMM*
- *Videreføring NCMM*
  mer eller mindre i den formen det har i dag - som et nasjonalt senter finansiert av UiO
- *Utvikling av et nytt konsept for virksomheten*
  som ivaretar intensjonen om å utvikle talenter i grenselandet mellom medisin og realfag og som vil bidra til konvergens i Livsvitenskapsbygget hvor senteret er planlagt inn.

De to siste alternativene innebærer også at UiO må ta stilling til nivået på finansieringen fra sentralt hold. Selv om senteret nå vurderes, ligger det betydelige forpliktelser på UiO både gjennom faste stillinger og gjennom den aktiviteten som allerede er igangsatt.

1.2 Opprettelsen av NCMM

Senteret ble startet etter et initiativ fra the European Molecular Biology Laboratory (EMBL) i 2005. EMBL ønsket å spre sin modell for grensesprengende forskning i Europa og foreslo overfor de nordiske forskningsrådene å etablere et nordisk forskningssenter for molekylærmedisin. Initiativet ble godt mottatt og endte opp med en utlysning av nordiske sentere for fremragende forskning (NCoE) i molekylærmedisin. Disse skulle fungere som et grunnlag for i neste omgang å se om det var mulig å etablere høyprofilerte nordiske EMBL-affilierte sentere. Forskningsrådet ga, etter en lengre prosess, UiO i oppgave å etablere og være vertskap for en norsk node av et EMBL-affiliert Nordic Centre for Molecular Medicine. UiO hadde den sterkeste faglige virksomheten og hadde vist størst interesse.

[1] Tabell 4.31 Norske kontingentbidrag til internasjonale grunnforskingsorganisasjoner i 2023
Prop. 1 S (2022 –2023) Kunnskapsdepartementet

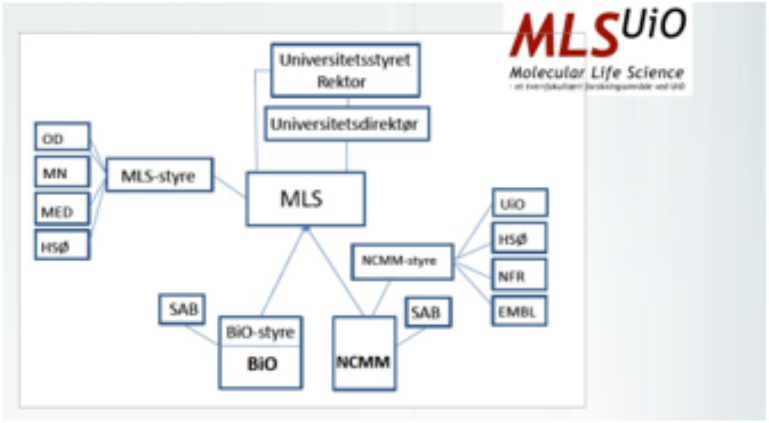
Avtalen om den nordiske overbygningen «Nordic EMBL Partnership for Molecular Medicine» ble signert av nordiske rektorer i 2007. Norsk senter for molekylærmedisin (NCMM) ble deretter etablert i 2008.

Senteret ble finansiert gjennom en 10-årig konsortieavtale mellom Norges forskningsråd, UiO og Helse Sør-Øst RHF. Senteret kom i full drift fra 2010.

Etter ekstern evaluering av NCMM i 2018 ble konsortieavtalen i modifisert form forlenget med ytterligere 5 år (ut 2024).

1.3 Intern plassering ved UiO

Molecular Life Science - MLS var en tverrfakultær satsing ved UiO fra 2009 til 2014 organisert som en enhet direkte under universitetsstyret og rektor. MLS opererte som et strategisk organ for molekylær livsvitenskap ved UiO. Satsingen koordinerte og finansierte tverrfakultær spissforskning ved tre fakulteter (MN, MED og OD) i samarbeid med de tre forskningsdekanene. I tillegg hadde MLS linjeansvar for både NCMM og Bioteknologisentret, se fig. 1



Figur 1 *Plassering av NCMM i UiO organisasjonen i perioden 2009-2014*

Ved utgangen av 2014 ble MLS nedlagt. Budsjett og virksomhet ble integrert i UiO:Livsvitenskap, som en utvidet satsing med bredere nedslagsfelt og ny organisering,
mens NCMM og Bioteknologisentret ble lagt til Det medisinske fakultet som to separate underliggende sentre, se fig. 2

Figur 2 Plassering av NCMM i UiO organisasjonen i perioden 2015- 2023

I 2016-2017 ble NCMM og Bioteknologisenteret etter anbefalinger fra et eget og felles «Scientific Advisory Board (SAB)» fusjonert, for å gi økt kritisk masse. Mens NCMM har molekylærmedisin som tema, var nedslagsfeltet til Bioteknologisenteret bredere. Dette skulle hensyntas i den nye felles organiseringen.

Helt fra opprettelse har NCMM holdt til i Forskningsparken hvor det tidligere opprettede Bioteknologisenteret fra 1989 også holdt til. Det var en tydelig ambisjon at begge sentrene skulle lokaliseres i det kommende Livsvitenskapsbygget når den tid kom.

1.4 Nåværende finansiering av sentret

NCMM finansieres pr i dag årlig på følgende måte: UiO basis ca. 35 mill. kr., Forskningsrådet 13 mill. kr., Helse Sør-Øst RHF 4,5 mill. kr., konkurranseutsatt ekstern finansiering, ca. 30 mill. kr.

Av de cirka 35 mill. kr. UiO basis til NCMM er det 26,5 mill. kr fra det tidligere Bioteknologisenteret, og 8,5 mill. kr. fra NCMM før fusjon mellom disse to enhetene i 2017.

Fusjonen mellom BiO og NCMM var et rent institusjonelt faglig fundert initiativ uten koplinger til EMBL og deres modell, men ble godkjent av EMBL. Det er gjort et betydelig arbeid for å involvere de andre universitetene i Norge og de andre helseregionene knyttet til virksomheten ved NCMM uten å lykkes i særlig grad.

2. Nordic Molecular Medicine Partnership

2.1 Innledning

NCMM inngår som en node innen molekylærmedisin i *The Nordic EMBL Partnership for Molecular Medicine* mellom European Molecular Biology Laboratory (EMBL), Universitetet i Oslo Universitetet i Helsinki, Umeå Universitetet, og Århus Universitetet.

EMBL-nodene ved de andre nordiske universitetene er *The Institute for Molecular Medicine Finland* (FIMM), *The Danish Research Institute of Translational Neuroscience* (DANDRITE) og *The Laboratory for Molecular Infection Medicine Sweden* (MIMS). Partnerskapet bidrar til fremragende forskning hvor molekylær bakgrunn for sykdom utforskes for å undersøke mulig molekylær og genetisk basert behandling (translasjonsforskning).

Partnerskapet gir tilgang til vitenskapelig infrastruktur som databaser, fasiliteter og instrumentering. Videre gis det tilgang til klinisk materiale, nettverk og opplæringstilbud fra partnerne slik at det legges til rette for EMBL-modellen med internasjonal rekruttering, utveksling av personale og vitenskapelig gjennomganger. Partnerskapets noder fungerer også som veksthus for unge, talentfulle forskere, og fremmer samarbeid og fremragende forskning innen molekylærmedisin både innad i vertsinstitusjonene og på tvers av nodene.

2.2 Danish Research Institute of Translational Neuroscience (DANDRITE)

DANDRITE er organisert som et forskningsinstitutt ved Aarhus universitet med fokus på translasjonsforskning innen neurovitenskap. Virksomheten er integrert i Institutt for Molekylærbiologi og Genetik, Faculty of Natural Sciences, og Institutt for Biomedicin, Faculty of Health.

Instituttnivået har linjeansvaret for drift og budsjett for DANDRITE. Dekanene ved det to fakultetene og de to instituttlederne er medlemmer i DANDRITEs styre. Det avholdes månedlige møter mellom øverste ledelse og instituttlederne for å koordinere driften og samarbeidet. Senior gruppeledere deltar i relevante komiteer både ved instituttene og fakultetene.

Ansatte ved Aarhus universitet som ikke er tilknyttet DANDRITE leder evalueringskomiteene i forbindelse med utlysning og tilsetning av gruppelederstillinger. Gruppeledere ansettes formelt ved ett av de to vertsinstituttene og instituttlederne deltar derfor i arbeidet med ansettelsen av nye gruppeledere.

DANDRITE er organisert med fire senior gruppeledere i faste vitenskapelige stillinger og seks gruppeledere i pre-tenure-stillinger med egen finansiering i ni år. EMBL-partnerskapet gir de yngre gruppelederne også et forskningsfelleskap, et sterkt nettverk og internasjonal synlighet, samt at det gjennomføres lokalt og internasjonalt mentoropplegg for disse personene.

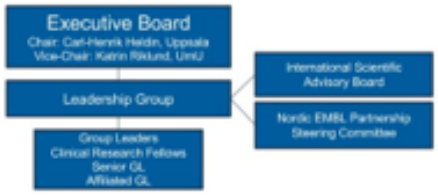
DANDRITE har et budsjett på DKK 75 mill. (i perioden 2023-2028) fra Lundbeck-stiftelsen samt *in kind* vertskapsfinansiering fra Aarhus Universitetet på direkte kostnader som utgjør DKK 35 mill. Når det gjelder gruppelederprogrammet for seks gruppeledere, omfatter det 10 fullfinansierte ph.d-stipendiatstillinger, årlig bidrag til kjernefasiliteter på DKK 1,4 mill, samt administrativ støtte.

2.3 The Laboratory for Molecular Infection Medicine Sweden (MIMS)

MIMS er organisert som et forskningslaboratorium ved Umeå universitetet med fokus på

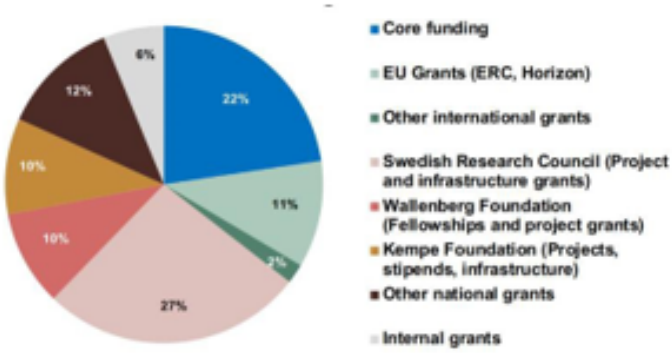
forskning innen molekylær infeksjonsmedisin. Virksomheten er tilknyttet både Det teknisk - naturvitenskaplige fakultet og Det medisinske fakultet, samtidig som det er tett samarbeid med Umeå universitetssykehus. MIMS har en nasjonal rolle i Sverige som partner i EMBL.

Styringsmodellen ved MIMS er som følger:



MIMS er organisert med syv senior gruppeledere i faste vitenskapelige stillinger og seks gruppeledere i pre-tenure-stillinger med egen finansiering i ni år.

MIMS hadde et budsjett på SEK 93.9 mill. i 2022, hvorav ca. 22 % er intern finansiering. Det er verdt å merke at i denne posten utgjør midler fra Det svenske forskningsrådet på ca. SEK ca. 14.00 mill. av 21.3 mill.



2.4 Institute for Molecular Medicine Finland (FIMM)

FIMM er et internasjonalt forskningsinstitutt for presisjonsmedisin organisert som en enhet ved Helsinki Institute of Life Science HILIFE, Helsinki universitetet. FIMM undersøker molekylære mekanismer ved sykdomsutvikling ved hjelp av metoder som involverer genetikk og medisinsk systembiologi. Forskningen kombinerer teknologi og forskning på høyt nivå med unike pasient- og biobankmaterialer. FIMM er i tett samarbeid med universitetssykehuset i Helsinki.

Det er ca. 250 ansatte ved instituttet som har et budsjett på ca. 25 mill. Euro hvor 90% hentes inn i form av ekstern finansiering. I tilknytning til instituttet er det ansatt tre forskningsgruppelede i pre-tenure-stillinger.

2.5 Norsk senter for molekylærmedisin (NCMM)

NCMM er organisert som et nasjonalt senter underlagt Det medisinske fakultet ved UiO som en separat selvstendig enhet. I rollen som nasjonalt forskningssenter skal NCMM fungere som et drivhus for unge, talentfulle forskere innen molekylærmedisin, bioteknologi og translasjonsforskning. Senteret er et viktig element i UiOs strategiske satsning på livsvitenskap.

I henhold til konsortieavtalen for NCMM, består styret av styreleder og fire medlemmer som representerer UiO og Helse Sør-Øst RHF, samt en nasjonal representant. Styrets nåværende sammensetning: Tre utnevnt av UiO (to fra MED og en fra MN - UiO utpeker styrets leder som til nå har hatt ansettelse både ved UiO og OUS), to utnevnt av Helse Sør-Øst RHF og ett styremedlem oppnevnt av nasjonalt dekanmøte i medisin på vegne av Forskningsrådet (nasjonal representant).

Styret er i samarbeid med senterdirektøren ansvarlig for senterets overordnede koordinering og fremdrift. Styret har pr i dag som oppgave å veilede og overvåke NCMMs virksomhet og økonomi, og godkjenner senterets strategiske planer, mål og budsjett. Pr i dag er det også NCMM styret som beslutter ansettelser av nye gruppeledere ved sentret.

NCMM er organisert med 11 forskningsgrupper, hvor 9 av forskningsgruppelederne er ansatt i pre-tenure-stillinger. De fleste av gruppelederne har i tillegg bistilling, hvorav fem ved Oslo universitetssykehus HF og tre ved MN, se tabell nedenfor. De fleste av ph.d.- stipendiatene har p.t. tilhørighet til MNs ph.d- program (15 ved MN, 5 ved MED og 7 ved utenlandske institusjoner).

Gruppeleder	Tidsperiode	Gruppenavn	Kompetanse	Bistilling/Delstilling
Janna Saarela	2019 - fast	Human immune disorders group	Genetic and functional analysis of inherited immune diseases	OUS
Anthony Mathelier	2016 - fast	Computational biology and gene regulation group	Computational biology, gene regulation, multi-omics, cancer development	OUS/Delstilling IFI
Camila Esguerra	2014 - 2023	Chemical neuroscience group	Zebrafish disease models, drug screening, brain development and homeostasis	Delstilling FAI
Inge Gåsen	2016 - 2025	Bionanotechnology and membrane systems group	In vitro assembly of biological soft matter, micro-and nanotechnology	
Nikolina Sekulic	2016 - 2025	Structural biology and chromatin group	Biochemistry, structural biology, cell division	Delstilling IO
Marieke Kuijjer	2018 - 2027	Computational biology and systems medicine group	Gene regulation, bioinformatics, network analysis, cancer development	Bistilling University of Leiden
Emma Haapaniemi	2019 - 2028	Precision pediatrics and gene editing group	CRISPR-Cas9 gene editing, gene editing therapy for inborn errors of immunity	OUS
Sebastian Waszak	2020 - 2023	Computational oncology group	Cancer genomics and epigenomics, neuropathology	OUS
Biswajyoti Sahu	2022 - 2031	Precision cancer epigenomics group	Bioinformatics, transcriptional regulation in cancer development	OUS
Charlotte Boccara	2022 - 2031	Systems neuroscience and sleep group	Sleep and development, neural and metabolic disorders, neuroscience	Delstilling IMB

NCMM hadde et budsjett på NOK 88 mill. i 2022 og hvorav ca. 41 % er intern finansiering av UiO. Som en del av denne finansieringen er NOK 26.5 mill. øremerket fra basis fra det tidligere Bioteknologisenteret.

2.6 Oppsummering

Enkelte av de andre nordiske EMBL - nodene synes noe mer integrert i forskningssterke miljøer med tett kontakt/samarbeid med vitenskapelige ansatte seniorer innen translasjonsforskningen ved verts-universitetene enn NCMM er ved UiO.

EMBL-modellen med rekruttering av unge fremstående forskere som gruppeledere er ikke til hinder for at seniorer utgjør en viktig del av organiseringen i en EMBL-node. Videre kan det synes som om nodene i Danmark, Sverige og Finland har et mer avgrenset faglig fokus ved at det er neurovitenskap, molekylær infeksjonsmedisin og presisjonsmedisin som ligger til grunn for forskningsaktiviteten.

Ved opprettelsen av NCMM som en EMBL-node ble NCMM organisert som et senter etter UiOs ønske. Det foreligger ikke krav fra EMBL eller andre samarbeidspartnere i nettverket om at dette skal være organisert som et fritt senter. Der er derfor fult mulig for UiO å organisere virksomheten ved den norske EMBL-noden på andre måter.

NCMM er også mer fysisk isolert pga. plasseringen i Forskningsparken. De andre nordiske nodene er tett på både når det gjelder fysisk plass på campus og i tett samarbeid med seniorer. Dette vil kunne bedres med planlagt plass i det kommende Livsvitenskapsbygget.

3. Evalueringer/vurderinger av NCMM

NCMM er ved gjentatte anledninger og på ulike måter evaluert/vurdert. Under følger korte oppsummeringer av hovedtrekkene fra både relevante evalueringer og vurderinger.

3.1 Internasjonal fagkomite 2018

Hovedkonklusjonene i den faglige evalueringen fra 2018 organisert av Forskningsrådet var at NCMM hadde en sterk faglig aktivitet. Finansiering for fem nye år ble anbefalt selv om universitetene ennå ikke i tilstrekkelig grad høstet fra senterets aktivitet inn i egen rekruttering til vitenskapelige stillinger. Det ble også fremhevet betydningen av å få til et tettere samarbeid med universitetssykehuset innen translasjonsforskningen.

3.2 Selvevaluering 2022

Universitetsdirektøren bestilte en selvevaluering 8.september 2022 for å skaffe tilveie et kunnskapsgrunnlag i det videre arbeidet med vurdering av videreføring av NCMM.
I det følgende redegjøres det for de overordnede tilbakemeldingene på denne bestillingen.

3.2.1 NCMM

Selvevalueringen beskriver at det er gjennomført et målbevisst strategisk arbeid med å følge opp anbefalingene fra evalueringen fra 2018 med hensyn til blant annet 1) ha en rekrutteringsstrategi som i større grad retter seg mot å tiltrekke seg kliniske forskere, 2) en mer temabasert forskningsstruktur, 3) øke eksternfinansering fra ERC og annen internasjonal finansiering, og 4) ivareta talenter og sikre rotering av gruppeledere. Selvevalueringen beskriver initiativ og resultater for flere av tiltakene.

Senteret erkjenner at det er utfordrende å sikre merverdi utenfor senteret, særlig i den første perioden av gruppeledernes ansettelsesperiode. Ansatte er gruppeledere i tidlig karrierefase som ofte har internasjonal bakgrunn, og det er krevende å etablere seg som gruppeleder samtidig som man skal være relevant i resonansmiljøer ved de permanente strukturene ved UiO og Oslo universitetssykehus HF. Det har blitt lagt til rette for mentorordning for å øke kjennskap til institusjonen og også for generell karriereveiledning for å bøte på dette.

3.2.2 Scientific Advisory Board

Scientific Advisory Board (SAB) uttrykker i sin tilbakemelding av 2. oktober 2022 sin tilfredshet med at NCMM nå har oppnådd en kritisk masse innenfor molekylærmedisin. Videre finner SAB det positivt at det nå er et skjerpet fokus på presisjonsmedisin. SAB utrykker at denne gledelige utviklingen skyldes senterleder Janna Saarelas lederskap. Senterlederen har klart å etablere en klar forskningsvisjon og perspektiver for NCMM hvor det tas sikte på å utvikle kliniske orientert forskning ved å tilby 50% ansettelse ved NCMM for relevante klinikere. SAB uttrykke forståelse for at det er krevende å rekruttere medisinere som både skal kunne arbeide i klinisk virksomhet og gjennomføre fremragende translasjonsforsking. Senterleder arbeider med å legge til rette for at gruppelederne har tilknytning til institutter ved UiO og Oslo universitetssykehus HF ved oppstart i gruppelederstillingene ved NCMM. Det observeres en styrket ambisjon hos gruppelederne om å hente inn eksternfinansiering, selv om ERC-søknader[2] ikke har gitt ønskede resultater.

SAB anbefaler en videreføring av senteret, og vil bidra aktivt for at senteret skal nå sine målsetninger. NCMMs rolle i Nordic EMBL partnership er viktig å ivareta på en tilfredsstillende måte fremover. Hvis Norge skulle trekke seg fra partnerskapet eller at EMBLs støtte skulle avsluttes pga. utilstrekkelig forpliktelser fra Norges side uttrykker SAB at dette vil føre til et stort tilbakeslag for både det nordiske samarbeidet og det biomedisinske området i en større europeiske sammenheng.

[2] Offentliggjøring av ERC- tildelinger for 2023 vil skje 5 sept. 2023.

3.2.3 NCMM-styret

NCMM-styret uttrykker i sin tilbakemelding av 3. oktober 2022 at rekrutteringsstrategien for å ansette nye gruppeledere har vært vellykket. Dette har ført til at medisinere er blitt ansatt i tett samarbeid med klinisk forskning. Samarbeidet med klinikken har ytterligere blitt styrket ved at det også er rekruttert prosjektledere (PI) med erfaring innen kliniske forskningsområder. Pga. svak tilrettelegging i klinikken for avsatt tid til forskning har det vært krevende å tiltrekke seg kliniske forskere til NCMMs fasiliteter i Forskningsparken sammenlignet med relevant laboratorietilgang i sykehusene. Dette vil bedres ved flytting til LV-bygget.

Det er utviklet en klar emnebasert struktur for persontilpasset medisin som blant annet omfatter bioinformatikk. Denne strukturen har bidratt til en raskere og mer effektiv integrering av nye forskningsgruppeledere. Kandidater til nye gruppeleder må nå vise at deres forskning passer inn i NCMMs forskningsprofil. Nye gruppeledere vil ved oppstart i sin stilling delta i et oppstartsprogram og introduseres for mulige samarbeidspartnere ved andre institutt ved UiO eller universitets-sykehusene. Dette har bidratt til å styrke samarbeidet mellom gruppeledere ved NCMM og disse miljøene. Gruppelederne deltar ofte i store internasjonale konsortier til gjensidig nytte, samt at dette øker synligheten av kompetanse og kunnskap i det norske forskningsmiljøet.

Styret sier seg fornøyd med at det er hentet inn finansiering fra Forskningsrådet, herunder Fellesløfts-midler, midler til Samarbeidsprosjekt for teknologikonvergens knyttet til muliggjørende teknologier, samt at NCMMs gruppeledere har inngått partnerskap i SFF-er. I tillegg er det hentet inn midler fra Kreftforeningen.

NCMM har bidratt til at dyktige forskere som har arbeidet ved sentret senere har blitt tilsatt i faste stillinger i vår region. Samtidig har det vært utfordrende for utenlandske kandidater å kunne konkurrere om faste vitenskapelige stillinger.

3.2.4 Det medisinske fakultet

Fakultetet uttrykker i sin vurdering av 13. oktober 2022 at NCMM langt på vei har lyktes med to av senterets målsetninger: 1) NCMM skal sørge for å utvikle unge talentfulle forskere innen translasjonsforskning, molekylærmedisin og bioteknologi og 2) NCMM skal etablere nasjonale nettverk innenfor molekylær medisin. Fakultetet vurderer videre at senterets tredje målsetning - «NCMM skal fasilitere translasjon av funn innen basalmedisin til klinisk praksis» er et høythengende og ambisiøst mål som i praksis er fjerntliggende og der det viktigste vil være å gi en retning for arbeidet snarer enn konkret måloppnåelse. Den samme vurderingen gjelder også for senterets fjerde målsetning – «NCMM skal også etablere nye diagnostiske metoder, definere nye legemiddels targets og tilpasse medisinsk teknologi for persontilpasset medisin». Mål 4 er et definert mål som sannsynligvis oftest må forventes å kreve lengre tidshorisont enn det gruppelederne i praksis har til rådighet.

Fakultetet legger vekt på NCMMs høye vitenskapelige produksjon gir merverdi i form av forsknings-samarbeid, bidrag til ph.d.- og master-utdanning, attraktive kjernefasiliteter, internasjonale talenter, internasjonal og nasjonal eksternfinansiering, samt positivt bidrag til fakultetets omdømme. NCMM er en viktig enhet/forskningsmiljø inn i det nye LV-bygget som også vil huse forskningsmiljøer fra Oslo universitetssykehus HF. NCMM anses også viktig aktør i det nye bygget for å sikre innovasjonspotensialet og for Veksthuset som er etablert for å bidra til at bygget skal nå målsetningen på dette feltet. MED synes det er bekymringsfullt at de færreste av NCMMs ph.d-studenter tar sitt dr.grads-program ved MED. Det synes som om kandidatene foretrekke MN siden NCMMs ph.d.-studenter kan velge å ta dr.grads-programmet ved MED eller MN.

MED støtter en videreføring av NCMM for at NCMM skal nå sin målsetning og er sitt ansvar bevisst i å ivareta NCMM. Ved en evt. reduksjon i midler fra sentralt nivå må de vurdere sin ressursbruk til NCMM opp mot sine andre enheter, og vurderer det slik at bortfallet av sentrale midler kan føre til nedskalering og omorganisering og peker på tre mulige modeller.

3.2.5 Det matematisk-naturvitenskaplige fakultet

Fakultetet uttrykker i sin vurdering fra 19. oktober 2022 at involvering i NCMM har blitt redusert som følge av omorganisering fra sentralt nivå til MED i 2015 (jfr. kap 1.3). Fakultetet oppfatter at de ikke er kjent med NCMMs strategier og målsetninger, og at de primært har vurdert resonansmiljøene[3] som ble opprettet som resultat av Bioteknologisenteret i Oslo (BiO)s evaluering i 2012. Fakultetet fulgte opp dette tiltaket ved å allokere ressurser til 20%-stillinger ved egne institutter for fire gruppeledere ved BiO/NCMM. Fakultetet hadde en uttrykt forventning om at resonansmiljøene skulle bidra til styrket forskningssamarbeid mellom fagmiljøer ved fakultetets institutter og BiO/NCMM. Fakultets erfaring er at denne forventningen i liten grad har blitt innfridd, og at et eventuelt samarbeid i hovedsak har dreid seg om veiledning av felles kandidater. Det er ingen felles eksternt finansierte prosjekter eller felles publikasjoner i resonansmiljøene, men det er noe forskningssamarbeid mellom fakultet og BiO/NCMM utenom resonansmiljøene. Gruppelederne har gjennom resonansmiljøene gitt positive bidrag til undervisningen ved instituttene. Fakultetet viser til noe forsknings- og utdanningssamarbeid, men dette er av lav merverdi for resonansmiljøene. Fakultetets vurdering er at en eventuell nedskalering av NCMM vil ha liten betydning for den faglige aktiviteten ved fakultetet. Ved en eventuell nedskalering er det viktigste for fakultetet å fortsatt ha tilgang til relevant infrastruktur slik som sebrafiskanlegget, H/D-massespektrometeret og konfokalmikroskopet. Det er spesielt viktig at sebrafiskanlegget driftes videre med god kompetanse, da dette er noe forskere ved Farmasøytisk institutt bruker i sin forskning og i utdanning av masterstudenter og ph.d.-kandidater.

3.3 Oppsummering

Evalueringene og tilbakemeldingene viser en noe sprikende oppfatning av NCMMs rolle. Som EMBL-node oppfattes oppgaven til NCMM å bidra med translasjonsforskning innenfor medisin i tett relasjon med relevante universitetssykehus. Som et senter ved UiO har NCMM forskningsaktivitet innenfor følgende områder: Bionanoteknologi, cellebiologi, strukturbiologi, genregulering, genomikk av humane immunsykdommer, kreft, nye medisiner, presisjonsmedisin, og systemmedisin. Dette skyldes antagelig i stor grad fusjonen mellom det tidligere Bioteknologisentret og NCMM i 2016-2017. At UiO har hatt og har en bredere tilnærming til hva aktiviteten ved NCMM bør være er en viktig faktor i det videre utviklingsarbeidet ved UiO.

4. Gjennomførte seminarer

Det har vært gjennomført to dagsseminarer for kunnskapsinnhenting. Seminarene har vært gjennomført på følgende måte:

- På Gardermoen 17. mars 2023 hvor leder av EMBL og EMBL-nodene ved de andre nordiske universitetene var invitert for å dele sine erfaringer fra egen institusjon samt å gi innspill til videre vurderingsarbeid ved UiO.
- I Oslo 26. juni 2023 ble tilsvarende seminar gjennomført internt ved UiO hvor seniorforskere fra MED og MN også var invitert.

Seminarene har vært ledet av rektor, og dekan, prodekan forskning ved MED og MN, og ledelsen ved NCMM har deltatt.

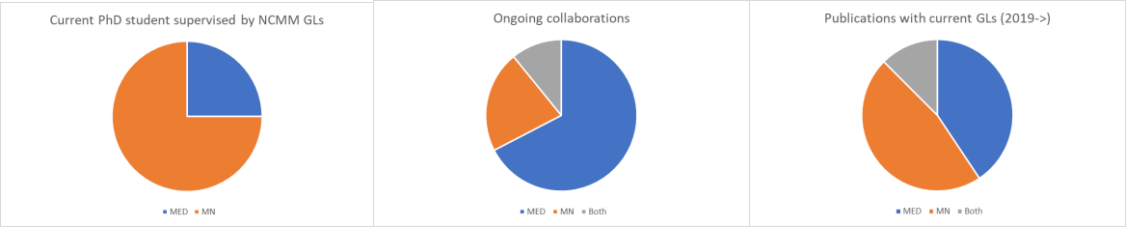
5. Evalueringsrapporter

Følgende evalueringer ligger blant annet til grunn for det dette bakgrunnsnotatet:

1. Internasjonal fagkomites evaluering av NCMM, 2018
2. NCMMs selvevaluering, okt.2022
3. Scientific Advisory Boards tilbakemelding, 2. okt. 2022
4. NCMMs styrets tilbakemelding, 3.okt. 2022
5. Det medisinske fakultets tilbakemelding, 13.okt. 2022
6. Det matematisk - naturvitenskapliges tilbakemelding, 19.okt. 2022

10.3 Vedlegg 3

Summary of current NCMM PhD students and collaborations as well as publications (last 5 years) with MED and MN March 2024



PhD students

NCMM group leaders are currently (2024) supervising 20 PhD students, of which 5 are enrolled (including 3 in the process) in MED PhD program and 15 in MN program.

Collaboration projects

Collaboration projects with researchers at the MED and MN faculties (excluding NCMM internal collaborations). Of the ongoing collaborations, 5 are with researchers from both faculties, 31 are MED and 10 are at MN.

Both

Topic: *Zebrafish models for schizophrenia risk genes (Finalizing revision of publication manuscript)*
Collaborator: Digibrain: Ole Andreassen, ClinMed, Marianne Fyhn, IBV , Gaute Einevoll, Physics
Funding: RCN grant

Topic: *ciliopathy risk genes*
Collaborator: Cinzia Progida, IBV, Eirik Frengen (ClinMed)
Funding: HSØ grant and NCMM basic funding , 2 shared MSc students

Topic: *Neuroendocrine disruptors and autism*
Collaborators: Anteneh Desalegn (Pharmacy); Hein Stigum (Helsan)
Funding: NFR and EU grants; NCMM core funding

Topic: *SMARTSENSE: Detemine the role of adolescent sleep deprivation in the emergence of metabolic disorders*
Collaborators: Phillipe Collas, Nolwenn Briand, IMB) & MATNAT-Physics (Ørjan Martinsen)
Funding: RCN

Topic: *SHAREbrain: Standardisation of neuroscience data management to facilitate re-use and collaborations*
Collaborators: Trygve Leergaard, Koen Verveake, Rune Enger, Torkel Hafting, IMB; Marianne Fyhn, IBV
Funding: Hub/Node funding from USIT

MED

Topic: *Integrative modelling and single-cell analysis of pancreatic lineage-specific transcription factors in pancreatic cancer treatment resistance*
Collaborator: Tero Aittokallio, IMB & OUH
Funding: NCMM joint postdoctoral funding

Topic: *Cellular transformation of normal breast organoids to understand the breast cancer tumorigenesis (Norma-Transform)*
Collaborator: Vessela Kristensen, ClinMed and OUH
Funding: Pilot projects initiated from basic funding and Vessela has applied for UNIFOR grant for some operating costs

Topic: *Single cell RNA-seq and proteomic analysis of primary and lymph node metastasis of pancreatic cancer.*
Collaborator: Caroline Sophie Verbeke, ClinMed and OUH
Funding: Pilot projects now initiated from basic funding to set up the methods and the analysis pipeline from biobank material

Topic: *IEI biology and diagnostics*
Collaborator: Asbjorg Stray-Pedersen, ClinMed and OUH
Funding: NCMM seed funding, HSØ (NCMM grant)

Topic: *Improved analysis tools for identifying functional and clinically relevant transcript isoforms from short and long-read RNA data*
Collaborator: Dag Undlien, ClinMed and OUH
Funding: NCMM joint post doc call

Topic: *Unveiling the risk factors of ageing to promote healthy longevity*
Collaborators: Hilde Nielsen and Evandro F. Fang
Funding: Nordforsk Japan-Nordic Frontier Research Projects for Healthy Longevity, Fang as a PI, NCMM PI is a collaborator.

Topic: *Genetic background of Multiple Sclerosis*
Collaborator: Hanne Flinstad-Harbo
Funding: EU

Topic: *Collaborations on several projects around better understanding breast cancer*
Collaborator: Vessela Kristensen, ClinMed & OUH
Funding: 2 Kreftforeningen grants, Kristensen as a collaborator + ongoing NCMM AI seed funding.

Topic: *brainstem-to-spinal cord projections*
Collaborator: Joel Glover, IMB
Funding: NCMM PI is a collaborator on a RCN grant (Glover as main PI) + NCMM AI seed funding.

Topic: *epigenetics projects*
Collaborator: Ragnhild Eskeland, IMB
Funding: Eskeland is a collaborator on 2 NCMM Kreftforeningen grants and NCMM PI a collaborator in Eskeland's grant.

Topic: *DNA repair: interactions between SMUG1 with nucleosome*
Collaborator: Hilde Nilsen, ClinMed
Funding: basic funding + NCMM AI grant

Topic: *epitope/paratope mapping with HDX-MS: AI engineered Ab against HER2*
Collaborator: Victor Greiff , ClinMed
Funding: basic funding + AI grant + will apply together for Kreftforeningen in June 2024

Topic: *epitope/paratope mapping with HDX-MS: novel Ab specific for mutated variant of HER2*
Collaborator: Jon Amund Kyte, OUH
Funding: basic funding

Topic: *epitope/paratope mapping with HDX-MS: new Ab against hemagglutinin*
Collaborator: Gunnveig Grødeland, ClinMed
Funding: basic funding + (developing preliminary data for bigger grant application)

Topic: *cross-talk between centromeres and nuclear envelope proteins*
Collaborator: Coen Campsteijn, IMB
Funding: basic funding + (developing preliminary data for bigger grant application)

Topic: *regulatory network modeling in breast cancer.*
Collaborators: Vessela Kristensen and Xavier Tekpli, ClinMed
Funding: NCS projects and RCN

Topic: *spatial omics modeling*.
Collaborators: June Myklebost and Karl-Johan Malmberg, IMB
Funding: NCMM AI grant.

Topic: *autophagy mechanisms using zebrafish*
Collaborators: Anne Simonsen, ClinMed
Funding: RCN, HSØ and Cancer Society Grants

Topic: *Drug validation of antiseizure medications on refractory epilepsy models in zebrafish*.
Collaborators: Erik Taubøll, ClinMed
Funding: Joint NCMM postdoc grant

Topic: *Glial activity analysis in refractory epilepsy models*
Collaborators: Rune Enger, IMB
Funding: NCMM AI grant

Topic: *BRAINCHIP: Design and build devices to perform wireless optogenetics*
Collaborators: Torkel Hafting, IMB
Funding: RCN

Topic: *AUTOPHAGY AND SLEEP: Autophagy as a phylogenetically conserved mediator of sleep benefits*
Collaborator: Helene Knævelsrud, IMB
Funding: NCMM joint postdoc

Topic: *SOCIAL DEVELOPMENT: Establish time line of social cognition and social representation in the rodent*

Collaborators: Torkel Hafting, IMB
Funding: Forskelinje

Topic: *TRANSLATIONAL APPROACH TO DETERMINE ROLE OF SLEEP*
Collaborators: Torbjørn Elvsåshagen, OUH
Funding: NCMM basic funding, grant to be applied

Topic: *CRISPR-Cas9 gene therapy for monogenic blood disorders*
Collaborators: Johanna Olweus UiO (ClinMed)/OUS, Hans Christian Erichsen UiO (ClinMed) /OUS
Funding: HSØ

Topic: *CRISPR-Cas -mediated gene therapy for monogenic blood disorders*
Collaborators: Johanna Olweus UiO (ClinMed)/OUS
Funding: RCN

Topic: *CRISPR-Cas9 corrected T cells for personalized therapy*
Collaborators: Johanna Olweus UiO (ClinMed)/OUS, Hans Christian Erichsen UiO (ClinMed) /OUS
Funding: RCN Technology project

Topic: *CRISPR-Cas gene therapy for blood cancer predisposition syndromes*
Collaborators: Hans-Christian Erichsen UiO (ClinMed) /OUS, Jochen Buchner UiO (ClinMed)/OUS
Funding: Norwegian Cancer Society (Kreftforeningen)

Topic: *CRISPR-Cas9 gene therapy for STAT1 Gain-of-Function disease*
Collaborators: Hans-Christian Erichsen UiO (ClinMed) /OUS
Funding: HSØ KLINBEFORSK

Topic: *Precision Immunotherapy Alliance (PRIMA)*
Collaborators: K-J Malmberg, J Olweus, JT Andersen, LA Munthe, JH Myklebust, F Lund-Johansen, UiO (ClinMed)/OUS
Funding: RCN

Topic: *ANTENOR: Implementation of polygenic risk score guided breast cancer precision prevention*
Collaborator: Vessela Kristensen, ClinMed
Funding: Norway Grants/Enterprise Estonia

MATNAT
Topic: *ML for transcriptomics*
Collaborator: Geir Kjetil Sandve, IFI.
Funding: Geir is co-supervisor of NCMM PhD candidate.

Topic: *3D genome*
Collaborator: Jonas Poulsen, IBV.
Funding: Jonas is co-supervisor of NCMM PhD candidate (co-authored papers being prepared)

Topic: *JASPAR database through ELIXIR*
Collaborator: Eivind Hovig, IFI.
Funding: NCMM

Topic: *sumoylation; working together on experiments and data analyses*
Collaborator: Pierre Chymkowitch, IBV.

Funding: basic funding, currently writing a grant application to NFR with Chymkowitch as main applicant.

Topic: *molecular modeling of protein kinases and nucleosome-like structures*
Collaborator: Michele Cascella, Chemistry
Funding: basic funding + NFR (2021-2025)

Topic: *scattering of protein-DNA complexes*
Collaborator: Reidar Lund, Chemistry
Funding: basic funding + NCMM AI grant

Topic: *structural studies of motility related proteins: IFT25/IFT27*
Collaborator: Cinzia Progida, IBV
Funding: basic funding

Topic: *centromere structure in fish*
Collaborator: Prof. Kjetill Jakobsen, IBV
Funding: basic funding + (developing preliminary data for bigger grant application). This is a planned project but has not start yet.

Topic: *Bioactivity screening of natural product compounds isolated from medicinal plants from Mali*
Collaborator: Helle Wangensteen, Pharmacy
Funding: NCMM Basic funding

Topic: *Neuroendocrine disruptors and autism*
Collaborator: Anteneh Desalegn, Pharmacy
Funding: RCN and EU grants; NCMM basic funding

Publications in collaboration with UiO Faculties (2019-)

This list includes publications by **current NCMM group leaders** in collaboration with researchers from one or more UiO faculties. There are in total 32 publications of which 15 publications are with researchers in MN, 13 in MED and 4 in both. The total number of NCMM's publications during the 5-year period (2019-2023) was 223, varying between 40 (2021) and 48 (2019/2023).

MATNAT, MED

J.A. Castro-Mondragon, M. Ragle Aure, O.C. Lingjærde, A. Langerød, J.W.M. Martens, A.-L. Børresen-Dale, V. Kristensen, and **A. Mathelier**. Cis-regulatory mutations associate with transcriptional and post-transcriptional deregulation of the gene regulatory program in cancers. *Nucleic Acids Research*, 2022.

MATNAT, MED

R.B. Lemma, T. Fleischer, E. Martinsen, M. Ledsaak, V. Kristensen, R. Eskeland, O.S. Gabrielsen, and **A. Mathelier**. Pioneer transcription factors are associated with the modulation of DNA methylation patterns across cancers. *Epigenetics and Chromatin*, 2022.

MATNAT, MED

Adipose Tissue Characterization With Electrical Impedance Spectroscopy and Machine Learning. Dapsance, Florian; Hou, Jie; Dufour, Damien; **Boccara, Charlotte**; Briand, Nolwenn; Martinsen, Ørjan Grøttem. 2023, IEEE Sensors Letters.

xx

MATNAT, MED

Hsieh PH, Lopes-Ramos CM, Zucknick M, Sandve GK, Glass K, **Kuijjer ML***. Adjustment of spurious correlations in co-expression measurements from RNA-Sequencing data. *Bioinformatics*. 2023 Oct 6;btad610

MED (IMB, ClinMed), OD

Wang HL, Siow R, Schmauck-Medina T, Zhang J, Sandset PM, Filshie C, Lund Ø, Partridge L, Bergersen LH, Juel Rasmussen L, Palikaras K, Sotiropoulos I, Storm-Mathisen J, Rubinsztein DC, Spillantini MG, De Zeeuw CI, Watne LO, Vyhnalek M, Veverova K, Liang KX, Tavernarakis N, Bohr VA, Yokote K, **Saarela J**, Nilsen H, Gonos ES, Scheibye-Knudsen M, Chen G, Kato H, Selbæk G, Fladby T, Nilsson P, Simonsen A, Aarsland D, Lautrup S, Ottersen OP, Cox LS, Fang EF. Meeting summary of The NYO3 5th NO-Age/AD meeting and the 1st Norway-UK joint meeting on ageing and dementia: recent progress on the mechanisms and interventional strategies. *J Gerontol A Biol Sci Med Sci*. 2024 Jan 30:glae029. doi: 10.1093/gerona/glae029. PMID: 38289789

MED (ClinMed)

International Multiple Sclerosis Genetics Consortium; MultipleMS Consortium. Locus for severity implicates CNS resilience in progression of multiple sclerosis. *Nature*. 2023 Jul;619(7969):323-331. PMID: 37380766.

MED (ClinMed)

International Multiple Sclerosis Genetics Consortium. Multiple sclerosis genomic map implicates peripheral immune cells and microglia in susceptibility. *Science*. 2019 Sep 27;365(6460):eaav7188. PMID:31604244; PMCID: PMC7241648.

MED (ClinMed)

International Multiple Sclerosis Genetics Consortium. A systems biology approach uncovers cell-specific gene regulatory effects of genetic associations in multiple sclerosis. *Nat Commun*. 2019 May 20;10(1):2236. PMID:31110181; PMCID: PMC6527683.

MATNAT (IFI)

Rauluseviciute, R. Riudavets-Puig, R. Blanc-Mathieu, J.A. Castro-Mondragon, K. Ferenc, V. Kumar, R.B. Lemma, J. Lucas, J. Chèneby, D. Baranasic, A. Khan, O. Fornes, S. Gundersen, M. Johansen, E. Hovig, B. Lenhard, A. Sandelin, W.W. Wasserman, F. Parcy, **A. Mathelier**. JASPAR 2024: 20th anniversary of the open-access database of transcription factor binding profiles. *Nucleic Acids Research*, 2023.

MATNAT

R. Rossini, V. Kumar, **A. Mathelier**, T. Rognes, J. Paulsen. MoDLE: High-performance stochastic modeling of DNA loop extrusion interactions. *Genome Biology*, 2022.

MED

S. Bjørklund, M. Ragle Aure, J. Häkkinen, J. Vallon-Christersson, S. Kumar, K. Bull Evensen, T. Fleischer, J. Tost, **A. Mathelier**, G. Bhanot, S. Ganesan, X. Tekpli, V.N. Kristensen. Subtype and cell type specific expression of lncRNAs provide insight into breast cancer. *Communications Biology*, 2022.

MED

M. Ragle Aure, T. Fleischer, S. Bjørklund, J. Ankill, J.A. Castro-Mondragon, OSBREAC, A.-L. Børresen-Dale, K.K. Sahlberg, **A. Mathelier**, X. Tekpli, and V.N. Kristensen. Crosstalk between microRNA expression and DNA methylation drive the hormone-dependent phenotype of breast cancer. *Genome Medicine*, 2021.

MATNAT

A.V. Pladsen, G. Nilsen, O.M. Rueda, M.R. Aure, Ø. Borgan, K. Liestøl, V. Vitelli, A. Frigessi, A. Langerød, OSBREAC, **A. Mathelier**, O. Engebråten, D.C. Wedge, P. Van Loo, C. Caldas, A.-L. Børresen-Dale, H.G. Russnes, and O.C. Lingjærde. DNA copy number motifs are strong and independent predictors of survival in breast cancer. *Communications Biology*, 2020.

MATNAT

B. Fromm, D. Domanska, E. Høye, V. Ovchinnikov, W. Kang, E. Aparicio-Puerta, M. Johansen, K. Flatmark, **A. Mathelier**, E. Hovig , M. Hackenberg, M.R. Friedländer, K.J. Peterson. MirGeneDB 2.0: The metazoan microRNA complement. *Nucleic Acids Research*, 2019.

MATNAT

S. Salvatore, K.D. Rand, I. Grytten, E. Ferkingstad, D. Domanska, L. Holden, M. Gheorghe, **A. Mathelier**, I. Glad, G.K. Sandve. Beware the Jaccard: the choice of metric is important and non-trivial in genomic colocalisation analysis. *Briefings in Bioinformatics*, 2019.

MED (KlinMed +OUH)

Brugger M, Lauri A, Zhen Y, **Sekulić N**, Brech A, Sørensen V, Kopajtich R, Zott B, Kreiser K, Strobl-Wildemann G, Arelin M, Blechschmidt C, Daum H, Michaelson-Cohen R, Prokisch H, Abou Jamra R, Arzberger T, Fiorini C, Winkelmann J, Carelli V, Stenmark H, Tartaglia M, Wagner M. Biallelic variants in the ESCRT-II subunit SNF8 cause a spectrum of neurodevelopmental disorders ranging from early-onset leukoencephalopathy to optic atrophy plus *(accepted and in print Am J Hum Genet).*

MATNAT (KI)

Segura-Peña D, Hovet O, Gogoi H, Dawicki-McKenna J, Hansen Wøien SM, Carrer M, Black BE, Cascella M, **Sekulić N.** The structural basis of the multi-step allosteric activation of Aurora B kinase. *Elife. 2023* May 25;12:e85328. doi: 10.7554/eLife.85328. PMID: 37227118; PMCID: PMC10259393.

MED (KlinMed +OUH)

Dorraji E, Borgen E, Segura-Peña D, Rawat P, Smorodina E, Dunn C, Greiff V, **Sekulić N**, Russnes H, Kyte JA. Development of a High-Affinity Antibody against the Tumor-Specific and Hyperactive 611-p95HER2 Isoform. *Cancers (Basel). 2022* Oct 5;14(19):4859. doi: 10.3390/cancers14194859. PMID: 36230782; PMCID: PMC9563779.

MATNAT

Stonyte V, Martín R, Segura-Peña D, **Sekulić N**, Lopez-Aviles S. Requirement of PP2A-B56Par1 for the Stabilization of the CDK Inhibitor Rum1 and Activation of APC/CSte9 during Pre-Start G1 in S. pombe. *iScience. 2020* May 22;23(5):101063. doi: 10.1016/j.isci.2020.101063. Epub 2020 Apr 16. PMID: 32361273; PMCID: PMC7195536.

MED

Weber CR, Rubio T, Wang L, Zhang W, Robert PA, Akbar R, Snapkov I, Wu J, **Kuijjer ML**, Tarazona S, Conesa A, Sandve GK, Liu X, Reddy ST, Greiff V. Reference-based comparison of adaptive immune receptor repertoires. *Cell Rep Meth*. 2022 Aug 22;2(8)100269

MATNAT

Pavlović M, Scheffer L, Motwani L, Kanduri C, Kompova R, Vazov N, Waagan K, Bernal FLM, Costa AA, Corrie B, Akbar R, Al Hajj GS, Balaban G, Brusko TM, Chernigovskaya M, Christley S, Cowell LG, Frank R, Grytten I, Gundersen S, Hobaek Haff I, Hovig E, Hsieh PH, Klambauer G, **Kuijjer ML**, Lund-Andersen C, Martini A, Minotto T, Pensar J, Rand K, Riccardi E, Robert PA, Rocha A, Slabodkin A, Snapkov I, Sollid

LM, Titov D, Weber CR, Widrich M, Yaari G, Greiff V, Sandve GK. immuneML: an ecosystem for machine learning analysis of adaptive immune receptor repertoires. *Nat Mach Intell.* 2021 Nov 16;3:6936-944

MED

Grad I, Hanes R, Ayuda-Durán P, **Kuijjer ML**, Enserink JM, Meza-Zepeda LA, Myklebost O. Discovery of novel candidates for anti-liposarcoma therapies by medium-scale high-throughput drug screening. *PLoS ONE*. 2021 Mar 10;16(3):e0248140

MATNAT

Kuijjer ML*, Fagny M, Marin A, Quackenbush J, Glass K. PUMA: PANDA Using MicroRNA Associations. *Bioinformatics.* 2020 Jun 17;btaa571

MED

Osorio D*, Tekpli X, Kristensen V, **Kuijjer ML***. Drug combination prediction for cancer treatment using disease-specific drug response profiles and single-cell transcriptional signatures. *BioRxiv* pre-print. DOI: 10.1101/2022.03.31.486602

MATNAT

Hsieh PH, Hsiao RX, Belova T, Ferenc K, **Mathelier A**, Burkholz R, Chen CY, Sandve GK, **Kuijjer ML***. Using hierarchical variational autoencoders to incorporate conditional independent priors for paired single-cell multi-omics data integration. *NeurIPS LMRL conference paper* 09 Oct 2022 (modified: 05 May 2023)

MED (IMB)

Princely Abudu Y, Pankiv S, Mathai BJ, Håkon Lystad A, Bindesbøll C, Brenne HB, Yoke Wui Ng M, Thiede B, Yamamoto A, Mutugi Nthiga T, Lamark T, **Esguerra CV**, Johansen T, Simonsen A. NIPSNAP1 and NIPSNAP2 Act as "Eat Me" Signals for Mitophagy. *Dev Cell*. 2019 May 20;49(4):509-525.e12. doi: 10.1016/j.devcel.2019.03.013. Epub 2019 Apr 11. PMID: 30982665.

MED (IMB)

Gawel K, Turski WA, van der Ent W, Mathai BJ, Kirstein-Smardzewska KJ, Simonsen A, **Esguerra CV**. Phenotypic Characterization of Larval Zebrafish (Danio rerio) with Partial Knockdown of the cacna1a Gene. *Mol Neurobiol*. 2020 Apr;57(4):1904-1916. doi: 10.1007/s12035-019-01860-x. Epub 2019 Dec 26. PMID: 31875924; PMCID: PMC7118054.

MATNAT (Pharmacy)

Desalegn AA, van der Ent W, Lenters V, Iszatt N, Stigum H, Lyche JL, Berg V, Kirstein-Smardzewska KJ, **Esguerra CV**, Eggesbø M. Perinatal exposure to potential endocrine disrupting chemicals and autism spectrum disorder: From Norwegian birth cohort to zebrafish studies. *Environ Int*. 2023 Nov;181:108271. doi: 10.1016/j.envint.2023.108271. Epub 2023 Oct 18. PMID: 37879205.

MATNAT (Pharmacy)

Moussavi N, van der Ent W, Diallo D, Sanogo R, Malterud KE, **Esguerra CV**, Wangensteen H. Inhibition of Seizure-Like Paroxysms and Toxicity Effects of *Securidaca longepedunculata* Extracts and Constituents in Zebrafish *Danio rerio*. *ACS Chem Neurosci*. 2024 Feb 7;15(3):617-628. doi: 10.1021/acschemneuro.3c00642. Epub 2024 Jan 25. PMID: 38270158; PMCID: PMC10853935.

MATNAT (Mathematics)

Elif S. Köksal, Susanne Liese, Lin Xue, Ruslan Ryskulov, Lauri Viitala, Andreas Carlson, **Irep Gözen**. Rapid Growth and Fusion of Protocells in Surface-Adhered Membrane Networks. *Small* 2020, https://doi.org/10.1002/smll.202002529

MATNAT (IBV)

Marcella Orwick Rydmark 1, Mikkel Killingmoe Christensen, Elif Senem Köksal, Ilayda Kantarci, Kiryl Kustanovich, Ventsislav Yantchev, Aldo Jesorka, **Irep Gözen**. Styrene maleic acid copolymer induces pores in biomembranes. *Soft Matter* 2019 Oct 9;15(39):7934-7944. doi: 10.1039/c9sm01407a.

Natural History Museum

Dr. Elif S. Köksal, Dr. Inga Põldsalu, Prof. Henrik Friis, Prof. Stephen J. Mojzsis, Prof. Martin Bizzarro, Prof**. Irep Gözen**. Spontaneous Formation of Prebiotic Compartment Colonies on Hadean Earth and Pre-Noachian Mars. *ChemSystemChem* 2022, https://doi.org/10.1002/syst.202100040

10.4 Vedlegg 4

EMBL model utilized in the recruitment of Group Leaders to the Nordic EMBL Partnership for Molecular Medicine

The group leader positions target early-career, independent researchers at the end of their post-doctoral training or in the early stages of starting their independent group. Typically, candidates are within 2 to 7 years of completion of their PhD, aligned with the eligibility criteria of the ERC Starting Grant. The group leaders are selected based on scientific excellence using pre-set criteria in an open, international process. As an efficient recruitment process is essential to secure the best candidates, the recruitment process is time-optimized to allow for an offer to be made to the top candidate(s) within 4 months of the application deadline.

The Board approves the advert for each position, ensuring that the text uses inclusive language, thus encouraging applications from a broad range of candidates, including under-represented groups. The advert is positioned to be attractive to international applicants, specifying a focused (yet broad enough) research area within molecular biology or medicine.

As part of their application, candidates provide a cover letter summarizing their career, scientific interests, past research accomplishments, future research plans, and fit with the centre's research profile (max 1-2 pages). The application should contain a CV and a list of publications, a research plan for next 5 years (max 5 pages), and names of three references.

An International Selection Committee, nominated by the Board, evaluates candidates and their research proposals against pre-set criteria (detailed below). Based on their assessments, they rank the candidates and, in collaboration with the centre's leadership, select those eligible for interview. The top-ranked candidates are invited to an interview conducted by the International Selection Committee with a Local Committee consisting of an NCMM representative and representatives with relevant scientific background from the faculties.

The interview follows a rigorous schedule to identify the top candidate(s) based on the quality of the research presented and the expertise of the candidates. The candidates present their research in a public talk, followed by a presentation of their future research plan to the International and Local Selection Committees, and finally a formal interview. One-on-one meetings with relevant researchers and centre's group leaders are organized during the interview day(s). Feedback from these meetings and the Letters of Reference from the candidates' nominated referees are considered in the final ranking made jointly by the International and Local committees. The Board approves the ranking and gives the Director a mandate to negotiate with the candidates in the ranking order.

Evaluation criteria used by the International Selection Committee

Numerical evaluation is made with ratings ranging from 1 (poor) to 5 (excellent, outstanding).
1 = poor, 2 = satisfactory, 3 = good, 4 = very good, 5 = excellent, outstanding. Threshold for scientific quality is 4.
If your rating is below threshold, no further evaluation is needed.

1. **Scientific quality and feasibility of the proposed research**

The candidate is expected to initiate and maintain a strong research program. Evaluation should consider originality, feasibility, and potential impact of the proposed research.

2. **Qualifications and scientific excellence of the candidate, scientific leadership**

Qualification requirements include an MD/PhD, PhD or equivalent degree, postdoctoral training and a track-record of high-impact publications. International mobility, such as training in high-quality institutions and universities globally will be valued. Like a typical EMBL group leader position, the EMBL molecular medicine partnership group leader position is intended for an early-stage independent researcher, preferably a candidate who has reached a career level equivalent to that applicable for applicants to ERC Starting Grant.

3. **Translational impact**

Successful candidates are expected to initiate a new independent research program with translational potential.

4. **Relevance of the research for the mission and research profile of NCMM and the Nordic EMBL Partnership for Molecular Medicine**

The candidate is expected to initiate and maintain strong research programs in synergy with the local research environment and to take active part in collaborative research opportunities and exchange programs within the Nordic EMBL Partnership for Molecular Medicine.

5. **Additional value for local node and for science nationally**

We expect multi-disciplinary research collaborations with the biomedical research environment locally and nationally.

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The centre director informs that criterion 3 has not been used as criteria for NCMM Biotechnology group leaders.

10.5 Vedlegg 5

PROCEDURE FOR EVALUATION FOR RENEWAL OF GROUP FUNCTION PERIODS AND GROUP LEADER APPOINTMENTS

Centre for Molecular Medicine Norway (NCMM), Nordic EMBL Partnership, University of Oslo

Background:

NCMM has earlier set out criteria for renewal of group leader appointments in line with EMBL practice and aligned with the other centers of the Nordic EMBL Partnership (NCMM Renewal Criteria for Group Leaders, approved by the NCMM Board, December 2, 2009 with changes of November 26, 2018). The evaluation and renewal process for NCMM Groups will be conducted according to international standards, in line with EMBL Guidelines and based on earlier established procedures at the Biotechnology Centre of Oslo.

The procedure is a 2-tier evaluation process with written evaluations from international experts followed by an assessment of the letters from international experts and group performance by the NCMM Scientific Advisory Board (SAB) and Director, integrating both the international feed-back and the SAB observations from following each group leader over the first 4-5-year period. This process will subsequently lead to a recommendation to the NCMM Board.

Procedure for renewal:

1) Each group and group leader will undergo a rigorous evaluation to be initiated approximately 3.5 to 4 years after the start date at NCMM. The evaluation will assess performance according to the Renewal Criteria for Appointment of Group Leaders.
2) Candidates will provide NCMM with a dossier that includes a current Curriculum Vita and List of Publications, a summary of their research accomplishments at NCMM (3-4 pages), a narrative about future directions (3-4 pages), a current list of all members of the group and of members having departed and their destination, an overview of the group budget and a list of all external grants raised (and mount) since joining NCMM, an overview of national and international collaborations, teaching, service tasks and other academic activities within and outside the University of Oslo and copies of up to three of the most significant and relevant papers they have published in the previous four years / since commencement at NCMM (in accordance with EMBL guideline).
3) NCMM / the SAB and the candidate will each name up to four experts suitable for assessing the performance and international standing of the group and group leader. Group leaders will be asked to name both potential experts as well as people they want excluded (and they should justify why they want these people excluded, e.g. competitive reasons or bias). Group leaders are not entitled to see the final list nor to veto anyone.
4) Based on this, the NCMM Director will forward a list of experts to the NCMM Board for approval.
   The Board can also add names. From the approved list the Director will approach and based on willingness nominate 4-6 experts to conduct individual reviews of the group and group leader and provide letters assessing the qualifications and performance.
5) The candidate will have access to the Letters of Evaluation and statement and be allowed

to comment before the SAB assessment and Board Decision.

6) The SAB will in cooperation with the Director examine the international expert evaluations, make their own assessment of the group's progress over time and make a recommendation to NCMM of whether the group should be continued or discontinued.
7) The NCMM Director will, based on the above-described letters and SAB assessment make a recommendation to the NCMM Board with respect to renewal of the group and Group Leader appointment.
8) NCMM Board will at approximately 4-5 years after the starting date of each Group Leader assess the recommendation and supporting material and decide upon renewal of the group's function period and the Group Leader appointment.

Drafted by NCMM Director Kjetil Taskén based on discussion and suggestions from SAB and NCMM Board in 2012 discussed with group leaders fall 2012, endorsed by the SAB 2013 and approved by the NCMM Board on March 12, 2013. Minor specification approved by the Board on September 2, 2019.

10.6 Vedlegg 6

Guidelines for Renewal of Groups and Group Leader Appointments at NCMM

The Centre for Molecular Medicine Norway (NCMM) is a national research Centre that serves as a greenhouse for young, talented scientists within the fields of molecular medicine, biotechnology and translational research. NCMM and the Biotechnology Centre of Oslo (BiO) merged in 2017. The new NCMM now consists of two departments: NCMM Translational Research (former NCMM) and NCMM Biotechnology (former BiO).

Renewal of an NCMM group for a second funding period and reappointment of the scientist in charge to the function of Group Leader will be decided upon after approximately 4-5 years, at which point the Group Leader is asked to summarize the accomplishments of the group at NCMM and present a research plan for the next 4-5 year period. An evaluation will be conducted, involving written evaluations by external experts and subsequent assessment by the NCMM Scientific Advisory Board as set out in the Procedure for Renewal. Next, a decision based on recommendation from the NCMM Director will be made by the NCMM Board. In each case there will be an independent assessment and evaluation but some general guidelines of expected achievements are outlined below.

Group Leaders at NCMM should during the first 4 to 5 years have accomplished the following:

- **Build a group with the critical mass to accomplish future goals**. This includes recruiting people, generating a good working milieu, making the group work as a team, developing/applying state-of-the-art technologies as well as developing a network of national and/or international collaborators.
- **Develop a successful line of research with independent publication activity**. This includes publication of some significant senior author papers in the top journals.
- **Win competitive extramural research grants to finance research**. This includes being able to establish other sources of funding than the budget provided by NCMM, in the form of competitive grant income from national or international sources and/or industrial collaborative grants.
- **Participate in the training of young researchers and contribute to the graduate school teaching**. Supervision of 1-2 PhD theses should have been completed or will be approaching completion.
- **Undertake efforts in translational research (applies only to Group Leaders in NCMM Translational Research)**. Molecular medicine is an area where the success eventually comes from translation of research to the medical setting. Even though the 4-5 year period is typically too short for the purpose of completing translation, the activity and potential of the Group Leader in innovations, translational research, clinical collaborations and technology transfer will be evaluated.
- **Contribute to the synergy, infrastructure and institutional profile**. NCMM seeks to find Group Leaders with complementary skill sets yet overlapping research interests to create a basis for synergy and collaboration. Although Group Leaders are largely autonomous in setting up their own research, they should seek to collaborate with each other. Furthermore, all Group Leaders should contribute to the building of NCMM as a leading and internationally recognized Centre in molecular medicine, biotechnology and translational research, having nationally and internationally competitive research infrastructure. The Group Leaders are also

encouraged to work together with EMBL and the other Nordic sites, to create a successful Nordic EMBL Partnership.

If the renewal of a group, and the corresponding reappointment of the scientist in charge in the function as Group Leader, is not granted, the Group Leader will have funds extended for 1-year, allowing reasonable time for closing down the group and for reorientation.

Approved by the NCMM Board December 2, 2009 and with minor modifications made March 12, 2013. Minor revision after merger with the Biotechnology. Approved by the Board November 26, 2018.

xxx

NORDIC EMBL PARTNERSHIP FOR MOLECULAR MEDICINE

EMBL

FRAMEWORK AGREEMENT

BETWEEN

EUROPEAN MOLECULAR BIOLOGY LABORATORY (EMBL)

Meyerhofstrasse 1, D - 69117 Heidelberg, Germany,

Represented by the Director General Professor Edith Heard

AND

THE INSTITUTE FOR MOLECULAR MEDICINE FINLAND (FIMM)

AS REPRESENTED BY THE UNIVERSITY OF HELSINKI, FINLAND

Yliopistonkatu 4, FI - 00014 University of Helsinki, Helsinki, Finland,

Represented by the Rector Professor Sari Lindblom,

THE CENTRE FOR MOLECULAR MEDICINE NORWAY (NCMM)

AS REPRESENTED BY THE UNIVERSITY OF OSLO, UNIVERSITETET I OSLO, NORWAY

Problemveien 5-7, Blindern, N - 0316 Oslo, Norway,

Represented by the Rector Professor Svein Stølen,

THE LABORATORY FOR MOLECULAR INFECTION MEDICINE SWEDEN (MIMS)

AS REPRESENTED BY THE UMEÅ UNIVERSITY, SWEDEN

Umeå University, SE - 90187 Umeå, Sweden,

Represented by the Vice-Chancellor Professor Hans Adolfsson,

THE DANISH RESEARCH INSTITUTE OF TRANSLATIONAL NEUROSCIENCE (DANDRITE) AS REPRESENTED BY THE AARHUS UNIVERSITY, DENMARK

Aarhus University, Nordre Ringgade 1, DK - 8000 Aarhus C, Denmark,

Represented by the Rector Brian Bech Nielsen

(hereinafter referred to as "the Partners")

FOR THE RENEWAL OF

THE NORDIC EMBL PARTNERSHIP FOR MOLECULAR MEDICINE

Preamble

The EMBL Partnership Programme (Annex 1) aims to create an interlinked system of outstanding research centers that enhance the development of the molecular life sciences in Europe and the world.

EMBL institutional Partnerships are close cooperative affiliations between EMBL and research institutions in the EMBL member states that demonstrate international orientation, highest scientific standards and commitment to nationally implement aspects of the EMBL operational model. They are based on shared institutional goals and scientific synergy or complementarity.

The Nordic EMBL Partnership for Molecular Medicine, hereinafter referred to as "Partnership Institute(s)" or "Node(s) of the Nordic EMBL Partnership", was created in 2003 and endorsed by the Nordic Research Council that represents Finland, Sweden, Norway and Denmark. Finland, Norway and Sweden concluded an Agreement with EMBL in 2007 with initial duration of five years, establishing the aforementioned partnership and, under its umbrella, envisaging the creation of one research node in each of the three countries. In 2013, the partnership agreement was renewed for an extended period of 10 years, and the network was expanded with the official opening of the Danish node.

Since its creation, the Nordic EMBL Partnership strives to attract and retain the very best international research talent, through providing an excellent research environment for ambitious young researchers and allowing them to build a strong professional network in the Nordic region and beyond. Group Leaders are recruited according to the EMBL model, which provides them with early independence and gives them the freedom to launch ambitious and original research programmes in a high-quality environment.

Each partner brings in a broad and unique set of expertise, spanning from molecular mechanisms of disease and precision medicine, neuroscience, microbial pathogenicity and molecular infection, to human genomics and population health. EMBL helps to provide a framework and access to scientific and organisational expertise. The Partnership has been very successful in creating a critical mass of excellent researchers, recruiting international talent to the Nordic region, acting as a multiplier of excellence locally and regionally by nurturing a network of affiliated researchers, and exemplifying the importance of sustainable support and funding for translational life science research.

The foundational investment of Nordic governments to partner with EMBL has led to the development of four world-class research institutes. To continue their individual and collective

success and to better leverage the national investment in EMBL as well as the national and inter-partner networking that the Nordic EMBL Partnership with EMBL provides.

Article 1 - The Partners

a. EMBL

EMBL is an international organization founded in 1974 with its headquarters in Heidelberg and sites in Hamburg, Hinxton, Rome, Grenoble and Barcelona. EMBL's mission is to conduct basic research in molecular biology; to provide essential services to scientists in its member states; to provide advanced training to its students, staff and visitors; to develop new instrumentation and methods for biological research; and to engage in technology transfer so that its discoveries can be used by society; and to advance the integration of life science research in Europe and internationally, including through its Partnership Programme.

A unique scientific vision and innovative approach for cross-disciplinary international collaboration has been set out in EMBL's 2022-2026 scientific Programme "Molecules to Ecosystems". The Programme represents the start of a new era of research, service and training in the life sciences, seeking to understand the molecular basis of life in its natural context and to rise up to the challenges the world faces today for human and planetary health. The research strengths and expertise of Nordic Nodes in molecular medicine, especially in infection biology, neuroscience, cancer and genome biology, perfectly complement and synergize with the new EMBL programme, offering a fertile ground for a multitude of joint interactions and collaboration, in scientific research, services, new technologies and training.

b. FIMM

The Finnish Node of the Nordic EMBL Partnership for Molecular Medicine is the Institute for Molecular Medicine Finland (FIMM).

FIMM is an international translational research institute focusing on human genomics and precision medicine, under the umbrella of the Helsinki Institute of Life Science at the University of Helsinki. FIMM has a driving mission to perform innovative research on patients and populations targeted towards understanding drivers of health and disease. FIMM works to deliver improvements to the safety, efficacy, and efficiency of healthcare in Finland and beyond. FIMM hosts several technology core facilities with vital national roles as well as the Finnish Hematology Registry and Biobank (FHRB).

c. NCMM

The Norwegian Node of the Nordic EMBL Partnership for Molecular Medicine is the Centre for Molecular Medicine Norway (NCMM).

NCMM is a joint venture of the University of Oslo (UiO), the Research Council of Norway (RCN) and the Regional Health Authority South East (HSØ). The host organization and legal entity of NCMM is the University of Oslo. The overall vision of NCMM is to improve the molecular understanding of health and disease to facilitate improved medical practice and precision medicine. As an international molecular medicine Centre with a translational mind-set, NCMM is bringing together multidisciplinary teams and a strong collaborative network of key scientists across Norway to combine basic and translational research approaches to clinically relevant problems. NCMM works to provide the basis for development of improved diagnostics as well as more efficient and targeted therapies. NCMM hosts national research core facilities for chemical biology and zebrafish models.

d. MIMS

The Swedish Node of the Nordic EMBL Partnership for Molecular Medicine is the Laboratory for Molecular Infection Medicine Sweden (MIMS).

MIMS is a national research institute supported by the Swedish Research Council and Umeå University. The legal entity of MIMS is Umeå University, where MIMS is affiliated with the Faculty of Medicine and the Faculty of Science and Technology and closely connected to the University Hospital of Umeå. Affiliated scientists across Sweden concentrate on understanding how viruses, bacteria and parasites cause disease and how their hosts respond to infection. MIMS brings together researchers from many disciplines to answer important and fundamental questions of infection biology. At the regional and national level MIMS contributes to and benefits from state-of-the-art research infrastructures in imaging, genomics and structural biology.

e. DANDRITE

The Danish Node of the Nordic EMBL Partnership for Molecular Medicine is the Danish Research Institute of Translational Neuroscience (DANDRITE).

DANDRITE is funded by the Lundbeck Foundation, and DANDRITE's legal entity and hosting institution is Aarhus University and is placed as an interfaculty center fruitfully affiliated with both the Faculty of Health and the Faculty of Natural Sciences. DANDRITE is embedded in a vibrant NeuroCampus Aarhus research community at Aarhus University and Aarhus University Hospital and encompasses internationally leading research centers and infrastructures in genetics, molecular and clinical medicine, bioimaging, cognitive neuroscience, transgenic animal models, biochemistry, biophysics, structural biology, nanoscience, and engineering. There are long-standing traditions in studies of for example membrane proteins, molecular neuroscience, and brain function and imaging.

Article 2 - Outline of the Partnership

The vision of the Nordic EMBL Partnership for Molecular Medicine is to combine and leverage the diverse, but complementary, research and technology expertise of the Nordic countries to take a leading role in addressing some of the biggest challenges in biomedicine today. To deliver on our vision, we bring together our diversity to facilitate scientific exchange and support in areas of common interest, especially where one partner has a recognized expertise, which can be shared for the benefit of the other partners. EMBL´s new scientific programme 2022-26 enables the Partnership for contribution to a deeper understanding of underlying mechanisms at the molecular level, which is required as basic knowledge to study life and ecosystems as a whole and its natural context. The holistic approach of the new programme also leverages the Partnership to attract new funding for collaborative projects.

In this respect, the Partnership with EMBL will continue its operational focus on international best practice in science, including selection, regular evaluation and internationalization of research groups. The Partnership will also continue its practice of building research collaborations, exchange of know-how, services and scientific training. EMBL will support the Nordic Partnership towards scientific excellence in areas of mutual interest. EMBL´s involvement is multi-layered and provides benchmarking and historic expertise, as well as practical support and strategic guidance, in various aspects relating to the governance, operations, and recruitment and scientific evaluation process.

The Partnership focuses on research in molecular medicine, which builds on state-of-art technologies and complementary strengths in all partner institutes. EMBL's recognized research strength in areas such as molecular, cellular and developmental biology, bioinformatics and structural biology, Norway's strength in molecular mechanisms of disease

and precision medicine, Sweden's strength in microbial pathogenicity and molecular infection medicine, and Finland's strength in human genomics and personalized medicine are complemented by Denmark's strength in molecular and translational neuroscience. With the unique EMBL operational model, the nodes are dynamic scientific hubs with an influx of young, high-caliber, international researchers, providing the local and national research communities with cutting-edge research and technological capabilities. Thus, there is continual renewal of innovative approaches and research advances to what remain the fundamentally important areas of biomedicine, returning great value to the universities and local and national research communities.

Article 3 - Implementation of the Partnership

a. Steering Committee

A Steering Committee (SC) will oversee the coordination between the Nodes of the Nordic EMBL Partnership and EMBL and will have up to three representatives from each Node and EMBL along with a Nordic EMBL Partnership Communications Director. From each Node, this would include directors and a senior administrator, as well as ad hoc members.
The SC will meet at least once a year. Meetings may be face-to-face or by video/tele-conference. The decisions of the SC will be taken by consensus, unless otherwise decided by the members.

The partnership will name the Speaker of the partnership, which will rotate every three years. The role of the Speaker is to give the Partnership a voice in strategic and official matters, responsible for representing all four of the Nordic nodes in any general matters, speaking on behalf of the Partnership where relevant and also helping to promote visibility of the Partnership.

b. Scientific advice and evaluation

A Scientific Advisory Board (SAB) for each Node consisting of external experts will review each Node of the Nordic EMBL Partnership at least every four years and report to the steering committee on the scientific progress of each Partnership Institute. During the period of the Partnership, at least one EMBL scientist will be a member of these SABs.

c. Scientific interactions

Based on the shared interest and to stimulate future collaborations between the scientists from EMBL and the Nodes, scientific exchanges (e.g. short-term visits and sabbaticals, joint lab retreats, seminars), joint training opportunities (e.g. co-funded joint postdoctoral programme, joint workshops, summer schools) and opportunities for horizontal, research-related activities can be implemented and organized.
The Nordic Partnership Nodes will also participate and contribute scientifically in the EMBL Partnership Conferences, and other relevant events.

Collaborations will be encouraged by all partners. Where possible, they will be facilitated by allocation of funds for personnel exchange and institutional support for joint applications.

d. Third party funds

The Partners may jointly or individually, as appropriate, make applications to either national or international funding authorities in order to attract additional funding to the Partnership. If an application is being made by one Partner, it shall not make any commitment on behalf of the other Partner without their prior written consent.

e. Access to facilities

The Partnership Institutes and EMBL will facilitate on a reciprocal basis access to their facilities, instrumentation and databases.

Facilities made accessible by FIMM include biobanking, sample preparation, genomics, transcriptomics, single cell analytics, metabolomics, lipidomics, high-throughput drug sensitivity screening, molecular pathology, digital microscopy, high-content imaging, biomarker validation, and associated bioinformatics solutions. Access to services and materials across the University of Helsinki and the Finnish biobank network may also be mediated through FIMM, but may require separate agreement or authorization by the relevant organization.

Facilities made accessible by NCMM include services provided by the Chemical Biology HTS unit and the zebrafish facility. Current approaches and model systems at NCMM include computational biology and bioinformatics, cell biology, genomics, neurobiology, immunology, rare diseases, stem cells, structural biology, synthetic chemistry and chemical biology as well as the zebrafish model system. Access to services and materials across University of Oslo and Oslo University Hospital (OUH) may also be mediated through NCMM, but may require

separate agreement or authorization by the relevant institution. From 2026 NCMM will be located in the new Life Science Building together with other research environments at UiO and OUH. This will give access to a number of additional infrastructures and core facilities.

Facilities made accessible by MIMS and Umeå University include molecular microbiology laboratories in close association with the University Hospital of Umeå, microscopy and imaging facilities. The research groups at MIMS use current state-of–the-art molecular microbiology and molecular biology methodology required for microbial virulence studies. The excellent light and electron microscopy facilities in Umeå, which are part of the Swedish National Microscopy Infrastructure, provide access to a range of scanning and transmission electron microscopes, advanced live cell imaging techniques including FLIM, FRAP, FLIM-FRET, STORM, TIRF, Spinning Disk Confocal and 4D confocal, as well as cutting edge technologies in correlative microscopy. The Umeå Centre for Electron Microscopy (UCEM), a national SciLifeLab facility run at Umeå, is one of the first adopters of cryo-electron microscopy for structural biology in the Nordic countries. The Biochemical Imaging Centre Umeå (BICU) for different advanced imaging techniques to visualize samples in multiple ways and for high-quality scanning and transmission electron microscopy. Other local and national facilities MIMS can access support cell sorting, single cell genomics, metabolomics, and animal research.

Facilities made accessible by DANDRITE include research infrastructures for neuroscience at all levels ranging from structure and function of molecules studied by cryo-EM, crystallography, NMR and FRET microscopy to advanced imaging, electrophysiology, production of transgenic mouse models, and functional/behavioral studies in transgenic models including for example induced pluripotent stem cells, brain organoids, fruit fly, zebrafish, mouse, and rat. Research at Aarhus University is in close proximity to clinical research at the Aarhus University Hospital (top-ranked at world level), and biotech support facilities are available.

Facilities made accessible by EMBL across all sites include structural biology and imaging facilities, multi-omics facilities, chemical biology services, in-vivo gene editing services, and bioinformatics resources at EMBL-EBI. EMBL-EBI is Europe`s hub for biomolecular data and an acknowledged world leader in the management and analysis of big data in biology. Its databases include information on hundreds of millions of genome and RNA sequences, protein structures, protein folding domains, cell metabolites, phenotypes, and on the effects of drugs on cells and tissues, as well as biological image data. EMBL-EBI's open sharing of biological data in standardized formats with the life science community has been integral to generating countless research insights worldwide.
EMBL scientific services, combined with scientific and technical expertise, provide researchers with the highest quality results, and enable significant fundamental research that is essential

to solving global societal challenges. EMBL also supports users by preparing samples for use as part of EMBL's structural biology and imaging services.

EMBL Imaging Center is a new EMBL service unit at Heidelberg, Germany for the highest resolution Electron and Light Microscopy technologies and the combination thereof (correlative technologies), including academically developed methods not yet commercially available. It provides open access for researchers to cutting-edge imaging technologies integrating methods in the field of electron and light microscopy. It is available to the international user community from both academia and industry to enable new ground-breaking research that crosses the scales of biology. New services will also become available to the Nordic partners in the next 5 years thanks to the new EMBL Programme.

f. Promotion of the partnership

The Partnership Institutes can refer to EMBL and the "Nordic EMBL Partnership for Molecular Medicine" in their promotional material, including job offers. Each individual institute has a logo, the reciprocal use of which needs to be approved directly by the Partnership Institutes and/or EMBL. Since the establishment of the Partnership, a Partnership logo has been created. The Partnership logo should appear prominently on the homepage of each institute. In addition, the logo can be used, by all Partners, with the following guidelines:

- The logo consists of text and image. The image may be used independently from the text. The text should not be used without the image.
- The logo should appear large enough so that the image and text are legible.
- The logo may not be altered in proportion, color or shape from the versions provided for download.
- When possible, link to the Nordic EMBL Partnership website from the logo.
- The Partnership logo takes the place of the four individual institute logos on promotional material.

In addition, primary and secondary colors to represent the Partnership are available and should be used when appropriate. Color codes and logo files are available on the Nordic EMBL Partnership website internal pages. For questions, consult the Communications Director.

The Partnership aims for joint recruitments in order to attract the most promising talents. In this context, the Partnership will be represented at major scientific conferences and career fairs for maximizing visibility of its activities.

"Nordic EMBL Partnership for Molecular Medicine" will be used in English only.

Article 4 - Exchange of Knowledge and Property Rights

1. The Partnership Institutes and EMBL make available to each other, free of charge, where not prohibited by any prior obligation, upon request, in writing or in any other appropriate form, existing knowledge that has been generated by scientist(s) or group(s) participating in this collaboration, protected or not, relevant for the purposes of the co-operation and purely for the requesting Party's own academic use. Such knowledge will be held in confidence in accordance with Article 5. They will not hold each other liable for exactness nor completeness of information which is transmitted according to the best knowledge of the providing Party.

   FIMM has several important local relationships with Finnish institutes such as HUS and THL, and this agreement does not constitute a permission or transfer of knowledge from any partner institution to the Nordic EMBL Partnership nodes. Separate agreements may be needed.

   As far as existing knowledge of NCMM concerns existing knowledge of the Regional Health Authority South East (HSØ) and Oslo University Hospital (OUH), it is acknowledged that in order to make such existing knowledge available a separate agreement between HSØ and/or OUH and the EMBL or the Nodes of the Nordic EMBL Partnership may be needed.

   As far as existing knowledge of MIMS concerns existing knowledge of UCMR, CBCS, local biobanks, or the University Hospital of Umeå, it is acknowledged that in order to make such existing knowledge available a separate agreement with the EMBL or the Nodes of the Nordic EMBL Partnership may be needed.

   As far as existing knowledge of DANDRITE concerns existing knowledge of Aarhus University and/or Aarhus University Hospital, it is acknowledged that in order to make such existing knowledge available a separate agreement with the EMBL or the Nodes of the Nordic EMBL Partnership may be needed.

2. Knowledge generated in the frame of the cooperation can be used by the Partnership Institute(s) and EMBL free of charge solely for their own academic research and teaching obligations subject always to the confidentiality provisions of Article 5.

Protected know-how of the other partner can be used free of charge only for the purposes of the co-operation and for own academic research and teaching projects which do not involve a third Party. Use of the Knowledge or of the protected know-how in research academic or commercial projects in which the Partnership Institute(s) and/or EMBL are taking part requires the prior written approval of the Party or the Parties who generated the Knowledge. Such approval shall not be unreasonably withheld in the case of academic projects with purely academic partners.

3. Any scientist shall give prior notice of any planned publication arising from joint research projects of their knowledge including a set of the data to be published to the other partner at least 30 days before this information is made public. Publications shall refer to the co-operation from which they emerged.

4. Inventions belong to the partner whose personnel has made them. Joint inventions belong to the Partnership Institute(s) and EMBL according to the intellectual contribution of the inventors. The inventors will lay down their contributions in an invention record and the Partnership Institute(s) and/or EMBL, as the case may be, will agree in writing in each case on the procedures for the management of the intellectual property, the commercial exploitation and the sharing of cost and revenue.

Article 5 - Confidentiality

1. Each partner is committed to confidentiality against third parties for all information and objects that have not been published and are conveyed in confidence by the other partner. The receiving partner shall not use any such information and objects for any purpose other than in accordance with the terms of this Agreement. The disclosure of confidential information or objects requires written agreement by the other partner.

2. The confidentiality clause mentioned above under Paragraph 1 excludes:

- Objects or types of information which have been developed or are being developed by the receiving partner independent of the information;
- Objects or types of information which are part of the generally accessible state of technology or which reach this status without the fault of the receiving partner;
- Objects or types of information which were already in the possession of the receiving partner at the time of the announcement or

- Objects or types of information which were lawfully disclosed to a partner from a third party who is in lawful possession thereof without any commitment to confidentiality.
- Objects or types of information which are needed to be communicated to comply with applicable laws or with a court of administrative order.

3. The above-mentioned confidentiality clause ends five years after the termination of this Agreement or the respective individual agreement, depending on which ends later. The partners shall impose the same confidentiality on all of their affiliates and subcontractors, their employees and any other personnel working for a partner, who may have access to confidential information.

Article 6 - Liability

1. Except as prohibited by applicable law, the Partners will hold each other liable only for willful injury or gross negligence. The same rule applies with respect to damage suffered by delegated personnel during the time of their delegation.
2. Any loss, damage or injury suffered by third parties will be borne solely by the Partner whose personnel caused them and each Partner shall be liable for any loss, claims, damages, cost or expenses arising from its own acts or omissions.
3. Any research agreement or related agreements entered into the Partners shall include appropriate terms in relation to liability.

Article 7 - Duration of Contract and Termination

1. This Agreement comes into effect with the signature of the last partner and is for the duration of ten years. It can be prolonged with mutual consent. The partners will agree in writing on a possible extension of the contract one year before it runs out.
2. The termination of this Agreement does not affect the individual agreements made within the framework of this agreement.
3. The provisions stipulated in the Article 5 of this Agreement remain valid even after termination of this Agreement; however, the Article 5 clause 1 is only valid for a duration of five years after the termination of this contract or the individual agreements – whichever ends last.

Article 8 - Settlement of Disputes

The parties will endeavor to resolve all disagreements or difficulties that could arise concerning the implementation of this Agreement without appealing to courts. In case an amicable settlement cannot be reached despite all efforts, the dispute shall be finally settled by arbitration in accordance with the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules. The place of arbitration shall be Heidelberg. Nothing herein shall be interpreted as a waiver of any privileges or immunities accorded to EMBL by its constituent documents or international law.

Article 9 - General Provisions

1. The rights and provisions detailed in this Agreement can be assigned only with prior approval of the other partner.
2. Any changes and additions of this Agreement need to be in written form; this requirement can only be dispensed with/waived in writing.
3. In case a clause of this Agreement should be annulled, it will not entail any consequences on the validity of the other clauses of the Agreement nor on the Agreement as a whole. The partners will try amicably to agree on a new clause retrospectively which will correspond to the invalid clause to be substituted.

FOR EMBL

Place, date: _____

Professor Edith Heard

Director General, EMBL

FOR FIMM

FOR EMBL

Place, date: Heidelberg, 15.11.2022

Professor Edith Heard

Director General, EMBL

FOR FIMM

Place, date: _____

Professor Sari Lindblom

Rector, University of Helsinki

Place, date: _____

Professor Mark Daly

Director, FIMM

FOR NCMM

Place, date: _____

Professor Svein Stølen

Rector, University of Oslo

Place, date: _____

Professor Janna Saarela

Director, NCMM

FOR MIMS

Place, date: _____

Professor Hans Adolfsson

Vice-Chancellor, Umeå University

Place, date: _____

Professor Oliver Billker

Director, MIMS

FOR DANDRITE

Place, date: _____

Brian Bech Nielsen

Rector, Aarhus University

Place, date: _____

Professor Poul Nissen

Director, DANDRITE

FOR EMBL

Place, date: _____

Professor Edith Heard

Director General, EMBL

FOR FIMM

Place, date: Helsinki 14.11.2022

Professor Sari Lindblom

Rector, University of Helsinki

Place, date: Helsinki 9 Nov 2022

Professor Mark Daly

Director, FIMM

FOR NCMM

Place, date: _____

Professor Svein Stølen

Rector, University of Oslo

Place, date: _____

Professor Janna Saarela

Director, NCMM

FOR MIMS

Place, date: _____

Professor Hans Adolfsson

Vice-Chancellor, Umeå University

Place, date: _____

Professor Oliver Billker

Director, MIMS

FOR DANDRITE

Place, date: _____

Brian Bech Nielsen

Rector, Aarhus University

Place, date: _____

Professor Poul Nissen

Director, DANDRITE

Place, date: _____

Professor Sari Lindblom

Rector, University of Helsinki

Place, date: _____

Professor Mark Daly

Director, FIMM

FOR NCMM

Place, date: _____

Professor Svein Stølen

Rector, University of Oslo 16.12.22

Place, date: _____

Professor Janna Saarela

Director, NCMM 16.12.2022

FOR MIMS

Place, date: _____

Professor Hans Adolfsson

Vice-Chancellor, Umeå University

Place, date: _____

Professor Oliver Billker

Director, MIMS

FOR DANDRITE

Place, date: _____

Brian Bech Nielsen

Rector, Aarhus University

Place, date: _____

Professor Poul Nissen

Director, DANDRITE

Annex 1: Criteria for selection and evaluation of EMBL institutional partnerships

The following criteria apply to all formal partnerships, established between EMBL and national research institutions of similar rank, and built upon the common vision for achieving scientific excellence. They are used not only as selection guidelines for partnership units, but also as a point of reference during scientific evaluations, conducted by the Scientific Advisory Committee.

FOR EMBL

Place, date: _____

Professor Edith Heard

Director General, EMBL

FOR FIMM

Place, date: _____

Professor Sari Lindblom

Rector, University of Helsinki

Place, date: _____

Professor Mark Daly

Director, FIMM

FOR NCMM

Place, date: _____

Professor Svein Stølen

Rector, University of Oslo

Place, date: _____

Professor Janna Saarela

Director, NCMM

FOR MIMS

Place, date: 22-11-18

Professor Hans Adolfsson

Vice-Chancellor, Umeå University

Place, date: 2022-11-14

Professor Oliver Billker

Director, MIMS

FOR DANDRITE

Place, date: _____

Brian Bech Nielsen

Rector, Aarhus University

Place, date: _____

Professor Poul Nissen

Director, DANDRITE

FOR EMBL

Place, date: _____

Professor Edith Heard

Director General, EMBL

FOR FIMM

Place, date: _____

Professor Sari Lindblom

Rector, University of Helsinki

Place, date: _____

Professor Mark Daly

Director, FIMM

FOR NCMM

Place, date: _____

Professor Svein Stølen

Rector, University of Oslo

Place, date: _____

Professor Janna Saarela

Director, NCMM

FOR MIMS

Place, date: _____

Professor Hans Adolfsson

Vice-Chancellor, Umeå University

Place, date: _____

Professor Oliver Billker

Director, MIMS

FOR DANDRITE

Place, date: Aarhus 29/11-2022

Brian Bech Nielsen

Rector, Aarhus University

Place, date: Aarhus 13/12-22

Professor Poul Nissen

Director, DANDRITE

EMBL upholds the importance of the selection and evaluation criteria and their relevance to the partnership performance. However, EMBL leaves the choice of the means and methods of implementation of the criteria at the discretion of the partner institutions.

Scientific excellence

EMBL was established on the principle of scientific excellence and this also has to be applied to any partner institute. The partner institute should be leading or aspire to lead at the national level and preferably at the international level, in the research area it pursues. The newly established institutes should possess leadership potential and strive to reach national and international recognition with the help and support of EMBL. The establishment of a mechanism for independent scientific review of the research activities is mandatory.

Scientific complementarity or synergy to EMBL

EMBL is a leading research institute in molecular biology in Europe. However, even EMBL cannot pursue all areas of research related to biology and life sciences, and therefore wishes to engage with partners that have complementary activities to mutual benefit. Scientific complementarity is very important but can be fulfilled in different ways: it can encompass entire research fields that are not covered by EMBL or areas in which EMBL is active, but in which synergy can be achieved through partnership.

Significant possibilities for common initiatives

The partnerships should be established in a way that offers significant scope for common initiatives. The co-operation needs to encourage close interactions between EMBL and the partner institute. This includes bilateral collaborations, participation of both partners in larger networks, the organization of joint conferences, exchange of staff and access for the partner to the EMBL services or vice versa.

Scientific Integrity and Good Scientific Practice

Scientific integrity and the observance of the principles of good scientific practice are essential in all scientific work which seeks to expand our knowledge and which is intended to earn respect from the public. All EMBL Partnership Institutes have the responsibility to enunciate principles and provide rules that serve as appropriate precautions guaranteeing that all staff members involved in scientific activity are regularly made aware of the standards of good scientific practice. Equally, Partnership Institutes have the responsibility to establish rules of

procedure in cases of suspected misconduct, ensuring as far as possible the establishment of truth and implementation of appropriate sanctions.

High level, regular international evaluation with consequences for tenure and funding

Scientific excellence should be the guiding principle of all activities within the partnership. If the partner has not already established a review system, it is essential that it commits to a high-level, regular international evaluation of its activities with consequences for tenure and funding which should be modeled on the review of EMBL by the EMBL Scientific Advisory Committee. The review board can be established with EMBL's support and, if desired, participation. The reviews should be carried out at regular intervals, usually every 4 years.

Commitment to significant levels of staff turnover

One of the core principles of EMBL is the staff turnover system and more than 85% of its staff members have time limited contracts with a maximum duration of 9 years. It can be challenging to establish such a system nationally, however EMBL partnerships should be used to achieve a high degree of flexibility in the staff composition of the partner institution. The partnership has to be a national centre of excellence that trains young scientists who are postgraduate fellows, postdoctoral fellows or starting principal investigators for a limited period of time before they move on to other national institutions.

Scientific, operational and financial independence

A partnership between EMBL and the partner institute is built on the precondition that both partners are scientifically, operationally and financially independent. Independence is generally perceived as the absence of direct influence from external interest and it is particularly important that partners have genuine scientific, operational and financial autonomy. Partner independence is of great value to EMBL, as it allows them to pursue scientific research without direct affiliation to any public institution, which could strip them from their research freedom. Partners need to be able to freely conduct their research as any control of the funding can slow down and restrict the pace of their research.

Equality, diversity and anti-harassment

EMBL is committed to ensuring a work environment that is collaborative, stimulating and supportive, and believes that all staff should be treated with courtesy, dignity and respect. Harassment is contrary to the principles of human dignity and mutual respect, detrimental to health and safety at the workplace and to the good functioning of EMBL in general. EMBL believes that the diversity of all its employees, visitors and collaborators is of critical importance

in drawing together the broad range of skills and experience to conduct world-class science. Therefore, individuals are treated fairly and respectfully regardless of their sex, race, ethnic origin, nationality, age, marital status, disability, religious beliefs, social class, sexual orientation and political views or any other attribute that might give rise to inappropriate discrimination. EMBL partner institutes are expected to promote amongst their staff and in leadership the principles of equality, diversity and anti-harassment.

The Research Council of Norway

Evaluation of the Centre for Molecular Medicine Norway (NCMM)

Evaluation
Division for Science and the Research System

The Research Council of Norway

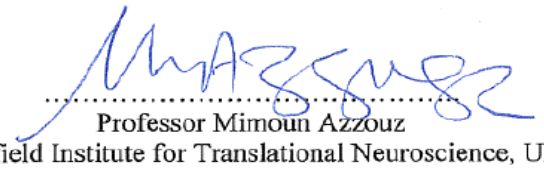
Centre for Molecular Medicine Norway

Evaluation of NCMM - 2018

Evaluation report
Division for Science and the Research System

To the Research Council of Norway

The members of the Evaluation Committee reviewing the Centre for Molecular Medicine Norway are pleased to submit this report. The views expressed are the unanimous opinion of the members of the Evaluation Committee and the members of the committee are in full accord with regard to the assessment, recommendations, and conclusions stated in the report.



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1. Executive summary including recommendations

The Centre for Molecular Medicine Norway (NCMM) was founded as a joint venture between the University of Oslo (UiO), the Research Council of Norway (RCN), and the South Eastern Norway Regional Health Authority (HSØ) in 2008. The UiO acts as the host institution for NCMM. The Centre has adopted the European Molecular Biology Laboratory (EMBL) model in terms of its organisation, excellence assessment, and its international recruitment of young, talented researchers to non-tenured positions (5-year renewable contracts). NCMM is currently in its second five-year period (2015-2019), following a successful external evaluation in 2013. As part of the 2018 evaluation, the Evaluation Committee commissioned by the RCN was tasked with the assessment of the scientific quality of the research conducted in the centre, the strategic role and development of the centre in the context of being a national research centre within molecular medicine and translational research in Norway. The Evaluation Committee (EC) had the opportunity to review self-assessment reports generated by the centre' leadership and the 9 group leaders based at NCMM. Scientific presentations and discussions with the Centre owners and stakeholders were held during a 2 day- site visit of the EC at the NCMM and the RCN. Finally, the committee was expected to provide recommendations for further development of the centre.

Overall the EC is pleased to see that the leadership of the centre responded positively to the recommendations from the centre evaluation in 2013. In brief, the responses to the 2013 evaluation include a) merger with the Biotechnology Centre of Oslo (2016/2017) increased the critical mass of NCMM, b) attempting to enhance the mentoring capacity for young group leaders by hiring a senior group leader, i.e. Assistant Director (2017), and c) expanding the efforts and focus on computational biology by recruiting two new groups for rotations in bioinformatics (2016) and systems medicine (current).

The leadership of NCMM and the Board are to be congratulated for the successful establishment of NCMM and for attracting high caliber talent from all over the world. The EC considers that the adoption of the EMBL recruitment model is having a positive impact on the recruitment process at NCMM and probably a wider influence at UiO level. The EC was impressed by the NCMM lab set up, technology platforms, expertise and the resources provided to the young group leaders to progress their careers. The expected re-location to the new building in 2024 is a very exciting development. It would allow centre expansion and working closely with Chemistry department, potentially beneficial for drug discovery programmes. The EC recognises the strong commitment of the NCMM leadership and group leaders to align their research activities with the translational vision and establish significant collabrative links with local hospitals. The EC considers that the 2 new NCMM recruits in the areas of precision medicine and systems medicine will bring great added value to the centre's translational vision.

The EC was impressed by the progress so far at the NCMM and fully recommend sustaining the Research Council of Norway financial funding to build on earlier success and enhance critical mass in strategic areas, in particular clinical expertise. Translational research is a slow process, the Centre however achieved noticeable milestones, e.g. 1) establishment of technology platforms essential for strong translational programmes; 2) attracted telented experts in personalized medicine and systems medicine; 3) establishment of strong collaborative links with national and international hospitals . Based on the criteria provided in the RCN mandate, the EC ranks the Centre with an overall score of Very Good/Excellent. The Committee would like to issue the following strategic recommendations:

- The Committee highly recommend expanding the recruitment strategy to attract clinician scientists to work under a single roof with the group leaders at NCMM. The centre could be designed to bring together a multidisciplinary team of clinicians and scientists in order to effectively translate basic scientific discoveries into potential therapies/benefits for patients.
- Establishing a clear theme based research structure within the NCMM to facilitate fast and effective integration of the group leaders into the translational research activities of the centre and increase internal and cross institutional collaborations. Some groups can fit nicely as horizontal technology

platfoms within a disease-based theme structure.

- The centre has been successful in attracting high caliber group leaders. However, the EC noticed the lack of ERC funding suggesting the need to establish a mentoring scheme to guide the group leaders through career thinking, ERC funding and publications strategy. The committee recommends to establish strong interactions (e.g. through workshops) between group leaders and national and European ERC holders, a process that would allow young investigators to gain expertise on how to secure such prestigious awards. Stronger interactions with ERC awardees at the Nordic EMBL Partnership nodes may be a good place to start.
- The EC expressed some concerns regarding the current NCMM Director rotating out at the end of June 2018 without clear transition planning while waiting for the new Centre Director to join NCMM. The newly recruited Assistant Director would need significant help and assitance during the transition phase to facilitate his adaptation to the managerial structure at NCMM, UiO and Norway in general.
- Importance of establishing a strategy for retention of successful talent. This strategy would also help to sustain specialised technologies and platforms established by group leaders rotating out from NCMM.

Evaluation Committee:

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E. Yvonne Jones, PhD. Joint Head Structural Biology & Interim Director, Wellcome Centre for Human Genetics, University of Oxford
Thomas Sinkjær, DMSc. Director of Science, Senior Vice President Grants & Prizes, Lundbeck Foundation and professor at Aalborg University, Denmark

2. Evaluation of the centre

2.1 The centre

Short description of the centre
The Centre for Molecular Medicine Norway (NCMM), established in 2008 in partnership with the Nordic European Molecular Biology Laboratory (EMBL), is a national research Centre hosted by the University of Oslo. NCMM serves as a greenhouse for young, talented scientists within the fields of molecular medicine, biotechnology and translational research. The key vision of NCMM is to develop an international centre with the necessary critical mass to achieve excellence in basic through to applied research in prioritised areas such as cancer, inflammation and central nervous system-related diseases.

The NCMM centre, led by Director Kjetil Taskén, is currently composed by 9 research groups mapping across NCMM Translational and NCMM Biotechnology. The Centre group leaders are being recruited to non-tenured 5 + 4 year positions. Recruitments of further 2 independent group leaders in personalized medicine and systems medicine were finalised in June 2018. NCMM currently has some 100+ employees from 33 different countries. Looking at statistics, 70 % of the current staff is international. Furthermore, 59 % of the total staff and 55 % of the group leaders are female, indicating an excellent gender balance within the NCMM.

The purpose of this evaluation is to assess the scientific quality of the research conducted in the centre, and to assess the strategic role and development of the centre in the context of being a national research centre within molecular medicine and translational research in Norway. Furthermore, the evaluation should provide recommendations for further development of the centre. The Evaluation Committee issued this report to summarise the key findings and provide recommendations for improvements aimed at the research groups, the centre and the Research Council of Norway (RCN). The Evaluation Committee was instructed to follow the evaluation mandate (attached to this report) in its evaluation tasks.

2.1.1 Scientific quality of research (Grade: Very good)

• The centre groups conduct research within molecular medicine or translational research at a high level in an international context (including contributions to their field, scientific production and impact)
The overall objective to conduct cutting-edge research in molecular medicine is progressing well. The overall scientific productivity varies from good to excellent between the research groups. This is in part related to for how long the group leader has been hired and the type of research conducted. But it also seems to be related to significant differences in levels of achievements as reflected by the quality of research outputs and success in attracting external funding (e.g. MSCA IF, ERC). NCMM has been granted two Marie Curie Individual Fellow grants in 2018, and several of the newly recruited group leaders are planning to submit ERC starting or consolidator grant applications over the next two years. In a highly competitive research environment this is properly on the lower end of what should be expected after running the center for 10 years.

• The centre groups are actively and successfully taking part in national and international research collaborations and networks
The Committee noticed a strong commitment of the leadership and the group leaders to establish internal, national and international collaborative efforts. Investigators within NCMM hold adjunct appointments in the Departments of Infectious Diseases, Hematology, Medical Biochemistry and Cancer Genetics, as well as the Institutes of Experimental Medicine and Cancer Research, the School

of Pharmacy and the Departments of Chemistry and Biosciences in Oslo University Hospital. The Centre is funding these adjunct positions with the aim to facilitate collaborations between basic and clinical research environments, offering group leaders access to patient materials, biobanks and clinical trials. Group leaders at NCMM Biotechnology also have adjunct positions at UiO. Group leaders highlighted around 70 national collaborations in addition to an increasing number of internal collaborations within the Centre. The EC felt that establishing the adjunct positions within hospitals and clinical departments at the UiO has been strategic and crucial to facilitate translational research.

The Committee believes that the network of NCMM Associate and Young Associate Investigators represented by 33 outstanding scientists located in all regions of Norway forms great opportunities for collaborative links. However, the added value of this network was not clear from the evaluation documents and discussions during the 2 day site visit. The Committee recommends maximizing the outputs from this network by encouraging strategic joint collaborative research projects and inviting the NCMM Associate and Young Associate Investigators to spend time at NCMM.

NCMM group leaders have also been successful at setting up collaborative links with European and international institutions. The Committee noted an increase in the research interactions with the three other nodes in the Nordic EMBL Partnership and the EMBL. However, we advise the research grouping to use these collaborative links, in particular with the European institutions to form strong consortia to attract substantial Horizon2020 funds.

The Committee recognizes the commercial potential of the research activities at NCMM. This is supported by the rise in number of patents filed and established collaborations with industry and biotechnology companies. NCMM investigators have also been involved in starting the Norwegian Inflammation Network (NORIN) innovation cluster that currently has 62 companies and other stakeholders as members. The Committee considers that these activities are essential for the translational research vision of the centre.

• ***Successful two-way collaboration between basic and clinical research environments***
Two-way collaborative links between basic and clinical research seem to be in place. Evidence of successful collaborations were provided in the evaluation documents and during the Committee site visit at NCMM. As mentioned above, group leaders in NCMM Translational Research secured adjunct appointments in clinical and paraclinical departments in OUH. Investigators at NCMM are also involved in collaborations with local clinical departments, regional HSØ-funded research networks, and three K.G. Jebsen Centres for translational research. However, the committee would like to have seen examples of successful collaborative engagements with/from the NCMM Associate Investigators and Young Associate Investigators.

2.1.2 Organisation and strategic role of the centre (Grade: Very good/Excellent)

• ***The centre has taken into consideration the recommendations from the previous evaluation (2013).***
Overall the EC was pleased to conclude that the leadership of the centre responded positively to the recommendations from 2013 evaluation. In brief, the responses to the 2013 evaluation include a) merger with the Biotechnology Centre of Oslo (2016/2017) increased the critical mass of NCMM, b) attempting to enhance the mentoring capacity for young group leaders by hiring senior group leader, i.e. Assistant Director (2017), and c) expanding the efforts and focus on computational biology by recruiting two new groups in bioinformatics (2016) and systems medicine.

• ***The centre utilizes the Nordic EMBL partnership in their translational research (infrastructure, collaboration and training activities provided by each of the partners)***
The Centre provided evidence of continued interactions with the Nordic EMBL Partners and participation in international translational infrastructures such as EATRIS and EU-Openscreen, training networks, workshops and translation research. There is clear evidence that the Nordic EMBL partnership offers exciting opportunity to access cutting-edge technologies at centres in Sweden, Finland and

Denmark. NCMM research groups established some links with these centres. The committee supports the continued commitment to the EMBL model. It is very positive that the Nordic EMBL participated in the recruitment process of new group leaders, and this should be sustained for future hiring. The Committee also felt that exploitation of the Nordic EMBL Partnership could be enhanced by attracting joint collaborative awards, in particular Horizon2020 funding.

• The activities and organization of the centre contribute to the aim of being a national and visible resource for translational research

The NCMM has demonstrated tremendous potential for translational research. However, the EC believes that recruitment of more clinician scientists would be particularly beneficial to the NCMM's ability to deliver this vision.

• Scientific leadership is being exercised in an appropriate way (both at centre and group level)

The Committee wishes to congratulate the NCMM Director for his excellent leadership role in taking the centre to its current advanced stage. His role in adopting the EMBL model for recrutiment of high caliber group leaders at NCMM is having a strategic impact on the centre. The Committee considers that an appropriate vision for leadership is in place. To facilitate translational research, the Centre is taking the lead on national initiatives, e.g. i) securing Norway's position in the ESFRI preparatory phase infrastructure project European Infrastructure for Translational Medicine (EATRIS); ii) NCMM and its Director have also established Chemical Biology in Norway, organising a national network, 'NOR-Openscreen', for high-throughput screening (HTS), bioprospecting and academic drug development. NCMM has secured funding for this as a national infrastructure, with four sites in Oslo, Bergen, Trondheim and Tromsø. The newly recruited Assistant Director should be supported in his efforts to establish a national structural biology hub focused on cryo-EM. The Director is providing day-to-day follow-up and mentoring of junior group leaders. The Assistant Director was recruited to help with a mentoring scheme at NCMM, although he is still early in his new function and busy establishing/moving his lab. The centre is providing leadership training to group leaders by attending the UiO research leadership training with focus on the group leader function. Overall, the Committee estimates that the scientific leadership at the centre and group levels is adequate. However, a strategic plan is needed to guide and mentor group leaders for effective integration to the NCMM translational vision and help them attract prestigious fellowships such ERC awards.

• The centre has been able to recruit outstanding younger scientists nationally and from abroad that promotes gender balance

The Centre group leaders are being recruited to non-tenured 5 + 4 year positions. The Committee was pleased to learn that recruitments of further 2 independent group leaders in personalized medicine and systems medicine were finalised during the site visit. NCMM is to be congratulated on the success of the international recruitment and diversity. However, the large number of researchers, many of which are young and very ambitious, and the recent merger of former BIO groups into NCMM requires a very dedicated management to ensure a successful integration. From the self-assessment some research groups seem to collaborate very successful, whereas other research groups seem not well connected.

NCMM currently has some 100+ employees from 33 different countries. Looking at statistics, 70 % of the current staff is international. Furthermore, 59 % of the total staff and 55 % of the group leaders are female.

More information would be helpful to understand the impact of the NCMM Associate Investigator network that was established in 2010 and has been extended in the Centre's second five-year period through two open calls in 2015 and 2017.

• The centre has contributed to recruitments to permanent academic positions

NCMM has adopted the EMBL model in terms of its organisation, assessment of excellence, and its international recruitment of young, talented researchers to non-tenured positions (5 + 4 years). The Committee was impressed by the recruitment process of new group leaders performed in a three-step process, where applicants are evaluated by a committee with senior members from the EMBL, the

Nordic Partnership and external experts. Since its existence, nine group leaders have rotated out of the Centre to permanent Professor positions at UiO and Akershus University Hospitals, as well as to a Reader position at Queens University Belfast, UK, and a Professor position at the Technical University of Denmark. The Committee felt that more needs to be done in this area to make sure that the group leaders keep strong links with NCMM after rotating out.

• The centre has enhanced collaboration with industry and biotechnology companies

The Committee recognizes the commercial potential of the research activities at NCMM. This is evidenced by the rise in number of patents filed and established collaborations with industry and biotechnology companies. NCMM investigators were also involved in starting the Norwegian Inflammation Network (NORIN) innovation cluster that currently has 62 companies and other stakeholders as members. The Committee considers that these activities are essential for the translational research strategy of the centre.

• The centre is supported by the host institution

The Committee is pleased with the support provided to NCMM by the host institution, the University of Oslo (UiO). This support is evidenced by the following strong facts and statements:

- The Committee was given access to the document "2.1 NCMM evaluation_institutional assessment UiO" submitted by the UiO as part of the evaluation. This document provides compelling evidence for UiO's strong & strategic support to NCMM.
- The institutional assessment mentioned above clearly states that the centre is considered as one of the cornerstones of its interdisciplinary Life Science initiative
- The centre has become well integrated at the Faculty of Medicine; the NCMM administration has especially appreciated being part of a larger environment with more administrative support.
- The host institution plans to relocate the centre in 2024 into the new Life Sciences Building. The Committee expects that the move will enhance the integration of the Centre within the UiO's strategic life science initiative.
- UiO expressed commitment to build dedicated space for a 300 kV Titan Krios Cryo Transmission Electron Microscope instrument in the new building.

• The funding is balanced between core funding and external projects

The Committee recognizes that NCMM receives a significant core funding from the 3 owners. The core funding for NCMM Translational Research in the period 2015-2019 is 31.5 mNOK per year from the three consortium partners; UiO, the RCN and HSØ. NCMM Biotechnology has an annual core funding of 27 mNOK from UiO. The group leaders have been successful at securing competitive external funds. However, the Evaluation Committee is surprised that the external funding in the form of European grants/awards remains relatively low. The Committee considers that the Centre has great potential in attracting substantial large program awards/funds because of the high caliber of the group leaders. The Committee believes that the NCMM group leaders have the capacity to secure prestigious external awards such as ERC.

• The centre has a strategy for submitting proposals to Horizon 2020 and other international funding schemes

Current external funding includes grants from the RCN, the Norwegian Cancer Society, HSØ, the European Commission, competitive grants at UiO and private foundations and organisations such as the Lundbeck Foundation, Novo Nordic Foundation, KG Jebsen Centres, and World Cancer Research. However, funds originating from Horizon 2020 are relatively low. It is very encouraging that NCMM has been granted two Marie Curie Individual Fellow grants in 2018. Several of the newly recruited group leaders are planning to submit ERC starting or consolidator grant applications over the next two years. The Assistant Director is also planning to bid for an ERC Advanced Award by end August 2018.

Plans are in place for the recently employed EATRIS coordinator to help investigators increase the

number of EU applications where both NCMM and other research communities in Norway are involved. The Committee is surprised to learn that no ERC award was secured by NCMM despite the high caliber and excellent track record of the group leaders. Members of the Committee highly recommend a clear strategy at NCMM to guide and encourage the group leaders to apply for these awards and other Horizon2020 funds. For example, it would be helpful to organize workshops and meetings involving ERC holders from other institutions in Norway and Europe to share their journey and advice on how to increase the chances of success when applying for these prestigious awards.

2.1.3 Translation between basic medical research and clinical practice (Grade: Very good/Excellent)

• The research has had impact on translational medicine

Very good progress has been made within NCMM with respect to translational activities, e.g. group leaders have reported some 30 ongoing observational and interventional clinical studies in the fields of therapy and disease mechanisms, as well as in the molecular biomarkers, diagnostic and monitoring areas. This ASAC trial is the first clinical interventional trial to assess the beneficial role of acetylsalicylic acid (ASA) in recurrence of CRC liver metastases and survival, and aims to recruit up to 800 patients. Also, NCMM is involved in three translational KG Jebsen Research Centres.

• The centre's research has contributed to added value for future patient benefit

It is still early time point for translational discoveries emerging from NCMM to benefit patients. However, NCMM investigators are being involved as co-PIs in two studies considered as good examples of studies that have contributed to added value for future patient benefit: i) an on-going trial to determine how aspirin can improve disease free survival in patients treated with resection for colorectal cancer liver metastases. This ASAC Scandinavian, multi-Centre, double-blinded, randomised, placebocontrolled trial is the first clinical interventional trial to assess the beneficial role of acetylsalicylic acid (ASA) in recurrence of CRC liver metastases and survival, and aims to recruit up to 800 patients; ii) NCMM researchers have also established cancer drug sensitivity screening on patient samples using a set of approx. 500 cancer drugs to assist clinical decision on individualised therapy choices in chronic lymphatic leukemia (CLL) and myeloma. Ultimately, the aim is to have algorithms to predict effective therapy combinations to be tested in individualised clinical trials.

• There is a successful two-way collaboration between basic and clinical research environments on a centre level

Two-way collaborative links between basic and clinical research seem to be in place. Evidence of successful collaborations were provided in the evaluation documents and during the Committee site visit at NCMM. As mentioned above, group leaders in NCMM Translational Research secured adjunct appointments in clinical and paraclinical departments in OUH. Investigators at NCMM are involved in collaborations with local clinical departments, regional HSØ-funded research networks, and three K.G. Jebsen Centres for translational research. However, the committee would like to have seen examples of successful collaborative engagements with/from the NCMM Associate Investigators and Young Associate Investigators.

• The South-Eastern Norway Regional Health Authority is actively involved in the process of adding value to the centre's research beyond scientific production

The Committee considers that the contribution of HSØ is very valuable by providing both core and extramural funds. NCMM group leaders with adjunct hospital appointments are eligible to apply for HSØ grant schemes. In 2017 HSØ grants constituted approximately 12% of the total NCMM extramural funding. In addition, HSØ is a key contributor to the national clinical trial programme KLINBEFORSK, including ASAC trial. It is likely that the HSØ involvement will increase if ownership is extended to include all the regional health authorities for the upcoming five-year period. The Committee recommends making some strategic recruitments to include clinician scientists working under the same roof with NCMM group leaders, a strategy that would increase the HSØ confidence in NCMM's

translational vision.

2.1.4 Plans for the next five-year period

Scientific strategy (Grade: Excellent)

• Scientific plans for providing science with high scientific impact and promoting the translation of basic medical research into clinical practice
The Centre leadership showed strong commitment for the continuation of NCMM's overall vision for the year to come aimed at improving the molecular understanding of health and disease, and facilitate improved medical practice and improve patient outcomes. This is in full alignment with the current strategy as it should be. Members of the Committee were provided with compiling evidence of planned future research activities with high scientific impact. Of note, the Centre made strategic recruitments in recent months/years including bioinformatics and bionanotechnology research groups, Assistant Director with expertise in structural biology and Cryo-EM, and two excellent group leaders in precision medicine and systems medicine.

The current Director of the centre is rotating out of NCMM at the end of June 2018. This would put any future plans for the next five-year period at risk of changes because of new directorship starting soon. The Committee expects that the new Director will certainly bring his/her vision to further shape the scientific strategy of the Centre for the next five-year period in discussion with the Board, UiO, HSØ and RCN.

NCMM is recommended, as it implements its vision, to have a strong focus on the core activity of being an EMBL node: to serve as a greenhouse for young, talented scientists within the fields of molecular medicine, biotechnology and translational research. In this process NCMM should further strengthen its relationship to the other Nordic nodes.

• Recruitment and training
As stated above the Centre made some strategic recruitments in recent months (e.g. precision medicine and systems medicine). Three group leaders will rotate out of NCMM in the period 2019-2022 or sooner, it is therefore expected that the centre recruit replacements. The Committee recommends that the Centre consolidate the current research activities instead of starting new research areas. This could help sustain and enhance areas of strength and retain valuable expertise and technological platforms. Another key recommendation is the hiring of clinician scientists to work under the same roof with current group leaders. This would likely accelerate and promote the translational path of the NCMM.

• Collaboration nationally/internationally/with EMBL-partners (including basic and clinical collaboration and collaboration with industry)
The Committee is convinced that the Centre will continue maintaining/establishing collaborative links with national and international institutions. The multidisciplinary nature of the research activities at the Centre offers great optimism. However, the Committee would recommend that NCMM attempt to learn from successful stories at other Nordic EMBL or EMBL partners. This could help enhance outputs from effective coordination of the AI network, interactions in the Nordic EMBL Partnership and by participating in international infrastructures such as EATRIS and EU-Openscreen, and in training networks, workshops and other initiatives in research, translation, innovation, technology development and medical practice.

• Strategies for innovative findings of commercial interest
Overall the Centre strategy for innovation and commercialisation is acceptable. However, the Committee would recommend a clear strategy for potential spin-off companies emerging from NCMM (this was missing in the plans for next 5-year period). Translational research ideas leading to commercialisation is a very long process and could take over 10-15 years. The risk for missing opportunities because of NCMM model (5-4 years positions) is real. It is therefore highly recommended

that NCMM management develops a strategy to manage the risks and set up a business model on how to sustain and promote translational ideas/discoveries towards commercialisation.

• ***Strategy for its national role as a resource centre and for international visibility***
NCMM, in coordination with its current owners, is in the process of exploring the possibility of including all four Health Regions and all four universities which have medical schools as owners of the Centre for the upcoming five-year period (2020-2024). The Committee believes that that extended ownership could be a strategic move towards greater national role and international visibility for NCMM. This would also place the Centre in a stronger financial position prior to its planned move to the new life sciences building in 2024.

• ***Reasonable balance between the core funding and external projects***
The core funding for NCMM from the three consortium partners; UiO, the RCN and HSØ is considered high and adequate to achieve excellence in translational research. The group leaders have been successful at securing competitive external funds. However, the Committee considers that the Centre has great potential in attracting substantial large program awards/funds because of the high caliber of the group leaders. The Committee believes that the NCMM investigators have the capacity of securing prestigious external awards such as ERC grants. As stated below, we recommend extensive interactions between the group leaders and ERC holders (national and European) to benefit from their experience and journey on how they secured such prestigious awards.

• ***Strategy for submitting proposals to Horizon 2020 and other international funding schemes***
Several of the newly recruited group leaders are planning to submit ERC starting or consolidator grant applications over the next two years. The Assistant Director is also planning to bid for an ERC Advanced Award by end August 2018. Plans are in place for the recently employed EATRIS coordinator to help investigators increase the number of EU applications where both NCMM and other research communities in Norway are involved. The Committee is however surprised to learn that no ERC award was secured by NCMM in last 10 years despite the high caliber and excellent track record of the group leaders. Members of the Committee highly recommend establishing a clear strategy at NCMM to guide and encourage the group leaders to apply for these awards and other Horizon2020 funds. For example, it would be helpful to organize workshops and meetings involving ERC holders from other institutions in Norway and Europe to share their journey and advice NCMM group leaders on how to optimize their chances of success when applying for these prestigious awards.

Financial strategy (Grade:Very good/Excellent)

The proposed strategy to balance core funding and external projects seems appropriate. Also, the merger of BIO into NCMM has made the centre more robust. Whereas the NCMM group leaders have been successful in securing national grants more focus needs to be placed on securing European grants including ERC. An increased engagement in teaching and student supervision should be considered.

2.1.5 Summary and recommendations for the centre

The Evaluation Committee wishes to congratulate the leadership of NCMM for the successful establishment of NCMM. The adoption of EMBL recruitment strategy is having a positive impact on recruitment process at NCMM and probably a wider influence at UiO level. The Committee **ranks the NCMM as Very Good/Excellent**. The Committee was impressed by the progress so far at the NCMM and fully recommends sustaining the Research Council of Norway financial funding and the support from other owners to build on earlier success and enhance critical mass in strategic areas, in particular clinical expertise. Overall, the centre achieved excellence in some strategic areas, e.g. recruitment of high caliber group leaders, capacity building evidenced by excellent technology platforms, and future scientific strategy. The Committee was impressed by the NCMM lab set up, technology platforms and the resources provided to the young group leaders to progress their careers. The Committee considers

that the expected move to the new building in 2024 is a very exciting development. It would allow centre expansion and working closely with Chemistry department, potentially beneficial for drug discovery prorammes. The Committee recognises the strong commitment of the NCMM leadership and group leaders to align their research activities with a translational vision and establish significant collaborative links with local hospitals. However, the centre is falling short in some other areas such as slow progress in converting promising findings to high profile outputs by some research groups and the lack of prestigious large European awards in particular ERC grants despite the excellent track record of the recruited group leaders.

Translational research is a slow process, the centre however achieved noticeable milestones. The committee is supportive of the NCMM translational vision. The NCMM has enormous potential to successfully achieve its translational objectives for the benefit of patients. The Committee would like to issue strategic recommendations aimed at improving translational research activities in NCMM:

1. The Committee highly recommends to expand the recruitment strategy to attract clinician scientists to work under a single roof with the group leaders at NCMM. The centre could be designed to bring together a multidisciplinary team of clinicians and scientists in order to effectively translate basic scientific discoveries into potential therapies/benefits for patients.
2. Establishing a clear theme based research structure within the NCMM to facilitate fast and effective integration of the group leaders into the translational research activities of the centre and increase internal and cross institutional collaborations.
3. The centre has been successful in attracting high caliber group leaders. However, the Committee noticed the lack of ERC funding suggesting the need to establish a mentoring scheme to guide the group leaders through career thinking, ERC funding and publications strategy. We recommend close intercations between group leaders and Norvegian and/European ERC holders to learn from their journey in securing such prestigious awards.
4. The Committee expressed some concerns regarding the current NCMM Director rotating out at the end of June 2018 without clear transition planning while waiting for the new Centre Director to join NCMM. The newly recruited Assistant Director would need significant help and assistance during the transition phase to facilitate his adaptation to the research and managerial structure at NCMM, UiO and Norway in general.
5. Importance of establishing a strategy for retention of successful talent. This strategy would also help sustain specialised technology platforms established by group leaders rotating out from NCMM. Consolidating the current research focus at NCMM instead of starting new research areas could help sustain the highly valuable platforms.

2.2 The research groups

Group 1: Signalling networks in health and disease

i. Brief description of the research group's strategy and targets

The group has concentrated its studies on signal networks especially on those connected to immune regulation. During the years the group has established various new technological platforms necessary for drug development in an academic environment and drug sensitivity screening for clinical purposes. Tasken demonstrated great scientific leadeship skills evidenced by the high number of publications, patents, start up companies and technology platforms implemented at NCMM. The PI assembled a large research group including 1 group leader, 2 senior scientists, 12 postdocs, 2 students and an admin officer. He established extensive collaborative links with academic and industry groups. A key element in their strategy has been wide collaborative networks both nationally and internationally.

ii. Scientific quality of research

The scientific productivity reported is a result of the work of the group leader who is a central figure in many high level scientific activities in Norway and abroad, as well as the researchers of the group being at various levels in their scientific career. The group publishes more than 10 papers a year as an indication of very good productivity. In general, the publications have appeared in respected, peer-reviewed international journals mainly in the fields of oncology, immunology and cell biology.

iii. Translation between basic medical research and clinical practice

The group has practiced extensive and fruitful collaborations with several clinicians belonging to several clinical specialities such as pathology, oncology, surgery and hematology. The group leader himself has had an adjunct appointment at the Department of Infectious Diseases (2011-17). This collaboration has proceeded to several observational studies and five intervention trials (in HIV and Tuberculosis). Moreover, in oncology he has participated to two clinical observational studies, a registry study and currently the group is involved in a randomized, placebo-controlled, multi-center trial. The cancer drug sensitivity screening is also very active. Thus, the translational activity has been outstanding.

iv. Future plans

The group leader is stepping down 2018 from the director position at NCMM, because the rotation concerns also him even at the director position. He will be the head of the Institute for Cancer Research, where the research will continue. His group will also move to this new institute. In general, the work will continue around the same topics as at NCMM with some new switches towards more cancer related aspects. The plans are sound and are expected to produce important scientific contributions.

v. Recommendations to the group

As the group leaves, the panel recommend that strong links are maintained with the NCMM investigators. A clear strategy should be put in place to sustain expert knowledge and technology platforms developed by this group at NCMM.

Overall rating: *Excellent*

Group 2: Integral membrane proteins

i. Brief description of the research group's strategy and targets

The group leader has excellent track record in structural biology having worked over 20 years as faculty and director of the Biomembrane Systems Centre at the University of California, Irvine. He continues to provide his extensive scientific leadership by running several structural biology research programmes at NCMM. Luecke is in the process of moving his team from UC Irvine. He already secured both internal and external competitive funding (e.g. Research Council of Norway, Worldwide Cancer Research) to support 5 new postdoctoral positions in his team. Recruitment of the postdocs is ongoing. He also has an ambitious plan to apply for an ERC Advanced Award for August 2018 deadline. Luecke has established strong collaborative links with international research groups. The EC would have liked to see collaborations with other group leaders at NCMM and local institutions.

ii. Scientific quality of research

The group leader's research priority is based on structure-based drug discovery with focus on cancer targets. He is planning to run 7 major projects on Helicobacter pylori, p53, Annexins, vitamin C transporters, S100A4 (metastatsin), channelrhodopsins, and RNA editing. These programmes are of international caliber as evidence by the NIH funding and high quality publications (e.g. Nature and Nature Communications). These scientific projects are supported by state-of-the art multidisciplinary platforms such as Cryo EM, crystallography, nuclear magnetic resonance, and computational techniques. Luecke presented some exciting research programmes at the EC site visit. However, the Committee felt that the PI would benefit from the focus on certain acitivities that could help with fast etsablishment at NCMM and urgent outputs.

iii. Translation between basic medical research and clinical practice

The group leader's research has potential to generate significant translational impact. His research efforts in particular Helicobacter pylori and P53 reactivation projects could lead to interesting targets and proof-of-concepts in animal models. His work has a wider impact, with potential IP generation, spin-off companies and commercialization. The group leaderis still establishing his team at NCMM and we would encourage establishment of collaborative efforts with groups leadersat NCMM and local clinicians/scientists to translate his scientific discoveries.

iv. Future plans

A key platform for group leader's research efforts is the establishment of cryo EM facility. Plans are already in place to allow such state-of-the art facility to emerge. This platform will be beneficial for other research groups at NCMM. He provided sound and clear plans on how to proceed with his scientific activities at NCMM and bring his valuable expertise to the Centre and at the national level. Plans are also in place to recruit postdocs/technicians and PhD students to join his team. He also provided extensive existing/future collaborative links to allow him attract further funds through Horizon 2020 but also apply for the prestigious ERC Advanced Award, which the panel believes would be a great added value to his track record. Structured and coordinated strategy for outreach, public engagement and dissemination across the research groups was lacking.

v. Recommendations

The group leader is in a transition period. He is currently moving his lab from his previous Centre in California. The EC would like to highlight the exciting and synergistic nature of the planned research programmes. However, the Committee would like to highlight that the ambitious number of the programmes suggesting lack of focus. This could help prevent further gaps in the outputs.

Overall rating: *N/A (Group leader started his new job at NCMM in the last 6 months)*

Group 3: Membrane transport

i. Brief description of the research group's strategy and targets

The group leader, a Danish structural biologist, was recruited to a group leader position at NCMM in 2010 with an excellent track-record in membrane protein research from his postdoctoral research at Aarhus University. In addition to his post in NCMM he has a 20% research position at the Institute for Experimental Medical Research, Oslo University Hospital. He will complete his second period of research at NCMM in 2019 at which point he will fully transition to a Professorship at the Technical University of Denmark. Currently the group leader'sportfolio of external funding includes grants from the Research Council of Norway and NordForsk. His group comprises three postdocs, technician and one PhD student. The group leader's expertise is firmly rooted in biotechnological development and biophysical characterisation of proteins and he has generously contributed this expertise in multiple collaborations, both in-house and internationally. His own biological research theme has remained focused on membrane proteins.

ii. Scientific quality of research

The group leader's current research on membrane proteins is divided into two projects: (i) structure-function analyses of MARCH-E3 ligases, and (ii) magnesium transport mechanism in microbes and plants. The MARCH-E3 ligase project appears to be a new line of research in the laboratory. As yet there are no publications, however, the group has succeeded in purifying full length MARCH5. Presumably they are well placed to take the project forward although a specific research plan was not outlined in the paperwork provided and he did not focus his presentation on this project during the site visit. In 2016 hepublished (in eLife) a major structure-function study from his laboratory on the magnesium transporter A (MgtA). The second project builds on this study, and is focused on a biological system for which he has international recognition and an extensive, global, network of collaborations. In his presentation during the site visit heoutlined a series of interlinked aims that are well designed to capitalise on his expertise in the MgtA system. Overall during the last five years the group leader has maintained a steady flow of publications in peer reviewed journals (some 18 in total). Most of these publications are in well-respected specialist journals. Given that this is an established and well-funded group the paucity of senior, or co-corresponding authorships in major journals is somewhat disappointing. However, heis to be congratulated on his success in setting up an effective structural biology pipeline during his time in NCMM. This has doubtless been challenging because he has been the only group leader in structural biology at NCMM.

iii. Translation between basic medical research and clinical practice

The group leaderhas applied his expertise in structural biology, protein engineering and enzyme kinetics to make important contributions to a range of translational projects in collaborators' laboratories, for example, drug development of PARP inhibitors and biophysical characterization of protease inhibitors. The loss of this expertise, resulting from his move to the Technical University of Denmark, has the risk of negatively impacting on the research landscape within the NCMM as well as the wider Oslo environment.

iv. Future plans

Not applicable in the context of the NCMM review.

v. Recommendations

The Evaluation Committee congratulates the group leader on his Professorship at the Technical University of Denmark and recommends that he keeps the focus on the aims outlined in his presentation to capitalise on his front rank position in structure-function research on the MgtA system.

Overall rating: Very Good

Group 4: Stem cells

i. Brief description of the research group's strategy and targets

The group leader was appointed to a group leadership at NCMM in 2012 having gained considerable expertise in working with stem cells at the Whitehead Institute during her postdoctoral training in the US. She is now mid-way through her second period as a NCMM P.I. In addition to her post in NCMM she has a 20% research position at the Department of Haematology, Oslo University Hospital. This affiliation with a Haematology department is very appropriate given her research focus on hematopoetic stem cells and myeloid blood disorders. The group leader has been very successful in winning external, peer-reviewed funding. This funding has included grants from the Norwegian Cancer Society, the Research Council of Norway (RCN), and RCN Young Talent grant for which the group leader was the lead P.I. as well as substantial funding, through a number of routes, from the UiO. The group currently comprises four postdocs, two Erasmus students are scheduled to arrive in August 2018.

ii. Scientific quality of research

The group leader is pursuing three projects within her research theme of chromatin dynamics during human development: (i) the links between epigenetic reprogramming and metabolism in mesoderm and blood cell differentiation, (ii) the role of lamin proteins during normal and malignant hematopoiesis, and (iii) the contribution of mitochondrial biogenesis in the directed differentiation of stem cells. She collaborates in-house with Prof. Tasken as well as with NCMM Associate Investigators, and with members of the Department of Haematology. She also has collaborations with colleagues in the Ludwig Institute, Brussels and the University of Freiburg. She has published five papers in peer reviewed journals over the last five years. Of these papers two are senior authorships in specialist journals and one is a review joint-authored with her doctoral supervisor, a current collaborator with complementary interests and methodologies. This level of output is potentially a cause for concern, the group leader does need publications to establish an international reputation in her field. She has, however, work approaching publication from each of her three project areas, namely, one manuscript is in revision and two in preparation. Of these results her study on the effect of a reduction of OPA1 on the expression of key TFs during neural differentionation was a highlight of her presentation.

iii. Translation between basic medical research and clinical practice

The group leader'scollaboration with the Tasken group, as well as her links with the Department of Haematology, potentially place her in a good position to, in due course, see her research into stem cell biology (in particular the molecular causes of myeloid blood disorders) impact on clinical practice.

iv. Future plans

The group leader's future plans are, broadly, to continue work in her three current project areas. Publication of her work to date on these projects is an important short-term aim. In the medium to longer term it is important that she is nimble in prioritising within her rather broad research portfolio to exploit any opportunities she has to follow up major results.

v. Recommendations

The group leader is now at a point where she has established her laboratory and generated data in a number of studies. The Evaluation Committee note that it is crucial that she capitalises on her work to date with publications and recommend that she maintains a clear focus in her future studies on OPA1 and STAT2.

Overall rating: Very Good/Good

Group 5: Computational biology and gene regulation

i. Brief description of the research group's strategy and targets

The group leader joined NCMM from Wasserman lab in 2016. He achieved several milestones in a very short time: established a small but very productive research team (2 postdocs, 1 PhD student, 1 MSc student), generated up to 11 outputs from his current own group during the last 2 years, established collaborative links locally with the Department of Cancer Genetics at Oslo University Hospital which demonstrate his intend to link his basic discoveries/tools to clinical and translational path. His research programmes are a continuation of his past projects but he is successfully bringing in novel and interesting research ideas (e.g. micro-RNA expression and dysregulation in cancer). He provided clear plans and strategy to secure external funding through prestigious fellowships (e.g. ERC). The group leader has been successful in establishing national and internation collaborations very relevent for tralaslational research.

ii. Scientific quality of research

The main research focus of this group is to study how transcription factors and microRNAs regulate gene expression and its dysregulation in cancers. Based on the info provided by the NCMM Evaluation documents and published work by the group, the group leader is undertaking excellent quality research as evidenced by his high quality outputs. He is aiming at developing new computational methods and tools for (1) improving the prediction of TF binding sites; (2) prioritizing somatic mutations dysregulating microRNAs in cancer and (3) understanding the interplay between TF binding and DNA methylation in cancers. Some of his exciting findings were generated through national collaborations; e.g. collaborative links with Drs. Vessela Kristensen (OUH) and Toni Hurtado (NCMM) to identify methylated regions (CpGs) that show reproducibly significant association with gene expression in three independent breast cancer cohorts (Fleischer et al., Nature Communications, 2017). International collaborations are also in place: e.g. the publication of the ReMap [collaborative effort with Dr. Ballester's lab (Marseille, France)] and JASPAR [in collaborations with 6 groups from Canada, France, UK, Denmark, and Belgium]. Anthony gave a compiling presenatation at the site visit demsonrating great vision and leadership.

iii. Translation between basic medical research and clinical practice

The translational path of the work offered by the group leader is not obvious at this stage. However, the committee is confident that his computational tools can form an excellent horizontal platform (research theme) to complement potential disease based research themes. This could be an excellent tool for experimental medicine. He is currently nicely applying this concept through the established collaboration with the groups at OUH.

iv. Future plans

The future plans and strategy are clear and sound. The group leader's ability to successfully run a small research group to achieve 11 high quality outputs within 2 years since moving from Canada provide further evidence that his career will progress on a trajectory of high caliber. He can definitely be competitive for prestigious awards (e.g. ERC).

Note the lack of structured and coordinated strategy for outreach, public engagement and dissemination activities across the research grouping.

v. Recommendations

Higly recommend to seek advise on how to secure an ERC award. Interactions with ERC hloders would help achieve this milestone. Overall, the achievements so far are excellent and future plans are very good.

Overall rating: *Excellent/Very Good*

Group 6: Cell cycle regulations

i. Brief description of the research group's strategy and targets

This research group was originally established in 2011 within the Biotechnology Centre. Currently the team is composed of the group leader, two researchers, one post-doc, a PhD student and a laboratory engineer. They are also hosting one Erasmus student. Since her appointment the group leader secured significant external funds: 2 awards from the Research Council of Norway (Frimedbio 2011 & Young Research Talents 2015); the group leader is also a holder of an grant from the Cancer Society (2014). The group leader has established several collaborations, both nationally and internationally (e.g. the Oslo University Hospital).

ii. Scientific quality of research

The group leader was successfully evaluated in 2016 and her appointment was renewed for 5 years. The group' main research focus is to elucidate imporant fundamental questions regarding phosphatase activity during cell cycle progression, using the fission yeast Schizosaccharomyces pombe as a model organism. So far, the strategic emphasis has mainly been on basic research without any translational aspects. The EC concluded that the work performed by this group is of high quality but also expressed some concerns in relation to the slow productivity reflected by low number of research outputs. Only two original papers (Plos One and Current Biology) have emerged from this group during the past five years. In addition, one review and one co-authored paper including the group leader have been published. The group leader gave a nice and well structured presentation during the EC site visit.

iii. Translation between basic medical research and clinical practice

This is missing and is partly dependent on the past and current research focus and the fact the group was established as a part of the Biotechnology Centre of Oslo 2011 without any requirement for translational work. However, the environment provides the group with excellent possibilities for extending the interactions to translational direction as well. The group has lately taken more active approach to extend its interactions at NCMM (Structural Biology and Chromatin group) as well as at OUH and inernationally. Because the project is also extending to autophagy, the collaborative presence of Per Segler at NCMM as a pioneer of that field is appreciated.

iv. Future plans

The group will complete the project 'Role of PP2A phosphatase in G1 arrest as well as Identification and characterization of mitotic phosphatases' and has ambitious research plans regarding further characterization of PP2A phosphatases in mitotic exit and cell cycle transition. Importantly, it will put more effort to extend interactions within the Institute, Oslo and also internationally. The panel considers this extremely important, because currently the group seems to have been somewhat isolated. The group leaders now on the second term (started 2017) at NCMM and aims at finding a new position after that. She tries to keep the group size at least at the current level and will apply for grants from several sources including ERC.

v. Recommendations

It will be essential for the group to establish/continue collaborations with the experts complementing the expertise of the group. Moreover, the effort should be put to increase the productivity both qualitatively and quantitatively to be competitive in ERC or comparable international calls.

Overall rating: Good/Very Good

Group 7: Chemical neuroscience

i. Brief description of the research group's strategy and targets

The group seeks to elucidate the underlying mechanisms involved in the etiology of pharmacoresistant epilepsies and neuropsychiatric disorders by probing the function of novel disease-associated gene variants. The group comprises 1 group leader, 3 postdocs, 1 PhD student, 1 MSc student, 1 Erasmus intern, and 3 technicians. The group leader joined the Biotechnology Centre of Oslo (now part of NCMM) at the end of 2014. This suggest a good international recruitment. The group has obtained approximately 30 million NOK in research and infrastructure funding. The EC consider this is very satisfactory. It is difficult to assess the leadership of the group leader but from her CV, she seems capable of setting the direction of the research. However, the current scientific productivity suggest that more emphasis should be put on writing up the work for publications. The self-assessment describes several external collaborations but few center collaborations if any. No documented science is presented from the collaborations.

ii. Scientific quality of research

The reported scientific production as expressed in number of peer review papers is low from the group leader. The last published paper came out in 2015. Two papers are in preparation. This is in part explained by a significant delayed in getting approvals to do experiment on fish and establish the wet lab. The impact of past published science was good and papers came out in very good to excellent journals. It is recommended to have an increased focus on visibility in the international research community and more effort to give invited talks at international meetings

iii. Translation between basic medical research and clinical practice

The group combines patient data, human genetics, bioinformatics, animal models, drug screening, mechanism-of-action studies and parallel functional validation in rodent and cell-based models into one highly integrated research network. This suggest that translation collaboration has been established. Also, a patent exists and dialogs with industry are in progress. Overall the zebrafish model holds potentials for a very strong collaboration with clinical practice and biomedical industries.

iv. Future plans

One of the main hypothesis is that the genetic mutations themselves, together with secondarily induced changes of the transcriptome, morphology, neuronal excitability and neuronal network behavior, lead to perturbations in normal brain rhythms resulting in neuronal dysfunction. The aim is to characterize the mechanisms of the different mutations in a concerted approach using a variety of model systems. The group propose to use the zebrafish to address one major challenge in clinical genetics to date - the identification of disease modifier genes.

v. Recommendations

Overall the plans are ambitious but more emphasis should be on research with direct beneft to patients by establishing collaborations with clinicians. Also, it is strongly advised to focus the future research on fewer questions and increase focus on scientific output.

***Overall rating*:** very good/Good

Group 8: Structural biology and chromatin

i. Brief description of the research group's strategy and targets

The group leader was recruited to a group leader position at BiO in 2016 and is affiliated (20% associate professor) with the Chemical Life Section of the Department of Chemistry, UiO. She is a young Croatian structural biologist with a track record of high impact research (including 1st and co-1st authorships in Nature and Science respectively) from her postdoctoral research training in the US. She has used aspects of her postdoctoral studies on histone H3 variant CENP-A (a necessary component for centromere formation) as a launch pad for her independent programme of work on structural determinants of centromere assembly and function. The group leader has recruited a team of one researcher, one postdoc, and an engineer. A PhD student and ERASMUS intern are scheduled to join the group over the next 12 months. She has already played a leading role in establishing a new technology for life science research in Norway, HDX-MS; she headed a UiO infrastructure grant to purchase the requisite state-of-the-art hydrogen-deuterium exchange mass spectrometer and has the necessary experience in the use of this powerful technique for the analysis of protein dynamics.

ii. Scientific quality of research

Since taking up her first independent P.I. post, some two years ago, she has established her laboratory, including setting up facilities for HDX-MS that are new to NCMM and unique within Norway. She has launched structure-function projects with three centromere associated themes focused on (i) CENP-A nucleosomes in centromere formation and maintenance, (ii) Shugoshin- centromere interaction in recruitment of effector proteins (e.g. the mitotic kinase Aurora B), and (iii) activation of Aurora B. She has won external peer-reviewed funding, a Research Council of Norway Young Talent grant to study the "Molecular basis for genomic stability through Shuogoshins". Within NCMM she has formed a very effective collaboration (exchange of expertise on methods) with the Lopez-Aviles group. This in-house collaboration in particular helped initiate the Shuogoshin project. The group leader also presents substantial evidence of integration within the wider UiO research community as well as a growing list of international collaborations. She has received invitations to speak/lead discussion at major international meetings in the centromere/kinetochore field (an EMBO workshop and Gordon Research Conference), these provide very encouraging start from which to build her international reputation as an independent P.I. The next key step will be success in generating publications from her own laboratory. The committee were therefore very encouraged to see from her presentation that she already has exciting results in hand.

iii. Translation between basic medical research and clinical practice

The group leader was recruited to the BiO without any expectation of there being major translational components in her research portfolio. That said, her basic research questions are focused in areas of fundamental biology that are of major biomedical relevance and, once generated, insights from her programme will be of considerable interest for translation through appropriate collaborations. She shows an excellent grasp of the potential relevance of her research, which is fully appropriate for this stage in the development of her laboratory.

iv. Future plans

The group leader presents an ambitious, but carefully thought through and well-structured, plan for the next five years. The three projects are each a continuation of work already on-going in her laboratory and are unified by use of common methodologies and the overarching theme of centromere biology. she should be well positioned to apply for an ERC consolidator grant in 2019, however, these are very competitive awards and senior colleagues at NCMM and UiO should provide mentoring and support to ensure that she has the maximal chance of success. In particular, she will almost certainly need to provide evidence of publication as a senior author to be competitive for a consolidator grant. She is working in a very competitive and fast-moving field. It is a very reasonable strategy to have a number of 'irons in the fire', however, now with some results already in hand she will need to ensure that she prioritises very effectively to nail the publication(s).

v. Recommendations

The Evaluation Committee recommends that she maintains a well structured approach to her portfolio of projects in particular prioritising work that appears most timely for high impact publication. The Committee also recommends that she actively seeks out mentoring and advice to maximise her chances of successfully winning an ERC consolidator grant.

Overall rating: Very Good/Excellent

Group 9: bionanotechnology and membrane systems

i. Brief description of the research group's strategy and targets

The group joined NCMM in September 2016, initially as part of the Biotechnology Centre of Oslo and has a focus on developing and applying technologies to manipulate biomatter with the aim to understand the role of materials properties in fundamental biological processes and disease.
The group comprises 1 group leader, 3 PhD students and a visiting student. Furthermore, the group is in the process of recruiting 3 more members in 2018. The group has raised 20 M NOK from external funding.
The group is very international. Also, the group leader has demonstrated to be a productive scientist. The group has obtained approximately 20 million NOK in external research funding. This is satisfactory. The structured self-assessment demonstrate clear objectives with research topics divided into three sub themes and a well described recruitment strategy suggest all together a good and continues research production. The scientific leadership of the group leader is very appropriate to head the research.
The self-assessment describes several well thought-out center and external collaborations in Norway and abroad.

ii. Scientific quality of research

The reported scientific production as expressed in number of peer review papers is very good. It is still early days with respect to assess the impact of the research. High degree of originality and a publication profile with a high degree of international publications in good journals. Very positive overall impression of the research group.
From the self-assessment it does not appear that members of the group are sufficiently visible in the international research community and more effort can be done to get invitations to give talks at international meetings.

iii. Translation between basic medical research and clinical practice

The research projects in the group rely on combining new technology with biological material and require strong interdisciplinary thinking. The group is at an early stage of its development but seems to progress well with respect to ensure translational impact.

iv. Future plans

The research focus on developing and applying technologies to manipulate biological matter. This will be continued in the future. The research themes are innovative; and well-integrated into NCMM. ERC-application is already being considered and preliminary data and publications suggest the group will deliver interesting research, also in the next five years. Many projects are high risk/high gain.
Overall a very ambitious and well center integrated research group.

v. Recommendations

Overall achievements are very good and future plans are excellent. The EC recommend to consolidate the outcome of the current projects by publishing the excisting findings.

Overall rating: *Very good/excellent*

2.3 Attachments

Mandate for the evaluation

Short biography of the evaluation committee members

Evaluation of *Centre for Molecular Medicine Norway (NCMM)*

Framework for the evaluation and Mandate

1. Framework for the evaluation

1.1 Introduction

The Centre for Molecular Medicine Norway (NCMM) is a national research centre that serves as a green-house for young, talented scientists within the fields of molecular medicine, biotechnology and translational research. The overall objective of NCMM is to conduct cutting-edge research in molecular medicine and facilitate translation of discoveries in basic medical research into clinical practice. NCMM focuses particularly on disease mechanisms where Norway has clear strengths, develops and adapts technologies for personalized medical applications and has unravelled new diagnostic methods and drug targets. The centre has made several new strategic recruitments in recent years, including recruitment of an assistant Director, establishment of a bioinformatics and a bio-nanotechnology research group, and is also in the process of recruiting two new research groups within precision medicine and systems medicine. NCMM aims to stay at the forefront, both regarding cutting-edge technology and research environments and the centre is focusing on interdisciplinary research.

The centre is hosted by the University of Oslo and is located at Oslo Science Park. NCMM is a prominent element in the University Life Science strategy and will move into the new Life Science building that is planned to be finished around 2024. The centre was established in 2008 as a part of a Nordic EMBL Partnership.

EMBL (European Molecular Biology Laboratory) is the leading European institution in molecular life sciences. The idea to establish Nordic EMBL-affiliated Centres for Molecular Medicine was generated by EMBL Council delegates from the Nordic countries, and strongly supported by Nordic Research Councils. The purpose of this agreement is to facilitate scientific collaboration and joining forces by drawing on each other's strengths.

The Research Council of Norway (RCN) based the selection of a national centre on an open competition for Nordic Centre of Excellence within molecular medicine, where the three Norwegian finalists formed the core of the national centre, and was called Centre for Molecular Medicine Norway, NCMM http://www.med.uio.no/ncmm/

January 2nd 2017, the merger between NCMM and the Biotechnology Centre of Oslo formally came into effect. The new NCMM consists of two departments: NCMM translational research (former NCMM) and NCMM Biotechnology (former BIO). The centre now comprises of 11 research groups, with internationally recruited young scientists as group leaders.

The NCMM is a joint venture between the University of Oslo (hosting institution), the Research Council of Norway and South-Eastern Norway Regional Health Authority (Helse Sør-Øst RHF). The centre has been partly financed by the RCN since 2008. The second five-year period, with a total allocation of NOK 65,000,000 from RCN, will end 2019.

The centre is headed by a director who reports to a board. The NCMM Board is responsible for initiating NCMM activities and, in collaboration with the Director, for ensuring the centre's overall coordination and progress and to facilitate translational research in Norway.

In addition, the NCMM has a Scientific Advisory Board (SAB) with a mandate to investigate the scientific performance and to advise on the further development of NCMM.

1.2 Background for the evaluation

In the contract between the RCN, the South-Eastern Norway Regional Health Authority and the University of Oslo, it is specified that funding for a five-year period is based on a satisfactory evaluation of the centre performed every five years. NCMM was evaluated after its first five-year period in 2013.

1.3 Purpose of the evaluation

The purpose of this evaluation is to assess the scientific quality of the research conducted in the centre, and to assess the strategic role and development of the centre in the context of being a national research centre within molecular medicine and translational research in Norway. Furthermore, the evaluation should provide recommendations for further development of the centre.

The evaluation will be used as input to determine the future funding of the centre.

1.3 Methods

An international Evaluation Committee consisting of 3-4 experts within the research areas of the centre will be appointed. The Evaluation Committee should base its evaluation on the self-assessments and fact sheets provided by NCMM, as well as a *site visit* to the centre. The self-assessments will include information about NCMM' organization and resources, status, development and future plans, and CVs and publication lists for the scientific staff.

The Evaluation Committee is requested to write a report of findings and recommendations for improvements aimed at research groups, the centre and the RCN.

1.4 Background documents for the evaluation

- A self-evaluation and Fact sheet from the centre, as well as self-evaluations and CVs from the individual research groups, according to a standardized outline
- An assessment from the University of Oslo and South-Eastern Norway Regional Health Authority
- The contract between the RCN, University of Oslo and the South-Eastern Norway Regional Health Authority,
- The project description "Plan for the establishment of Centre for molecular Medicine Norway – Nordic EMBL Partnership", revised March 2008.
- The evaluation of NCMM from 2013
- NCMM strategy and Milestones for the five-year period 2015-19

Supplementary information:

- The Nordic EMBL Partnership Agreement (2013-2023)

- The centre's annual reports from 2013-2016, 2017 will be sent when available
- Reports from NCMM Scientific Advisory Board from 2014-2018

The Evaluation Committee may request further information as needed. In addition to the written material the Evaluation Committee is expected to base its findings on a *site visit* to the NCMM.

2. Mandate for the Evaluation Committee

The centre shall be evaluated both with respect to its achievements so far and with respect to its plans for the next five-year period.

The four main criteria for the evaluation are:

- *the scientific quality*
- *the centre organization*
- *translation between basic medical research and clinical practice*
- *the strategy and the plans for the next five-year period*

The committee shall use one of five grades: weak – fair – good – very good – excellent. The research groups shall be evaluated based on scientific quality of their research, their future plans and translational research, while the centre will be evaluated according to the four criteria as a whole.

The evaluation of the centre shall emphasize the following:

Scientific quality of research
The evaluation is expected to assess to what extent:

- the centre groups conduct research within molecular medicine or translational research at a high level in an international context (including contributions to their field, scientific production and impact)
- the centre groups are actively and successfully taking part in national and international research collaborations and networks
- there is a successful two-way collaboration between basic and clinical research environments

Organization and strategic role of the centre
The evaluation is expected to assess to what extent:

- the centre has taken into consideration the recommendations from the previous evaluation (2013)
- the centre utilizes the Nordic EMBL partnership in their translational research (infrastructure, collaboration and training activities provided by each of the partners)
- the activities and organization of the centre contribute to the aim of being a national and visible resource for translational research
- scientific leadership is being exercised in an appropriate way (both at centre and group level)

- the centre has been able to recruit outstanding younger scientists nationally and from abroad that promotes gender balance
- the centre has contributed to recruitments to permanent academic positions
- the centre has enhanced collaboration with industry and biotechnology companies
- the centre is supported by the host institution
- the funding is balanced between core funding and external projects
- the centre has a strategy for submitting proposals to Horizon 2020 and other international funding schemes

Translation between basic medical research and clinical practice
The evaluation is expected to assess to what extent:

- the research has had impact on translational medicine
- the centre's research has contributed to added value for future patient benefit
- there is a successful two-way collaboration between basic and clinical research environments on a centre level
- the South-Eastern Norway Regional Health Authority is actively involved in the process of adding value to the centre's research beyond scientific production

Research plans for the next five-year period:
The evaluation should assess whether the centre has satisfactory plans for future development, including:

- scientific plans for providing science with high scientific impact and promoting the translation of basic medical research into clinical practice
- recruitment and training
- collaboration nationally/internationally/with EMBL-partners (including basic and clinical collaboration and collaboration with industry)
- strategies for innovative findings of commercial interest
- a strategy for its national role as a resource centre and for international visibility
- a reasonable balance between core funding and external projects
- a strategy for submitting proposals to Horizon 2020 and other international funding schemes

Short biography of the Evaluation Committee members

Mimoun Azzouz
Department of Neuroscience, Sheffield Institute for Translational Neuroscience
Sheffield, England
Professor Azzouz obtained a Master in Neuroscience with 1st Class Honours from the University of Marseille in 1994 and a PhD in Neuropharmacology at the University Louis Pasteur in Strasbourg. He then worked as postdoctoral scientist at the Gene Therapy Centre in Lausanne, Switzerland from 1997 to 2000. He was recruited in 2000 by Oxford BioMedica plc as Senior Scientist then appointed as Director of Neurobiology in 2003.

In 2006, he was invited to join the University of Sheffield and was appointed to the Chair of Translational Neuroscience. He is currently Deputy Head of Department, Research & Innovation.

His track record of translational research productivity is characterised by publications in top ranking scientific journals, including Nature, Nature Medicine, among others. He has been successful in attracting an array of scientific awards and funding from prestigious funding bodies. He recently won the prestigious ERC Advanced Investigator (2011) and ERC PoC (2017) Awards. These awards are top level EU *ad hominem* award acknowledging his pre-eminence in European biomedical research.

He has been a key academic partner in the successful fundraising of £18M necessary to build the new Sheffield Institute for Translational Neuroscience (SITraN). He has been advisor for pharmaceutical companies and academic institutions. He is/was a member of scientific Panels/Boards for various funding bodies such as the Medical Research Council (MRC DPFS Panel, UK), the French Muscular Dystrophy Association (AFM), the Health Research Board (HRB) of Ireland and the Neuroscience Panel, Germany. He currently serves as member SAB for Maddi Foundation, CureSP47 and Telocyte USA. He was elected as Board member of the British Society of Gene and Cell Therapy Society in 2016.

Sirpa Jalkanen
Institute of Biomedicine, University of Turku
Turku, Finland
Academician Sirpa Jalkanen is Academy Professor of Immunology at the Medical Faculty, University of Turku, Finland.

She has published more than 300 peer-reviewed papers and has more than 10 patents in the fields of inflammation and cancer. She is a member of EMBO and Academia Europae and has received several prizes/honors such as Datta Medal, Anders Jahre, Äyräpää, 2nd European Women Innovator and the Finnish Pharma Industry Prizes.

She has also several positions of trust. She is a member/vice chair/chair of the boards in three big Finnish Foundations financing research. In addition, she is a member of the board of Orion, the biggest pharmaceutical company in Finland and has been a co-founder of two biotech companies.

E. Yvonne Jones
Wellcome Centre for Human Genetics, University of Oxford
Oxford, England
Professor Jones read physics at Jesus College, Oxford, and for her doctorate shifted her focus to biology, studying in the Laboratory of Molecular Biophysics. During her postdoctoral training she learnt protein crystallography and in 1989 reported the three-dimensional structure of tumour necrosis factor (TNF), a medically important cell signalling molecule involved in inflammation.

In 1991 she started her research group at the University of Oxford as a Royal Society University Research Fellow. In 1999 she moved within the University to co-found the Division of Structural Biology (STRUBI) at the Wellcome Centre for Human Genetics (WHG) in the Nuffield Department of Clinical Medicine. From 2001-2011 she was a Cancer Research UK Principal Research Fellow. She is currently co-Head of STRUBI and interim Director of the WHG.

Within her own research group (funded by Cancer Research UK and the UK Medical Research Council) she investigates the molecular mechanisms by which cells signal to each other in the human body, an abiding interest first sparked by her studies on TNF. Professor Jones' work, built upon strong links with clinically related groups, has provided fundamental insights into signalling systems of importance for cellular immunology, developmental biology and cancer. She has published some 250 research papers and reviews including senior author papers in Nature, Science and Cell.

She is/was a member of scientific Panels/Boards for various funding bodies in the UK and Europe and currently serves on Scientific Advisory Boards for academic Institutes/Consortia in the UK, France and Australia. She is a Fellow of the Royal Society and of the Academy of Medical Sciences as well as a Member of EMBO.

Thomas Sinkjær
Lundbeckfonden
Copenhagen, Denmark

TS holds M.Sc.E.E. and Ph.D. degrees from Aalborg University and a Dr. Med. Sci. degree from University of Copenhagen, Denmark.

TS's research interests are in the basic and clinical aspects of human sensory-motor interaction and the development of new neuro-diagnostic and therapeutic technologies. He has contributed to 186 articles in international recognized peer-reviewed scientific journals and over 400 conference papers. He has written two science books. The books and several papers are frequently cited. For a full list of publications including citations see WoS or Google Scholar:
https://scholar.google.nl/citations?hl=en&user=QnNKuWcAAAAJ&pagesize=100&view_op=list_works

TS has received a number of international awards for his research, including the prestigious Villum Kann Rasmussen Annual Award in Science and Technology (the highest personal research award in Denmark), and the International Steven Hoogendijk Award in Medical Engineering, among others.

TS has a great interest and experiences in promoting curiosity-driven research, in developing instruments to increase excellence in research and academic leadership, and to increase the societal impact of research.

He is involved in evaluating international and national research funding schemes, research institutions, and research management performance and in developing research and innovation policy recommendations. TS holds positions of trust in both Danish and foreign research organizations, including the Norwegian, the Flemish Research Councils, NSF and the European Research Council. He serves on the boards of several knowledge companies and pricing committees and is the co-founder of four technology companies.

TS is a member of several professional organizations, including The Royal Danish Academy of Sciences and Letters and The Danish Academy of Technical Sciences. TS has been awarded the Royal Order of Chivalry; Knight of the Order of Dannebrog (Ridder af Dannebrog) Denmark

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NCMM - self evaluation

We refer to the letter of 8.9.2022 where NCMM is asked to present a self-evaluation in relation to renewal of the EMBL Partnership Agreement, as well as the upcoming change in NCMMs financial situation.

Attached is the complete self-evaluation, including signed assessments from the NCMM Board, and from NCMM's Scientific Advisory Board.

Please do not hesitate to contact us if anything is unclear.

Sincerely yours

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Self-evaluation – NCMM

Centre for Molecular Medicine Norway (NCMM) is a national research Centre that aims to recruit young, talented researchers within the fields of molecular medicine and biotechnology. The overall objective of NCMM is to conduct cutting-edge research in molecular medicine with the ultimate aim to translate discoveries in basic medical research into clinical practice. The Centre was established in 2008 as a national partnership institution with the European Molecular Biology Laboratory (EMBL). NCMM together with similar centers in Finland, Sweden and Denmark, constitute the Nordic EMBL Partnership for Molecular Medicine. In 2022, the Partnership agreement will be extended for a ten-year period (2023-2032).

Since its establishment, NCMM has been funded by the University of Oslo (host), the Norwegian Research Council (RCN), and the South-Eastern Norway Regional Health Authority (HSØ). NCMM is currently in its third five-year funding period (2020-2024), following a successful external evaluation in 2018. According to RCN policy, the Research Council will not be able to continue funding NCMM after the third five-year period ends in 2024. This will reduce the core centre funding by 65 M NOK in the period 2025-2029 if not compensated by other funding sources.

Description of how NCMM has implemented the recommendations from the 2018 evaluation

1.1. Expanding the recruitment strategy to attract clinician scientists

To enhance the clinical collaboration opportunities, most NCMM group leaders have adjunct appointments in clinical and para-clinical departments at Oslo University Hospital (OUH), relevant for translation of their research, and funded by NCMM through the HSØ allocation. The current adjunct positions have enabled 20 joint grants, over 28 projects and 27 publications with the clinical collaborators over the last five years. Furthermore, the hospital affiliations have eased the access to patient data and samples (see more details below, on added value). It is challenging for clinicians employed at the hospital to reduce their clinical duties to free up time for their own research. However, NCMM recently hired the Head of the Infection and immunology group at OUH, MD, PhD Hans Christian Erichsen Landsverk, to a 50 % researcher position at NCMM for the coming two years (2022-2024). NCMM is actively searching for other interested clinicians with profiles matching NCMM focus areas. The Centre has also been active in attracting MDs at all career levels: NCMM has recruited two medical doctors as new group leaders, and two -MDs from Germany to perform research at the Computational Oncology group at NCMM. Moreover, eight of the new Associate Investigators appointed in 2020 are clinically active scientists. Recently, an MD also finished her PhD thesis in the Precision Pediatrics and Gene Editing group (May 2022).

1.2. Theme-based research structure

Over the last five years, NCMM has established a more theme-based research structure under the umbrella of precision medicine by recruiting five group leaders and a director with research programs in computational biology and precision medicine: *Dr Marieke Kuijjer,* PhD (NCMM since 10/2018) was recruited from the Dana-Farber Cancer Institute, Harvard T.H. Chan School of Public Health. Kuijjer is a computational cancer biologist with training and experience in bioinformatics, genomics, and network biology. *Prof Janna Saarela* MD, PhD (Director of NCMM since 1/2019) was recruited from the Institute for Molecular Medicine Finland, Helsinki. Her research focuses on genomic determinants of human immune disorders and methods for safe sharing of sensitive health data. *Dr Emma Haapaniem*i, MD, PhD (NCMM since 4/2019) was recruited from the Karolinska Institute, Stockholm. Her research focuses on rare immune disease diagnostics and developing a modified CRISPR-based platform for rare immune disease gene therapy. *Dr Sebastian Waszak,* PhD (NCMM since 3/2020) was recruited from the EMBL Heidelberg. His group uses international patient populations, multi-modal data integration, and computational methods to investigate pediatric brain tumors and rare cancers. *Dr Charlotte Boccara,* PhD (NCMM since 4/2022) was recruited from the Institute for Basic Medical Sciences at UiO. Her research centers around systems neuroscience and sleep disorders. *Dr Biswajyoti Sahu,* PhD (NCMM since 9/2022) was recruited from University of Helsinki. His group studies enhancer biology. This theme-based focus is a useful strategy to efficiently integrate the new group leaders in the Centre and to complement the expertise already available in house, as shown by multiple collaborations that were initiated between the newly recruited and more established group leaders.

1.3. ERC grants / international funding

Current competitive funding of NCMM group leaders includes grants from the Norwegian Research Council (RCN), the Norwegian Cancer Society and the South-Eastern Norway Regional Health Authority (HSØ). International funding includes grants from the European Commission, the Swiss National Science Foundation Sinergia as well as

private foundations and organizations such as the World Cancer Research, Barncancerfonden and Ians Friends Foundation (pediatric brain tumors). In 2021, NCMM group leaders secured several large grants, including a 25M NOK RCN allocation from the large, interdisciplinary research program and a 20M NOK RCN allocation from the radical innovative technology program. In 2022, one NCMM group leader was part of the consortium receiving a Centre of Excellence grant from the RCN. Based on the recommendations from 2018 evaluation, NCMM has addressed career thinking, ERC funding and publications strategy with the group leaders and access to the external funding unit at the Faculty of Medicine for ERC funding. Since the last evaluation, three ERC Starting and one Consolidator grant applications were submitted, with support of European ERC awardees or other senior experts in their research fields. In 2020, two NCMM ERC StG applications made it to the second round. Due to the pandemic, no interviews took place that year, and the evaluation pended entirely on the written application submitted. Currently, one NCMM group leader is preparing an ERC StG application.

1.4. Retention of successful talent and rotation of group leaders

The cornerstone of the NCMM strategy is to recruit and develop young scientists to become fully qualified tenured faculty members. To increase the opportunities for NCMM group leaders to rotate out to more permanent positions, each recruitment is discussed with the scientific environments at UiO and OUH to understand their future needs and find mutual benefits. All group leaders select a second 20% affiliation at one of the Departments at UiO, based either on a pre-recruitment agreement or on the choice of the group leader. The faculty affiliations enable group leaders to build networks with the potential future host, and to gain teaching experience required for professorships in the future. NCMM group leaders have no teaching obligations but are encouraged to gain teaching experience after the midterm evaluation. NCMM negotiates the UiO affiliations to be paid by the departments to increase the motivation for reciprocal interactions. Group leaders with clinically oriented programs and need of patient data and materials, are offered adjunct positions in relevant hospital departments. Since the last evaluation, one group leader has rotated out to an associate professor position at the Dept. of Biosciences, University of Oslo (2021). NCMM acknowledges that it is challenging for young scientists to transition from a postdoc to a group leader, build a new research group with laboratory infrastructure, and meet the evaluation criteria within the first 5-year period. In addition, most of the recruited group leaders relocate from a foreign country and need to establish scientific networks locally, as well as having to learn to understand the university system in Norway. NCMM has therefore established a mentoring program to provide guidance and advice for the newly hired group leaders. Each group leader has established contact with one local and one international mentor. The international mentor is expected to give general career and scientific advice, while the local mentor in addition should facilitate local networking and help with understanding the host organization and career development in the host institution. NCMM encourages tight interactions by inviting mentors to visit NCMM or group leaders to visit their mentors. Other career development activities include:

- *Day-to-day follow-up and mentoring by senior colleagues*: the NCMM Director is available for day-to-day advice and mentoring to all group leaders. The ongoing recruitment of a new associate director will also increase mentoring capacity.
- *Benchmarking*: the NCMM Scientific Advisory Board provides group leaders with feedback on scientific progress and offers advice on research strategies in approximately biannual visits. In addition, NCMM has regular internal group leader meetings, an annual scientific retreat and an annual Nordic Partnership or broader EMBL network meeting. These initiatives include scientific presentations, discussions and rigorous feedback.
- *Leadership training*: NCMM group leaders attend the UiO research leadership training or the EMBO Lab Leadership Courses in Germany.
- *Support with grant writing and other administrative and organizational matters*: group leaders can obtain advice and support from the Unit for External Funding, Faculty of Medicine and NCMM Director, CAO, Lab and HSE Coordinator, IT staff etc.
- *Support for innovation activities*: Inven2 AS, UiO's Technology Transfer Office, has introduced UiO's services for innovation support to the group leaders, and Inven2 and the Life Science Growth House experts are available for meetings to evaluate the innovation potential of the research projects / findings.

NCMM has an agreement with the Faculty of Mathematics and Natural Science to secure the sustainability of the zebrafish core facility established by the NCMM group leader who will be rotating out of the Centre in 2023. The facility will relocate to the Life Science Building and become part of its research infrastructure network.

NCMM plan for the next five-year period (2025 – 2029)

The Centre's plans for the next five-year period given financing at the same level as today

The long-term aim of NCMM is to continue developing and promoting the Centre to be among the leading players on the worldwide map of molecular medicine with a translational mind set and team-oriented working culture. In the next five-year period, NCMM will build on the foundation of the Centre's current strengths: a strong focus on precision medicine with top expertise in functional genome medicine, computational biology and development of novel technologies. Precision medicine has been introduced and built up as a large thematic program over the last 5 years. This has enabled the Centre to build a critical mass of scientists with overlapping research interests. Furthermore, this has resulted in increasing interactions and collaborations between research groups within NCMM, as well as with other strong research environments and core facilities at the University of Oslo, the national network of established Associate Investigators across universities and hospitals in Norway, and researchers at the EMBL and its partnership institutes. **We aim to develop NCMM into a hub of excellence in precision medicine, bridging basic biochemical and data science research and research environments to clinical medicine.**

NCMM currently hosts world-leading expertise in genome medicine, functional genomics, gene regulation, disease modelling and genome editing, with research programs spanning from basic biochemical research and algorithm development to diagnostics and pre-clinical development of novel treatments for rare diseases. Current research groups within NCMM are studying common and rare cancers, immune diseases, and neurodevelopmental disorders under the thematic umbrella of precision medicine. These studies are underpinned by development and application of computational biology methods and novel technology platforms to interrogate disease genomes, chromatin architecture and transcriptomes. NCMM's functional genomics approaches, aiming at identifying disorder mechanisms and novel therapeutics, include genome editing and chemical biology perturbations, and reprogramming of experimental cell, animal and computational models. The methods and resources developed by NCMM groups are also applicable to other diseases and biological questions.

NCMM will move to the Life Science Building (LSB) in 2026-27. NCMM is looking forward to the opportunities provided by the relocation, which will place us under the same roof with highly relevant collaborating university and hospital environments. This will further facilitate our goal to bridge the basic science research to translational and clinical medicine. NCMM also looks to the communal activities available in LSB, such as the Life Science Growth House. Moreover, as NCMM currently has limited space available for the strategic development of the Centre in the Oslo Science Park, the move to the LSB will secure NCMM necessary space to implement its future strategy. To avoid unnecessary interruptions to the laboratory projects, NCMM will not recruit new group leaders who need access to the laboratories during 2025-2026.

Data driven life science will become a critical success factor for tackling global health challenges in the future. Over the five-year period of 2025-29, NCMM will continue to develop its existing links to computational science environments at the Faculty of Mathematics and Natural Sciences (MN), the Faculty of Medicine (MED) Oslo University Hospital (OUH), and OsloMet & SimulaMet AI Lab, to reinforce the computational biology focus of the Centre and increase method development capabilities for health data analysis. Furthermore, NCMM is currently in the process of recruiting a new Associate Director with expertise in computational biology and method development. The Associate Director will have a joint affiliation with the Centre for Bioinformatics at MN and will focus on building stronger networks to the computational biology and bioinformatics research environments locally, nationally and internationally. A stronger and more visible computational focus at the Centre, as well as embedding NCMM in a broader local and national computational research environment, will make NCMM more attractive for upcoming recruitments of young research group leaders with expertise in developing machine learning / artificial intelligence models applicable to fundamental biological questions under the umbrella of precision medicine. Investing in the development of improved computational biology tools and resources will reduce future healthcare costs by decreasing the number of expensive diagnostic laboratory tests that are needed. Thus, NCMM's current and future expertise in computational biology will produce knowledge and algorithms that will provide direct and indirect health and economic benefits to patients and the society.

NCMM has adopted the EMBL model in terms of its organization, assessment of excellence, and its international recruitment of young, talented researchers to non-tenured positions (5+4 years pending a successful scientific evaluation). This model enables recruitment of international talent to Oslo and Norway and provides a greenhouse for young researchers to build their own independent research lines under the umbrella of NCMM's precision medicine focus. Furthermore, the model ensures that NCMM has the necessary flexibility in terms of making strategic recruitments in new research focus areas and emerging technologies, thereby strengthening and renewing the scientific landscape both in the Oslo region but also nationally. This strategy has already been proven a success

based on for example the scientific development and set up of the widely used zebrafish core facility by NCMM's Dr Esguerra, and the new RCN funded UiO-OUH Centre of Excellence for Precision Immunotherapy Alliance, relying on the unique genome editing expertise of NCMM's Dr Haapaniemi.

Genome editing is one of the most powerful novel technologies in genomic medicine, as it opens opportunities for interrogating functional consequences of genetic variation and modifying cellular functions by making changes to the genome. Over the five-year period of 2025-2029, NCMM will build a national expert hub for functional genomics and cell-based therapies by bringing together expertise and resources in gene regulation, genome editing, induced pluripotent stem cell (iPS) models, single cell and high-throughput chemical biology technologies, and computational modelling. Setting up a collaborative hub with state-of-the-art instruments and technologies will create capabilities for example for providing evidence for causality of rare genetic variants, interrogating functions of coding and regulatory variation in disease context, and creating cell and animal models for Mendelian and complex disorders. NCMM aims to build the hub at a scale capable of tackling the major bottleneck in understanding the role of rare and regulatory genetic variation in disease development, created by the recent developments in sequencing and omics technology, and computational methods. Development of technologies for modifying functions of immune cells for cell therapy, and correcting gene defects for treatment of rare diseases, will be the major pre-clinical functions of the hub. Genome editing of iPS cells is still an emerging technology that can be developed at NCMM by combining the existing expertise and targeted recruitment of international talent. Introduction of pluripotent stem cells will enable building cell models that are biologically more relevant than traditional cell lines and have a longer life span than the currently used immune cells. To increase the critical mass of expertise, NCMM will build closer connections to the strong iPS and T cell research environments at UiO / OUH as well as with the new EMBL Partnership institutes in Vilnius University Life Science Centre (focusing on genome editing) and the Hubrecht Institute (focusing on Developmental Biology & Stem Cell Research).

Several research groups at NCMM will rotate out in the period 2023-2025 after finishing their 5+4 years at NCMM. Thus, to secure the development of core competences for precision medicine, including the clinical and molecular health data analysis and the collaborative expert hub for functional genomics and cell-based therapies, NCMM will recruit new group leaders with expertise in the pivotal research areas, such as machine learning / computational modelling, genome editing, induced pluripotent stem cells (iPS) cell models and single cell technologies.

The focused recruitment of a new group leader with expertise in high-throughput technology and chemical biology will strengthen the new functional genomics and cell-therapy expert hub, as well as secure the necessary scientific development and maintenance of the state-of-the art capabilities of the High-Throughput Chemical Biology Screening (HTCBS) Platform hosted by NCMM. The HTCBS platform currently provides local and European chemical compound libraries and screening instrumentation to a wide variety of projects, spanning from systems biology perturbations to pre-clinical drug sensitivity screens for cancer samples in hospital research projects. Increased scientific expertise provided by the new recruitment, will allow NCMM to further develop the technology and processes for drug sensitivity screening as a diagnostic and / or therapy-advising tool for cancer patients. This process will be planned in collaboration with the strong research environments at the Institute for Cancer Research (OUH), the recently established Norwegian Centre for Clinical Cancer Research Matrix, and will be supported by the Finnish and Danish partners of the EU OPENSCREEN network. NCMM acts as the coordinator for the national and EU-level network for chemical biology, the EU- / NOR-OPENSCREEN network. The HTBCS platform serves research groups in local and national universities and hospitals as the coordinating NOR-OPENSCREEN node, and they will integrate to the research core-facility network of the new Life Science building. A strategic upgrade and growth of this platform, as well as the connected research environment, will therefore benefit the new LSB, UiO and OUH in the near future.

Understanding the structure-function relationship of drug target molecules and disease-affected proteins open new views to disease mechanisms and therapy developments. NCMM is currently one of the critical driving forces for development of structural biology expertise in Oslo, and works closely with scientists at the Departments of Chemistry and Biosciences at UiO, as well as with the structural biology research environment at University of Bergen, to build the first cryo-EM facility in Norway. During the next five-year period, NCMM will support the transfer of its expertise and instruments in structural biology to the LSB under MN and will maintain and further develop connections to the new environment.

In the next five-year period, NCMM will continue to engage in interdisciplinary collaborations locally, nationally and globally, to maintain the current success level and grow further, producing high impact publications and attracting funding in national and international funding calls, including the prestigious interdisciplinary Centres of Excellence and Fellesløftet projects. NCMM has a national mandate to facilitate molecular medicine in Norway, and will

continue being active in creating collaboration opportunities with the other universities and hospitals in Norway by coordinating the national research infrastructure networks EU OPENSCREEN and EATRIS and a national network of well-established Associate Investigators (currently 47 PIs).

NCMM's plans with tentatively reduced financing and consequences of reduced financing of NCMM as an institutional, regional and national Centre

In a tentative situation of reduced financing, NCMM will honour the commitments to the current research groups but will not be able to replace three to four research groups rotating out in the coming years. Thus, a severe consequence of budget cuts will be a reduction in the recruitment of new group leaders. This will first preclude building of the novel collaborative expert hub in the Life Science Building in the next five-year period, and limit or delay the increased investments in developing the computational biology and health data modelling focus. Furthermore, this will significantly reduce the strategic flexibility of the Centre to build up new research areas and emerging technologies in the future. Given the tentatively reduced financing, NCMM would continue developing its research focus in precision medicine and bridging data science research and technology development to clinical medicine. However, the planned next new recruitments would be postponed by five years to 2027 leading to reduction in critical mass and fewer research groups. This will severely affect collaboration opportunities and productivity of the Centre, and reduce possibilities for NCMM to participate in interdisciplinary collaborations in the Life Science building, nationally and internationally. It will also reduce capacity in engaging in clinical collaborations, which will decrease the attractiveness of NCMM as a partner for HSØ (one of NCMM's core funders since 2008). Furthermore, downscaling of the centre will reduce the attractiveness of NCMM in the international research arena, thus hampering recruitment of top talent to the Oslo region for future group leader positions at NCMM. A decrease in core funding would also terminate the planned new recruitment enabling scientific development of the High-Throughput Chemical Biology Screening Platform. This would significantly reduce NCMM's capability to invest in active development of the research environment and research infrastructures in the Life Science Building, and with the new national precision medicine initiatives. Moreover, a tentatively reduced funding will stop most, if not all, of NCMM's national activities, such as maintaining the successful and very collaborative Associate Investigator network, which connects the Centre to other Norwegian universities and hospitals, but also has high representation of scientists in the Oslo region (68% of the AIs). Furthermore, downscaling the research community at NCMM will strongly influence the Centre's ability to secure national and international external funding.

Consequences of reduced financing of NCMM as an institutional, regional and national centre

- Decreased capacity to attract global research talent to Oslo and Norway and reduced strategic flexibility of the Centre to build up new research areas and novel technologies in the future
- Decreased interactions with clinical research environments, making NCMM less attractive as a partner for HSØ.
- Decreased scientific output and competitiveness in national and international funding calls.
- Decreased opportunities for collaborations within UiO and OUH research environments.
- Reduced resources for contributing to the LSB research environment.
- No resources for national research and research infrastructure activities.
- Reduced capabilities for contributing to the Nordic EMBL Partnership and collaborating with other EMBL Partnership Institutes.
- Diminished capabilities to contribute to success of precision medicine research in Norway.

NCMM's added value to the UiO's and Oslo's research environments

Contribution to UiO's 2030 strategic aims

NCMM is strongly contributing to the UiO's 2030 strategic aims by promoting independent, ground-breaking, long-term research and strengthening UiO's dialogue with the outside world and work. NCMM is actively developing interdisciplinary collaborations, emphasizing strategic recruitments and systematic career follow-up as well as developing research infrastructures that serve scientists both locally and nationally. Currently, 77% of the NCMM

staff is international, representing 37 nationalities. NCMM researchers as well as the administration collaborate actively in Nordic, European and global initiatives. NCMM group leaders organize, participate and give keynote lectures in international conferences, and actively engage in international research consortia. More specifically, this is demonstrated through 154 collaborative publications with researchers at 153 international universities, institutes and research centres globally over the last 5 years.

Recruitment of talented scientists to the research environment

Since the inception of NCMM in 2008, with the Institute for Biotechnology using the same model, the joint Centre has recruited 20 group leaders through international calls. Five group leaders are currently in their first appointment period, and thirteen have passed their external evaluation after their first five-year period, having been renewed for a second and final period at NCMM. Over this time, five group leaders have rotated to permanent positions at UiO and OUH, as well as Ahus, and four to Professor or principal investigator positions abroad (see Table). One group leader rotated out to an IT company.

Former Group Leaders	Employment period	Current position
Hilde L. Nilsen	2004-2013	Prof., Faculty of Medicine, UiO/Ahus
Farrukh A. Chaudry	2005-2013	Prof., Faculty of Medicine, UiO
Ian Donaldson	2005-2013	IT company, UK
Bernd Thiede	2005-2015	PI/Head of Core Facility, Faculty of Mathematics and Natural Sciences, UiO
Michael Leitges	2006-2016	PI, Memorial University, Newfoundland, Canada
Erlend Nagelhus	2010-2014	Prof., Faculty of Medicine, UiO (died 2020)
Ian Mills	2010-2016	Prof., Queens University, Belfast + John Black Associate Prof., University of Oxford
J. Preben Morth	2010-2019	Prof. Technical University of Denmark (DTU), Copenhagen
Sandra Lopez-Aviles	2011 - 2021	Ass. Prof., Dept. of Biosciences, UiO
Antoni Hurtado	2011-2017	Comprehensive Cancer Center in Salamanca, Spain

NCMM group leaders recruit talented research trainees through open international calls, and have trained 35 PhD students and 56 post-doctoral researchers since 2010 to become active members of the scientific environment. 45% of the PhD students have continued in an academic career and 39% moved to the industry. In total, 29 of the 35 students (83%) have stayed in Norway and 6 have relocated to Europe, the US and Canada. As NCMM does not have its own PhD program, PhD students trained in the Centre defend their thesis at either the Faculty of Medicine (MED) or the Faculty of Mathematics and Natural Sciences (MN). Since 2010, 17 of the trained students graduated from MED and 18 from MN. More specifically, of the PhD fellows admitted to the PhD program at the MN Faculty, twelve graduated from the Dept. of Biosciences, three from the Dept. of Pharmacy and three from the Dept. of Chemistry. The finished PhDs have provided over 4M NOK monetary gain for MED in the form of RBOs, and 2.9M, 0.7M and 0.7M NOK to the three departments at MN, respectively. MED returns 75-80% and Dept. of Biosciences 35% of the RBO to NCMM. Fourteen of the current 16 PhD students at NCMM are enrolled in graduate schools at the MN (six in Chemistry, four in Biosciences, three in Informatics, and one in Pharmacy) and two at MED. Of the 56 alumni postdocs trained at NCMM since 2010, 62% continued in their academic career and 21% moved to the industry. In total, 35 (62%) are still working as scientific experts in Norway, mainly in the Oslo area, while 21 have relocated to international positions.

Scientific collaborations with the research and clinical environments at UiO and OUH

The 20% adjunct affiliations of the NCMM group leaders at the faculties of UiO have been productive. After the last evaluation, the numerous scientific collaborations between NCMM and UiO faculty have produced 31 joint publications and 19 joint research grants. NCMM group leaders collaborate with scientists in 6 departments at MN, as well as five Institutes and Centres at MED. As a part of NCMM's focus on translational research, most group leaders at the Centre are established with adjunct appointments in clinical or para-clinical departments. This currently involves increasing interactions and collaborations particularly with the Institute of Cancer Research, and Departments of Medical Genetics, Hematology and Pediatric Research at the Oslo University Hospital, but also with several other Departments, including Departments of Pathology, Immunology, Neurology and NORMENT at the Division of Mental Health and Addiction. Since the last evaluation, collaborations with the OUH departments have generated 27 joint publications and 20 joint research grants.

Teaching at Bachelor, Master and graduate level courses and organizing seminars

NCMM group leaders support faculties in bringing basic university training and top-level research closer together. To do this, NCMM groups teach and organize courses in the Bachelors' and Masters' and graduate level courses at the faculties: NCMM group leaders have developed and / or are the main teachers of six basic and graduate level courses at Dept. of Chemistry (KJM5310/9310 , KJM5330/KJM9330, KJM5320/9320, and three special curriculum graduate courses) and one at MED (CareIn). They also give individual lectures and practical training in teaching programs of Institute for Basic Medical Sciences (MED 2200 & MED1100), Dept of Pharmacy, Dept of Chemistry and Dept of Biosciences (more details given in the appendix Table 2). Moreover, all NCMM group leaders teach in the national Molecular Medicine PhD course (MF9120BTS), which has been developed and organized annually by the Centre since 2011. Moreover, the three computational biology group leaders have recently developed and will this

fall implement a graduate course titled "*Multi-omic data analysis and integration for precision medicine*" (MF9255). NCMM group leaders also supervise Master's and Medical thesis students.

NCMM's Dr Mathelier is the founder and organizer of the "Sven Furberg seminars in Bioinformatics and Statistical Genomics" since 2017. Group leaders at NCMM have organized six international scientific meetings / workshops since the last evaluation.

Innovation activities

Since 2018 NCMM's researchers have filed three Innovation disclosures, one of which has maturated into a spin-out company with the support of INVEN2. Four of the NCMM group leaders / scientists are collaborating with pharma, healthtech and biotech companies in scientific advisory roles, and two group leaders have provided mentoring in the European Joint Program of Rare Diseases Innovation Management program. Furthermore, PhD students have internship opportunities in companies as part of the Digital Life project, and one PhD students is currently funded by a company collaboration. Group leaders are also involved in research and innovation projects funded by RCN / EU.

Building of interdisciplinary national collaborations

The NCMM Associate Investigator (AI) network currently consists of 47 PIs, of which 32 are researchers and clinicians at UiO and OUH. The AI's are outstanding scientists who are currently based in Norway, and whose expertise is compatible with the NCMM research areas. To stimulate new scientific collaborations, NCMM has, in the period 2019-2022, granted a total of 10.7M NOK as seed-money for new collaborative projects. In 2021, NCMM in collaboration with the Arctic University of Norway (UiT) also co-funded a 1.2M NOK pilot program to stimulate more interactions between NCMM group leaders and young researchers at the Faculty of Health Sciences at UiT.

NCMM is coordinating Norway's participation in two ESFRI infrastructures: EATRIS, the European infrastructure for translational medicine, and EU-Openscreen. The NCMM-coordinated national NOR-Openscreen network, which has received national infrastructure funding from the RCN since 2016, includes four national core facilities in Tromsø, Trondheim, Bergen and Oslo. This infrastructure and its network has improved the services provided to the research environments. EATRIS and EU-Openscreen are actively engaging Norwegian scientists in EU grant applications. For example, participation in EATRIS initiated research projects has brought over 6M NOK of EU funding to Norwegian scientists in the period of 2018-2021 (4M NOK to UiO and 0.6M NOK to OUH). EU-Openscreen led projects have secured 7M NOK from EU for Norwegian scientists since 2018. The infrastructure and training services of the two European networks are available to all Norwegian scientists.

NCMM's integration to the research and clinical environments in the future

NCMM offers young, highly ambitious and promising researchers EMBL-style contracts based on a 5+4 years' model with a mid-term review. This secures the internationally recruited group leaders sufficient time to prove the feasibility and impact of their innovative research proposals. Through this recruitment model, NCMM facilitates fast development of new "high risk, high gain" research directions in Oslo and Norway that provide large returns, with the flexibility to shut down outdated areas of research and technology. Furthermore, the in-built turnover cycles maintain and push flexibility, dynamism and agility to meet new opportunities in the future. The model also provides the host with control on future commitments. As presented in the 5-year plan above, our goal is to develop NCMM into a hub of excellence in precision medicine, bridging basic biochemical and data science research to clinical medicine. Strengthened integrations with local and national research and clinical environments are critical to the success of the Centre moving forward. Life sciences represent the largest priority area of the University of Oslo, and there are high expectations regarding interdisciplinarity and convergence when leading university and hospital environments move in under the same roof. NCMM will play a key role in the Life Science strategy. In addition to already established connections to the Depts. of Pharmacy and Chemistry, NCMM sees a great synergy potential with several of the OUH environments moving into the building. Furthermore, NCMM group leaders, who are mostly recruited from abroad, need to build local networks when they join the Centre. Being an integrated part of the LSB, will make them more visible for both more established researchers as well as students. This will allow broader networking, better mentoring, and recruitment of more Norwegian students to the Centre. Being an integrated part of the LSB will also enable NCMM to share more effectively its novel technical expertise, supporting interdisciplinary research collaborations and promoting the development of the research infrastructure network in the LSB. Moreover, the planned expertise hub for functional genomics and cell-based therapies will create new opportunities for collaborations and interactions both locally and nationally. With its translational mind-set, NCMM can reach out and collaborate with all the other environments in the building, to foster interdisciplinary collaborations. NCMM will connect to basic life science research at Departments of Chemistry, Pharmacy and

Biosciences, and bring their understanding of molecular structures, interactions, and cellular functions to new interdisciplinary collaborations. NCMM is also building up its computational biology and computational modelling focus by new recruitments and by increasing interactions with strong computational research environments in MED, MN and OUH as well as the Simula AI lab. This will strongly support and enable new interdisciplinary basic research and translational research collaborations in the region. NCMM's new functional genomics and cell-based therapy expert hub, as well as the High-Throughput Chemical Biology Screening Platform, in combination with the computer modelling focus, will open opportunities for collaboration with new clinical and research environments at MED and OUH, such as NORMENT and CanCell. The new capabilities will also extend opportunities for interaction with the other universities and hospitals and the national precision medicine initiatives, such as the new Norwegian Centre for Clinical Cancer Research Matrix. This will increase collaboration opportunities beyond the current NCMM main clinical collaboration partners.

Appendix 1

Table 2. Teaching activities in Bachelors', Masters' and Graduate level courses of the current NCMM group leaders
Faculty of Medicine / NCMM
MF9120BTS Molecular Medicine (national graduate course)
MF9255 Multi-omic data analysis and integration for precision medicine
Faculty of Medicine / Institute for Basic Medical Sciences
Physiology and comparative anatomy courses MED 2200 & MED1100 (lectures and practical training)
CareIn course (practical training with Rodents)
Faculty of Mathematics and Natural Sciences/Dept. of Pharmacy
Organic Chemistry Based Drug Design (2015 – 2019)
Pharmaceutical Microbiology (2015 – present)
FARM3110 – Epilepsy and Pathophysiology and Treatment (2022)
Faculty of Mathematics and Natural Sciences/Dept. of Chemistry
KJM5310/9310 Biomolecular structure and function (graduate level, main teacher 2017, 2019, 2021)
KJM5330/KJM9330 Soft Matter Nanobiotechnology (Development, organization and implementation, 2018-2020)
KFK181 Bionanotechnology: Chalmers University of Technology, University of Oslo (lectures 2018-2019)
KJM5320/9320 Structural Biology techniques (national graduate BioCat school, main teacher and course organizer, 2018, 2020, 2022)
Computer labs – KJM1140 Biochemistry I for chemists (Bachelor level, practical training, 2018)
Artificial Cells: Basic Science, Applications and Philosophical Aspects– 9101SP (special curriculum graduate course, 2022)
Biomembranes in Prokaryota: Biochemical and Physical Chemistry Aspects of Prokaryotic Membranes (special curriculum graduate course, 2020)
Biomembrane Nanotechnology (special curriculum graduate course, 2022)
Faculty of Mathematics and Natural Sciences/Dept. of Biosciences
BIOS3601 Genetics and Developmental Biology (individual lectures, 2021

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2nd October 2022

Dear Board members,

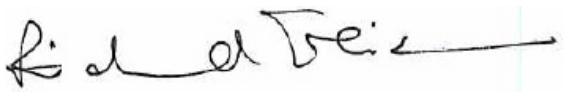
NCMM Self Assessment – Statement from the Scientific Advisory Board

Thank you for giving the Scientific Advisory Board the opportunity to contribute to the assessment of the continuation of the NCMM. I now write in my capacity as chair of SAB, enclosing our statement.

We are unanimous in our view that funding of NCMM be maintained at the level prior to the withdrawal of the RCN from the partnership. We have every confidence that Prof Janna Saarela can lead the Institute to continued success in the coming years.

Please feel free to contact me directly should you require further information.

Yours sincerely



Richard Treisman

Director of Research, The Francis Crick Institute
Chair, NCMM Science Advisory Board

Response to the request by the University of Oslo for a view concerning the operation and future plans of the Norwegian Centre for Molecular Medicine (NCMM) from its Scientific Advisory Board (SAB).

We give a brief outline of the Nordic EMBL Partnership for Molecular Medicine and its strategic importance, emphasising how the strategic aims and operational model of the NCMM play into the national, Nordic and wider European context. We address the comments of the 2018 review of NCMM. Finally we summarise our view of the future potential of the NCMM during the next funding round and upon extension of the Nordic EMBL Partnership.

1. THE NORDIC EMBL PARTNERSHIP FOR MOLECULAR MEDICINE

The Norwegian Centre for Molecular Medicine (NCMM) was established in 2008 as the Norwegian node of the Nordic EMBL Partnership for Molecular Medicine. The partnership is a joint venture between the European Molecular Biology Laboratory (EMBL), and the Universities of Oslo in Norway (NCMM as partner), Umeå in Sweden (Molecular Infection Medicine Research, MIMS as partner), Helsinki in Finland (Institute for molecular Medicine Finland, FIMM as partner), and from 2013, Århus in Denmark (Danish Research Institute of Translational Neuroscience, DANDRITE, as partner). The Partnership agreement was renewed and extended for 10 years in 2013.

The EMBL is the flagship institution for molecular biosciences in Europe. Since its foundation in 1974, the EMBL 5+4 group leader development model has allowed the establishment hundreds of groups in biosciences across Europe and further afield. EMBL's European Bioinformatics Institute (EBI), opened in 1994, has similarly driven the development of biological data science and informatics; and other specialist EMBL nodes address specific topics and/or provide infrastructure, including structural biology (Hamburg, Grenoble), epigenetics (Rome), tissue biology (Barcelona), and Imaging (Heidelberg).

Following a systematic analysis of European research trends, EMBL identified Norway and the Nordic countries as an opportunity to promote the development of molecular precision medicine. Northern Europe presents strong opportunities for translational molecular medicine, including a long-standing tradition of high quality medical research, good availability of patient material, registries and biobanks, as well as computational biology and data science.

The resulting Nordic EMBL Partnership has fostered close collaboration across the Nordic countries to realise this vision over the past 15 years. Each Partner has adopted the EMBL principle of scientific excellence, alongside the EMBL operational model, which prioritises international recruitment of talented young group leaders, a supportive infrastructure, and close collaboration with the local scientific environment. As group leaders complete their 9-year terms, they move to leadership positions elsewhere, thereby enriching the scientific environment at each host institution or country.

This model has already allowed the Nordic EMBL Partnership to support a great medical breakthrough. In 2010, Emmanuelle Charpentier was selected as a group leader for MIMS in Umeå, at the biannual recruitment meeting of the Nordic partners and EMBL. In 2020, she and Jennifer Doudna were awarded the Nobel Prize in Chemistry "for the development of a method for genome editing" (CRISPR-Cas9).

2. RECOMMENDATIONS OF THE 2018 REVIEW

The 2018 review was the first assessment of the newly integrated NCMM, which brought together the founding NCMM node and the Oslo Biotechnology Centre, both of which were under the Directorship of Kjetil Taskén. At the point of merger, the portfolio of the NCMM was unfocussed, reflecting the differing agendas of the two institutes. However, and most importantly, the renewed NCMM now had the size to attain real critical mass in molecular medicine, and before moving on Taskén had appointed two specialists with complementary expertise in cancer informatics and immune disease gene therapy.

With the arrival of Janna Saarela as NCMM Director in 2018, the institute has sharpened its focus on precision medicine. Our response to the comments of hte 2018 review will illustrate why we believe that Saarela is doing an excellent job in taking the institute forward in the face of several challenging circumstances that predate her Directorship term.

Attracting clinician scientists

We concur with the view of the review panel that it is important that there are both medically trained and clinically active faculty at NCMM. At the time of the review, Taskén was the only scientist with a medical background on the NCMM faculty, although not being clinically active. We were pleased to see that the new Director Saarela is medically trained, and that she considers clinician scientist activity at the NCMM to be a priority. The challenge is to identify clinicians who are both clinically active while also conducting excellent research, and to provide an environment in which they can thrive. An example is NCMM group leader Haapaniemi, who joined in 2019: medically trained and clinically active as a pediatrician, her research programme focusses on development of therapeutic gene-editing approaches. Saarela is aiming to building clinically oriented research by offering 50% appointments at NCMM, and is seeking clinicians whose interests chime with the NCMM's focus areas. The increasingly medically relevant nature of the NCMM research portfolio will increase the attractiveness of NCMM for scientific training of clinician scientists at all levels.

Theme-based research structure within NCMM

In the SAB's view this is the most important comment from the review for NCMM today. The SAB considers that Saarela has successfully established a clear research vision and perspective for the NCMM. which we discuss in more detail in section 3 below.

ERC grants and funding

SAB has been very pleased to see the increase in ambition for external funding amongst NCMM group leaders since Saarela's arrival, even though as yet applications to ERC have not been successful. The increased effort reflects partly a culture change and increased collegiality amongst the group leaders, partly the quality of the group leaders' programmes, and partly Saarela's pro-active mentoring and support.

Transition and Assistant Director

The SAB expressed concern at the time of Taskén's departure that the arrangements for the Director transition were not satisfactory. Taskén's multiple external commitments had previously revealed the necessity of having an additional senior staff member at NCMM to provide operational support, faculty mentoring, knowledge

of and links with the Norwegian biomedical research community, and continuity. By the time of Taskén's departure a new Assistant Director was in place, but his role had not been clearly defined, and he lacked experience of Norwegian scientific traditions and policy. The appointment was not a success, and the difficult situation that arose was handled well by Saarela. She has now properly defined the Assistant Director role, and is working towards a new appointment.

Retention and rotation

There are several aspects to these comments.

1. We note that the EMBL model does not provide for permanent retention of research group leader staff. To break this model might be divisive amongst existing faculty and set an unwelcome precedent.

2. The question of onward career steps for NCMM group leaders at the end of their appointments. For NCMM to succeed in seeding the national biomedical research community at the highest level, it must facilitate interactions with potential new host departments. Saarela is working to ensure that all NCMM group leaders are affiliated to specific departments at UiO and OUH on their arrival, to build potential interactions. Examples include affiliations to Chemistry, Pharmacy, and Informatics (UiO Maths and Natural Sciences), and the Institute of Basic Medical Science (UiO Medicine), and to Pediatric Research, Hematology, and Medical Genetics (OUH). We note that physical integration of NCMM with other UiO departments in the new Life Sciences Building will help this, and we look forward to seeing how this develops in the coming years.

3. The issue of how to sustain technology platforms in an institute of limited size with group leader turnover. This is best addressed by ensuring that the group leader portfolio is focussed, ensuring that platforms serve multiple groups within the institute. Where platforms are have less local usage, integration with the local community is essential to give value for money. We note that provisions have been made to sustain structural biology and zebrafish husbandry in the context of planning for the new life sciences building.

3. PLANS FOR THE NEXT 5 YEAR PERIOD

As mentioned above, Saarela has a clear research vision and perspective for the NCMM which give the institute a clear future direction of travel. She prioritises two broad and complementary areas: computational biology, genomics and informatics, on one hand, and precision medicine, loosely described as work on the genetic and/or cell basis of disease and approaches to therapy, on the other. These two foci us areas are well chosen, in that success in one will create challenges and opportunities that can be addressed by the other, and both have the potential to make direct clinical impact. The size of NCMM - ten groups split between the two areas – and its internally and externally collaborative nature, will allow each area to punch above its weight.

Given the relatively small size of NCMM, it is important that new recruits are both scientifically excellent and complement the existing portfolio, while bringing new interests and approaches. Saarela's new appointments do this very well, and the research portfolio is now much better focussed and coherent than at the 2018 review. Suitable areas that she envisages for recruitments in the immediate future are stem cell/iPS cell work, chemical biology and high-throughput approaches, genome editing, etc. The SAB has every confidence that Saarela can deliver on this ambition, and we look forward to seeing how the centre develops at our future visits.

All this of course depends on sustained and adequate funding. The SAB appreciates the joint commitment of the founding funding partners of the NCMM; however, we are deeply concerned that the decision of the Research Council of Norway to not renew its funding commitment will put the NCMM's future success in jeopardy.

4. ADDED VALUE

The current NCMM strategy aims to maximise added value for national biomedical science, bringing excellence in biomedical discovery research alongside fruitful interactions with the clinical and translational community in Oslo and elsewhere in Norway.

The most important development in the coming years will be the move of NCMM into the new Life Sciences Building. The SAB notes that NCMM will be the sole representative of the Medical Faculty in the LSB, and will provide the link around which interactions between basic sciences and clinical research will pivot. This is a real opportunity to build on the affiliation of NCMM group leaders with UiO and OUH departments. The SAB considers that the NCMM's presence in the LSB will form a focal point for interactions with other departments in the wider Norwegian life science scene.

5. RECOMMENDATION: THE FUTURE

The NCMM is making significant new contributions at the interface between biomedical discovery science and medicine. It is the view of the SAB that to reduce NCMM funding now would be to reduce the institute to a size below that required for critical mass, and to risk all that has been achieved since Saarela's arrival in 2019. We cannot emphasise this more strongly, and urge UiO to make good the funding shortfall that has arisen from the RCN's withdrawal.

The UiO leadership and NCMM board should do everything possible to ensure that NCMM keeps its full role in the Nordic EMBL partnership. Withdrawal of Norway from the partnership, or cessation of EMBL support on the grounds of insufficient commitment by Norway, would represent a major setback both for Nordic countries and for biomedicine in the wider European context.

NCMM in its current configuration is barely more than five years old. Founded in 2008 with Kjetil Taskén as director, its current structure is the result of the merger with the UiO Biotechnology Institute in 2017. Taskén left precipitately in 2018, and following an international search was succeeded by Janna Saarela in 2019. Despite the challenges imposed by the merger transition, and the recent Covid-19 pandemic, Saarela has shown that she has the vision and drive to take NCMM to future success in its new funding period. It is vital that she be given the opportunity to do this in the years to come.

Richard Treisman	The Francis Crick Institute (chair)
Olli Kallioniemi	Karolinska Institutet and SciLifeLab
Alvis Brazma	European Bioinformatics Institute
Titia Sixma	Netherlands Cancer Institute
George Vassiliou	Cambridge Stem Cell Institute
Judith Zaugg	EMBL, Heidelberg

UNIVERSITY OF OSLO

To the University Board

Date: 3.10.2022
Case no..: 2022/32067

Exempt from public disclosure: offl § 14

Self assessment of NCMM - statement requested from the Board

The NCMM Board is grateful for the invitation to give self-assessments to the points below. NCMM is the result of a merger of the former NCMM and the Biotechnology Centre coming into effect in 2017. The overall objective of NCMM is to train young science talents by conducting cutting edge research in molecular medicine and facilitate translation of discoveries in basic medical research into clinical practice. The Centre is organized as a unit at the Faculty of Medicine, but several group leaders also have part-time positions at Departments at the Faculty of Mathematics and Natural Sciences (MN). Almost all PhD candidates at NCMM are admitted to the MN PhD program.

- **NCMM's follow-up on recommendations given by the Research Council's evaluation from 2018:**

1. *"The Committee highly recommends to expand the recruitment strategy to attract clinician scientists to work under a single roof with the group leaders at NCMM. The Centre could be designed to bring together a multidisciplinary team of clinicians and scientists in order to effectively translate basic scientific discoveries into potential therapies/benefits for patients."*

Response: The recruitment strategy of new group leaders to NCMM has been highly successful in establishing closer contact with clinician scientists. The latest recruitments includes e.g. an MD who has started training in pediatrics at OUS. Another group leader with strong clinical ties to brain tumor research is member of an international consortium studying pediatric central nervous system tumors and has recently contributed to WHO's classification of brain tumors. In collaboration with OUS, NCMM has recently recruited a clinician to a researcher position split with 50 % at NCMM and 50 % at OUS. The collaboration with clinical scientists has also been strengthened by recruiting associated principal investigators with clinical research topics.

During the pandemic the possibilities to recruit clinician scientists to laboratory research at NCMM's premises was limited by the lock-down. Due to less flexibility of clinical work, it has been challenging to attract clinician scientists to laboratories at Forskningsparken compared with access that is more convenient to research laboratories in the hospitals. However, moving to the Life Science Building will further improve the possibilities of interaction.

2. *"Establishing a clear theme based research structure within the NCMM to facilitate fast and effective integration of the group leaders into the translational research activities of the Centre and increase internal and cross institutional collaborations."*

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Response: A clear theme-based structure in precision medicine, including e.g. bioinformatics, has been implemented. This has indeed led to faster and more effective integration of new group leaders recruited to NCMM. Candidates for new group leader positions have to demonstrate how their research fits with existing research topics at the Centre. Immediately after being employed by NCMM, they undergo a start-up program and are introduced to potential collaborators at other UiO departments and university hospitals. This program has strengthened the collaboration between group leaders at NCMM and with other university departments and hospitals. NCMM group leaders are often involved in large international consortia, and they use their competence and knowledge to introduce these to Norwegian collaborators for mutual benefits.

3. *"The Centre has been successful in attracting high caliber group leaders. However, the Committee noticed the lack of ERC funding suggesting the need to establish a mentoring scheme to guide the group leaders through career thinking, ERC funding and publications strategy. We recommend close intercations between group leaders and Norwegian and/European ERC holders to learn from their journey in securing such prestigious awards."*

Response: NCMM has a close collaboration with the External funding unit at the Faculty of Medicine for ERC funding. The unit arranges seminars for applicants and organizes meetings with grant holders. Several group leaders have submitted ERC starting grant applications, and there have been finalists. The latest round with NCMM participation was unfortunately decided to be without interviews. NCMM is partner in EU-OPENSCREEN-DRIVE and hosts MSCA individual fellowships.

Group leaders have been successful in obtaining national funding from the Norwegian Research Council and Norwegian Cancer Society. They have worked cross-disciplinary and obtained several Fellesløft-fundings, and partnerships in recently awarded Centre of Excellence and a technology convergence project from the Norwegian Research Council.

Almost all group leaders have attended UiOs research leader program.

4. *"The Committee expressed some concerns regarding the current NCMM Director rotating out at the end of June 2018 without clear transition planning while waiting for the new Centre Director to join NCMM. The newly recruited Assistant Director would need significant help and assistance during the transition phase to facilitate his adaptation to the research and managerial structure at NCMM, UiO and Norway in general."*

Response: This was a good advice from the Committee, and NCMM provided a detailed program for the Assistant Director during the transition phase. The Assistant Director resigned from the position 25 Sep 2021. A new recruitment is planned in collaboration with the Institute of informatics, MN, UiO. The resignation of the Assistant Director led to several Board discussions, and the role of the Assistant Director in the coming call has been better defined.

5. *"Importance of establishing a strategy for retention of successful talent. This strategy would also help sustain specialized technology platforms established by group leaders rotating out from NCMM. Consolidating the current research focus at NCMM instead of starting new research areas could help sustain the highly valuable platforms."*

Response: NCMM has the role as an incubator in order to qualify young researchers for top academic positions. Among ten group leader alumni, six qualified for top academic positions of which four in the Oslo region. Among the other four, three have positions as principal investigators (one in Oslo) and one has a position in a biopharmaceutical company. Thus, NCMM has contributed to retain successful talent in the region.

The purpose of NCMM has not been to provide permanent positions. Therefore, there is no guarantee for permanent positions after a group leader period at NCMM. Group leaders have to apply for available academic positions in competition with other applicants.

It has been more challenging to find academic positions for foreign recruits. The closer affiliation with host institutes and adjunct positions is meant to alleviate this bias. Moreover, institutional or societal needs are always taken into consideration when announcing and recruiting new group leaders.

- **The Board's evaluation of NCMM's plans for the next five year period given the same financial status, and the plans within the frames of a tentatively reduced financial situation including consequences for NCMM as an institutional, regional and national Centre.**

Self-evaluation: The plans for the next five year period given the same funding as now is to establish the centre as a major hub for precision medicine and biotechnology in the Life science building (LSB). It will serve as a greenhouse for young talented researchers, and be an instrument for introducing emerging and new technologies for the benefit of research both at a regional and national level. NCMM in the LSB is ideally situated to bridge basic and applied sciences and will be the single most important unit for the Faculty of Medicine in the building. The presence of NCMM at today's level is therefore instrumental for the interaction between scientists at different faculties and departments in the LSB.

Continued Nordic EMBL partnership will probably depend on the same level of funding as now. The partnership is an important prerequisite for recruitment of new talented group leaders and access to highly esteemed evaluators and scientific advisors for our research community.

Possible consequences of a tentatively reduced funding are summarized as:

- Reduced scientific output and competitiveness for funding within precision medicine and biotechnology topics such as computational biology and gene editing.
- Increased risk of not obtaining the scientific and societal goals of the LSB.
- Reduced ability to attract young talented researchers. NCMM has been particularly successful in recruiting female research group leaders.
- Less attractive as collaboration partner for Helse Sør-Øst.
- Loss of Nordic EMBL partnership and thereby loss of access to Nordic collaboration and European recruitment programs. Difficulties in recruiting highly talented young researchers will probably be one of the greatest challenges in the research communities the next years.
- Diminished or disappearance of function as an institutional, regional and national centre.

- Reduced contribution from NCMM to teaching in pharmacy and chemistry at MN.
- Reduced or absence of PhD courses such as in molecular medicine and multi-omic data analysis.
- Reduced number of PhD students funded by NCMM; in particular at departments at MN, which have the majority of the students.

- **Describe how NCMM evaluates the added valued of NCMM for the environment (faculties, units at UiO and OUS) and how NCMM regards the integration with the environment in a five years period.**

Self-evaluation: The Board's impression is that NCMM has taken several measures to increase its significance for the environment by specifically recruiting researchers within selected topics of great importance and competitiveness. NCMM has successfully established a thriving research environment within computational biology and bioinformatics. This competence is highly desirable and very valuable for the development of precision medicine. NCMM emphasizes recruitment of researchers with the ability to interact across disciplines as evidenced by leadership and participation in convergence research environments, funding of Fellesløft-projects and participation in Centres of Excellence.

Although the location of NCMM at Forskningsparken has not been optimal for integration with clinician scientists, this will change when moving to the LSB and a closer geographical location of researchers from the Faculty of Mathematics and Natural Sciences, Faculty of medicine and OUS.

A reduction of NCMM funding will seriously diminish

1) The possibility of using NCMM as a bridge between the different units
2) NCMMs role as a greenhouse for recruiting and developing young talented researchers
3) The possibility of using NCMM as an instrument to develop and introduce new and emerging technologies
4) The relevance, scientific, and societal output of the Life Science Building

The Board highly recommends NCMM funding to be continued at the current level.

On behalf of the NCMM Board:

Jens Petter Berg, MD PhD
Professor, Chair of the Board

UNIVERSITETET I OSLO

Notat

Til:
FADM FFO Seksjon for forskning og innovasjon

Dato: 13.10.2022
Saksnr..: 2022/32076 ALEKSASA

NCMM - selvevaluering – MEDs uttalelse

Det medisinske fakultet takker for anledningen til å gi innspill til delgrunnlag til styresak om NCMM – Norsk senter for molekylærmedisin.

Overordnet er NCMM fra 2015 innlemmet i MED som et eget senter som i organisasjonskartet står sideordnet de tre instituttene. Etter fusjonen med Bioteknologisenteret i 2017 fikk NCMM betydelig større tyngde i MED, både budsjettmessig, personalmessig og bedømt utfra vitenskapelig produksjon. NCMM ble etablert i 2007 og utgjør den norske noden i et nordisk partnerskap som i tillegg inkluderer European Molecular Biology Laboratory (EMBL). Senteret drives etter EMBL-modellen der internasjonalt rekrutterte gruppeledere kan være maksimalt 9 år ved senteret.

Selv om NCMM på denne måten er en integrert del av MEDs aktivitet, adskiller senteret seg også på mange måter fra fakultets øvrige drift og funksjonsområder. Det ligger i sakens natur at NCMM er en form for eliteprosjekt der personell rekrutteres overveidende internasjonalt til frontlinjeforskning i basal- og translasjonsforskningsfelt og der undervisningsoppgavene og –forpliktelsene er marginale. Administrativt er de nokså selvstendige og tradisjonelt har senteret praktisert rekrutterings- og ansettelsesrutiner som ligger litt på siden av fakultets vanlige rutiner.

I det etterfølgende besvarer vi FIADMs henvendelse punkt for punkt.

MEDs samhandling med NCMM over tid

Administrativ samhandling. I tiden fra NCMM ble dannet i 2007 til innlemmingen i MED i 2015 hadde MED og NCMM sporadisk samarbeid, mest av karakter forsker-til-forsker kontakt. Fra innlemmingen av NCMM i MED fra 2015 har samarbeidet vært tett, spesielt administrativt og økonomisk. NCMMs direktør og kontorsjef deltar i fakultets ledermøte, Lederforum, sammen med dekanat og på like premisser som ledelsen fra MEDs institutter. Videre deltar NCMMs kontorsjef i administrativt allmøte med

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fakultetsdirektør, seksjonsledere og andre kontorsjefer ved MED. NCMM nyter samme administrativ støtte fra fakultetsadministrasjonen som MEDs andre institutter gjør, for eksempel ifb. med søknader til EU.

Forskningsmessig samhandling. Den faglige aktiviteten til NCMM ligger innenfor feltene translasjonsforskning, molekylærmedisin og bioteknologi, med tematisk hovedvekt på kreft, hjerte-kar sykdommer, immunsykdommer og sykdommer i det sentrale nervesystemet. Over tid har forskere ved MED blitt assosiert med forskergrupper ved NCMM. I starten var det etablerte forskere ved MED som ble assosiert, deretter har man assosiert yngre forskere ved MED til NCMM. NCMM har kjernefasiliteter som blir brukt av forskere ved MED, for eksempel biokjemisk screeningstjeneste for å screene etter molekyler som påvirker biologiske systemer.

Undervisningsmessig samhandling. NCMM arrangerer enkelte ph.d.-emner som mange ph.d.-kandidater tar i løpet av sin forskerutdanning, spesielt ph.d.-kurset i "*Molecular Medicine*" som blitt gitt som nasjonal kurs siden 2012 og der så langt mer enn 215 avlagt eksamen. I inneværende semester arrangerer NCMM også ph.d.-kurset "*Multi-omic data analysis and integration for precision medicine*". Dette emnet er helt i trå med MEDs ønske om å bidra til å utvikle fremtidens persontilpassede behandling.

MEDs vurdering av NCMMs egen måloppnåelse

Ved gjennomgang av årsrapportene til NCMM kan målsetningene til NCMM oppsummeres som følgende:

1. NCMM skal sørge for å utvikle unge talentfulle forskere innen translasjonsforskning, molekylærmedisin og bioteknologi
2. NCMM skal etablere nasjonale nettverk innenfor molekylær medisin
3. NCMM skal fasilitere translasjon av funn innen basalmedisin til klinisk praksis
4. NCMM skal også etablere nye diagnostiske metoder, definere nye legemiddels targets og tilpasse medisinsk teknologi for persontilpasset medisin.

MEDs vurdering er at NCMM langt på vei må sies å ha lykkes med punktene 1) og 2). Mht punkt 3), hvorvidt NCMM også kan sies å ha fasilitert translasjon av funn innen basalmedisin til klinisk praksis, er dette et ambisiøst mål der det nok er vanskeligere å uttale seg sikkert om måloppnåelse. Uansett er dette et høythengende og i praksis fjerntliggende mål der det viktigste vel er å gi en retning for arbeidet snarer enn konkret måloppnåelse. Den samme vurderingen gjelder også for punkt 4, der de definerte målene sannsynligvis som oftest må forventes å kreve lengre tidshorisont enn det gruppelederne i praksis har til rådighet.

Det skal også understrekes at i Forskningsrådets siste evaluering av NCMM i 2018 ble en samlede vurdering av NCMM uttrykt som «…*Very good*, with the potential to achieve *Excellent* in the coming years». Videre

ble det slått fast at man forventer seg at NCMMs vitenskapelige produksjonen kommer til å øke, både antall publikasjoner og publikasjoner i tidsskrifter med høy impact. MED anser at denne vurderingen fortsatt er gjeldende, og slutter seg til uttalelsen.

Samlet sett mener MED at NCMMs viktigste bidrag til nå har vært å utvikle talentfulle forskere innenfor molekylærmedisin. For å kunne svare ut målene i punkt 3) og 4) stiller fakultetet seg bak uttalelsen fra Forskningsrådsevalueringen av NCMM i 2013 der det på disse punktene ble uttalt bl.a: "…*changing patient care does not happen overnight, and is the responsibility of an intricate patchwork of scientists, clinicians, biotech, industry, political activists, policy makers, insurance providers and governmental regulatory agencies. Importantly, the NCMM should be allowed the time to realise its translational ambitions through quality science and clinical collaboration. If the stakeholders wish to ensure delivery of new diagnostic strategies and therapeutic treatments to patients, they must continue their investment, with a shared commitment to support NCMM and work together to optimize translational opportunities".*

Vedlegg 1: Bibliometrianalyse av resultater fra NCMMs gruppeledere.

MEDs vurdering av merverdien av NCMMs aktivitet over tid og i dag

NCMM-infrastruktur av strategisk betydning for MED. NCMM koordinerer kjernefasiliteter og vitenskapelig know-how av strategisk betydning for MED. Et viktig punkt er at NCMM koordinerer norsk deltakelse i EATRIS (EU-ESFRI project European Advanced Translational Infrastructure). Forskere får via EATRIS tilgang til infrastrukturer som trengs ved ulike typer transnasjonal forskning. På denne måten sørger MED for at norsk deltakelse i EATRIS bidrar til å gi forskere tilgang til de aller beste teknologier og ressurser.

NCMMs forskere er attraktive. NCMMs gruppeledere, postdocs og ph.d.-kandidater rekrutteres i internasjonal konkurranse. En merverdi av NCMMs aktiviteter og EMBL-opplegg er at ambisiøse yngre forskere gis mulighet til å satse stort på prosjekter med høy risiko. En stabil økonomisk basis danner grunnlag for å satse, og iblant lykkes man, iblant ikke. Denne innebygde risikoen er en del av forutsetningene for de gruppeledere som rekrutteres, man kan også iblant gi store resultater. I tillegg er det en klar merverdi for MED at ph.d.-kandidater ved NCMM som gjennomfører MEDs doktorgradsprogram er attraktive og får jobber i næringslivet, f.eks. i start-up selskaper.

Opptak av NCMM-stipendiater i MEDs doktorgradsprogram. Stipendiater ansatt i NCMM kan typisk melde seg opp ved ph.d.-programmet enten ved MED eller MN, siden MN også er inne i NCMM med finansiering. Fra opprettelsen av NCMM har 16 ph.d.-kandidater blitt tatt på MEDs ph.d.-program, men i inneværende år er det kun 2 av NCMMs stipendiater som følger (er opptatt i) MED phd-program. Av de ph.d.-kandidater fra NCMM som er blitt tatt opp ved MNs ph.d.-program har 15 fullført og i inneværende år er hele 12 registrert som aktive ph.d.-stipendiater. Dette viser en utvikling over år der den klare hovedtyngden av NCMMs

stipendiater velger å benytte seg av MNs ph.d.-program snarere enn av vårt fakultets program. Sett fra MEDs side er denne utviklingen bekymringsfull og må sies å være et element som, dersom den vedvarer, isolert sett reduserer merverdien av NCMMs aktivitet for fakultetet.

Vedlegg 2: Antall NCMM ph.d-kandidater i MED og MN

NCMMs vitenskapelig produksjon gir oppmerksomhet i samfunnet og blant forskere. Vitenskapelige publikasjoner i tidsskrifter som blir sitert av andre forskere er av klar merverdi for MED. Likeledes er publikasjoner i Nivå 2 tidsskrifter en merverdi for MED. Vi ser også at NCMMs aktiviteter får oppmerksomhet i norske dagsaviser og pasientforeninger. Tilsvarende merverdi gir også symposier som arrangeres i NCMMs regi, samt registrering av DOFIer og patenter som har sin opprinnelse i NCMMs forskning.

NCMM forskere blir ambassadører for MED og UiO. Den internasjonale profilen til medarbeidere ved NCMM er samlet sett meget positiv for MED og betyr at vi får, og har fått, internasjonale faglige ambassadører, både mens de arbeider ved NCMM, og også etter at har forlater NCMM. Tilknytning av utenlandske NCMM forskere til MED vurderer vi som gunstig for fremtidig internasjonalt samarbeid og fremgang i forskningssøknader til EU.

MEDs vurdering av konsekvenser for fakultetet ved et evt. nedskalert NCMM

En nedskalering av NCMM vil ha konkrete konsekvenser på flere områder som er viktige for MED. Det anses åpenbart at mange av fakultets aktiviteter og resultater ikke uten videre kan erstattes ved en nedskalering av NCMM, med ulike negative følger for MEDs resultater, herunder:

- Generelt redusert forskningsproduksjon med tilhørende redusert faglig aktivitet
- Redusert ekstern finansiering, overhead og publikasjonspoeng
- Risiko for reduksjon i tilbudet ved NCMMs to stedlige kjernefasiliteter (biokjemisk screening, zebrafiskfasiliteten), dette inkludert personell med kunnskap om hvordan kjernefasiliteten håndteres.
- Ph.d.-kursene «*Molecular Medicine*» og «*Multi-omic data analysis and integration for precision medicine*» vil være i risiko for å måtte reduseres eller legges ned.

En betydelig nedskalering av NCMM vil også måtte ha konsekvenser for administrasjon og organiseringen av NCMM som enhet i fakultetet. En tenkelig løsning vil da være at NCMM plasseres inn som en avdeling eller forskningsgruppe i ett av instituttene, fortrinnsvis Institutt for medisinske basalfag.

Fakultetets tanker om videreføring av NCMM (volum, innretning og organisering)

For at NCMM skal kunne nå sine mål ligger det i sakens natur at NCMM må vedbli å være en langsiktig satsning. MED erkjenner sitt ansvar for NCMM på lik linje med fakultetets andre enheter, men ved fordeling av fakultetets samlede ressurser synes det ikke rimelig eller mulig å behandle NCMM på annen måte enn resten av fakultetet, dvs en form for særbehandling fremfor andre deler av fakultetet synes ikke aktuelt.

En videreføring av NCMM i sin nåværende form vil kreve omtrent samme totale finansiering som nå. Uten ekstern finansiering i samme størrelsesorden som den finansiering som nå ytes av UiO sentralt, NFR og HSØ til sammen, vil MED alene ikke makte å videreføre NCMM i samme form som i dag.

Et viktig argument for videreføring av NCMM, enten i sin nåværende form eller i redusert utgave, er at NCMM sammen med Veksthuset for helse, livsvitenskap og teknologi vil være de tyngste rene MED-aktivitetene som er planlagt inn i det nye Livsvitenskapsbygget. Selv om det i OUS-delen av Livsvitenskapsbygget vil være mange felles forskningsgrupper mellom MED (Klinmed) og OUS, vil MEDs tilstedeværelse og aktivitet i Livsvitenskapsbygget likevel fremstå som amputert dersom NCMM ikke videreføres. Dette vil også kunne ha direkte negativ effekt på Veksthusets resultater da man må forvente at NCMMs forskere og aktivitet vil være en viktig målgruppe for Veksthuset. Tilsvarende vil samling i Livsvitenskapsbygget forventes å utløse viktige synergier mellom MCMM og den omfattende OUS-forskningsaktiviteten som planlegges flyttet dit, disse synergiene inkluderer også MCMMs innovasjonspotensial.

Avsluttende kommentarer

NCMM er sikret nåværende finansiering ut 2024. Etter den tid kan man tenke seg tre prinsipielt forskjellige senarioer for videre drift, men tilhørende ulike driftsmessige konsekvenser:

1. **Totalt bortfall av finansiering utover MEDs bidrag**
   I dette senarioet vil NCMM med stor grad av sannsynlighet reduseres til en marginal virksomhet i fakultetet. Aktiviteten vil være nærmest fullstendig avhengig av at NCMM selv klarer å konkurrere suksessfullt om ekstern finansiering hos nasjonale og internasjonale finansieringskilder. NCMM vil i dette tilfellet neppe kunne bestå som eget senter, men måtte legges inn som en enhet i ett av instituttene.

2. **Redusert finansiering, men bibehold av nåværende UiO finansiering (inkludert MNs bidrag)**
   Det er anslått at i denne modellen må NCMM nedskaleres fra nå 11 forskningsgrupper til et nivå med 6-7 forskningsgrupper. I tillegg til UiO-finansieringen må man forutsette at senteret selv evner å skaffe betydelig tilleggsfinansiering i konkurranse om nasjonale og internasjonale forskningsmidler. Dette vil kunne muliggjøre betydelig aktivitet, om enn ikke helt på dagens nivå, men tilstrekkelig til at senteret kan bestå og hevde seg som den viktigste MED-enheten i det nye Livsvitenskapsbygget.

3. Redusert UiO-bidrag og bortfall av annen nåværende (ekstern) finansiering

Dette alternativet vil gi en situasjon som ligger mellom modellene 1) og 2) ovenfor. Vi må forutsette at senteret kan skaffe adskillig ekstern finansiering, dog ikke av samme størrelsesorden som under 2). Det vil allikevel gi et senter med antatt 3-4 forskningsgrupper, men som sådant kan det neppe forsvare sin plass som en selvstendig enhet i MED.

Med hilsen

Ivar P. Gladhaug
dekan

Hans Mossin
fakultetsdirektør

Dette dokumentet er godkjent elektronisk ved UiO og er derfor ikke signert.

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UNIVERSITETET I OSLO

Notat

Til:
FADM FST Seksjon for forskning og internasjonalt samarbeid

Dato: 19.10.2022
Saksnr..: 2022/32076 BMIKALSE

Uttalelse fra MN-fakultetet vedrørende videreføring av NCMM

Vi viser til notat av 8. september 2022 hvor fakultetet blir bedt om å uttale seg angående en eventuell videreføring av NCMM og takker for muligheten til å komme med våre vurderinger. Uttalelsen er strukturert etter de fem punktene i notatet.

Fakultetet har siden 2015, i samarbeid med NCMM, oppnevnt fire resonansmiljøer hvor en gruppeleder ved NCMM har fått en 20% stilling ved et relevant fagmiljø ved fakultetet. Vurderingene i dette notatet omfatter i hovedsak erfaringene med disse resonansmiljøene, men vi vil understreke at det også har vært noe samarbeid utover resonansmiljøene mellom forskere ved MN og NCMM.

Samhandling med NCMM

Bioteknologisenteret i Oslo (BiO) ble evaluert i 2012, og det ble da uttrykt at senteret i større grad burde forankres mot fakultet og relevante institutter gjennom komplementær forskningsaktivitet. Ett av tiltakene som ble foreslått for å styrke kontakten mellom BiO og relevant fakultet, var å opprette et «to-bens engasjement» hvor gruppeledere ved BiO tilbys en 80 + 20% modell for ansettelse. MN-fakultetet fulgte opp dette tiltaket ved å allokere ressurser til 20%-stillinger ved MNs institutter for fire gruppeledere ved BiO/NCMM. Disse satsingene har blitt kalt resonansmiljøer.

To av resonansmiljøene ligger på Kjemisk institutt og var tiltenkt et ledd i instituttets langsiktige strategi for å styrke kjemisk livsvitenskap i perioden før innflytting i Livsvitenskapsbygget. Instituttet har derfor aktivt støttet NCMM-samarbeidet, både økonomisk og på andre måter (bl.a. invitasjon til møter og seminarer).

I tillegg til 20% stillinger ved instituttet fra 2016, har de to gruppelederne fått tildelt en postdoktorstilling hver (KD-stilling) og 1,25 MNOK hver pr år. I henhold til informasjon fra NCMM har det blitt ansatt en forsker i den ene KD-stillingen. Kontantbidraget og midler for KD-stillingene har blitt overført til NCMM. Samlet finansiering fra fakultetet har vært ca. 5 MNOK pr år, dvs. totalt ca. 25 MNOK frem til 2021. Begge gruppelederne ble tilbudt forlengelse av 20% stillingen i 2021, og det ene resonansmiljøet har blitt forlenget til ut 2024.

Instituttet har også støttet utstyrsanskaffelser i millionklassen til de to gruppelederne ved å prioritere innkjøp av et massespektrometer for H/D-utveksling og et konfokalmikroskop gjennom universitetets interne

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utlysning av infrastrukturmidler, samt gjennom egenandelen til konfokalmikroskopet. Hittil har instituttets egne forskere benyttet dette utstyret lite.

Begge gruppelederne har gjennom sine 20% stillinger bidratt til undervisningen ved Kjemisk institutt. Syv av gruppeledernes stipendiater er tatt opp på doktorgradsprogrammet ved Kjemisk institutt og har medveiledere fra instituttet. To av disse har fullført og to har falt fra underveis. Tre jobber fortsatt med prosjektene sine, men to av disse har måttet endre veilederforholdet sitt. I tillegg har instituttet overtatt to stipendiater etter at gruppeleder Hartmut Lütke sluttet ved NCMM.

I praksis har det vist seg at avtalen ikke har ført til nevneverdig forskningsmessig samarbeid til tross for at dette rimeligvis har vært en forventning fra instituttets side. Dette kommer tydelig frem ved at det ikke foreligger noen publikasjoner fra de to gruppelederne der ansatte ved Kjemisk institutt er medforfattere. Begge gruppelederne har kreditert Kjemisk institutt i sine publikasjoner, men ingen av de som har vært ansatt i KD-stillingene har kreditert instituttet.

Den ene gruppelederen har samarbeidet med et forskningsmiljø ved Matematisk institutt, blant annet gjennom et Fellesløft IV prosjekt.

Det tredje resonansmiljøet ligger på Farmasøytisk institutt med samarbeid innen farmakologi, mikrobiologi og sebrafiskmodeller. Fakultetet har siden 2015 finansiert en 20% stilling ved instituttet, og stillingen ble i 2019 forlenget til slutten av 2023. Utover dette har gruppelederen ikke mottatt noen finansiering fra fakultetet.

Gruppelederen har bidratt noe til undervisningen på instituttet (hovedsakelig på engelsk) og har veiledet to mastergradsstudenter ved instituttet. En av gruppelederens stipendiater har vært tatt opp på doktorgradsprogrammet ved Farmasøytisk institutt, og hun disputerte i 2021.

Gruppelederen har hatt lite forskningssamarbeid med instituttet og selv om hun krediterer Farmasøytisk institutt i omtrent halvparten av publikasjonene sine som utgår fra NCMM, er det ingen sampublikasjoner med forskere fra instituttet. Gruppelederen har deltatt i felles søknader om ekstern finansiering, men disse har dessverre ikke blitt innvilget.

Det fjerde og siste resonansmiljøet har ligget på Institutt for biovitenskap (IBV). Gruppelederen startet ved BiO i 2011, og etter midtveisevalueringen i 2016 ble hun tilbudt en 20% stilling ved IBV for perioden 2017 til 2022. Hun er nå ansatt som førsteamanuensis ved IBV. Utover 20% stillingen ved IBV, har gruppelederen ikke mottatt noen finansiering fra fakultetet.

Gruppelederen har bidratt til undervisningen ved instituttet og en av stipendiatene har vært tatt opp på doktorgradsprogrammet ved IBV. Stipendiaten disputerte i 2020.

Fakultetet har ikke fått noen tilbakemelding om forskningssamarbeid mellom gruppelederen og forskere ved IBV, og det er ingen fra IBV som er medforfatter på gruppelederens publikasjoner.

Oppsummert eksisterer det i dag to resonansmiljøer – ett ved Kjemisk institutt og ett ved Farmasøytisk institutt. Samlet finansiering for disse to resonansmiljøene er ca. 2,7 MNOK pr år.

Vurdering av NCMMs egen måloppnåelse

Fakultetet finner det vanskelig å uttale seg om dette uten inngående kjennskap til NCMMs formål og strategi, og viser derfor til de eksterne evalueringene som er gjort av NCMM og BiO.

Merverdien av NCMMs aktivitet for fakultetet

Fakultetet hadde en uttrykt forventning om at resonansmiljøene skulle bidra til styrket forskningssamarbeid mellom fagmiljøer ved MNs institutter og BiO/NCMM. Erfaringen viser at denne forventningen i liten grad har blitt innfridd, og at et eventuelt samarbeid i hovedsak har dreid seg om veiledning av felles kandidater. Det er ingen felles eksternt finansierte prosjekter eller felles publikasjoner i resonansmiljøene, men det er noe forskningssamarbeid mellom MN og BiO/NCMM utenom resonansmiljøene.

Gruppelederne har gjennom resonansmiljøene gitt positive bidrag til undervisningen ved instituttene.

Konsekvensen av nedskalering av NCMM

Fakultetets vurdering er at en eventuell nedskalering av NCMM vil ha liten betydning for den faglige aktiviteten ved fakultetet. Ved en eventuell nedskalering er det viktigste for fakultetet å fortsatt ha tilgang til relevant infrastruktur slik som sebrafiskanlegget, H/D-massespektrometeret og konfokalmikroskopet. Det er spesielt viktig at sebrafiskanlegget driftes videre med god kompetanse da dette er noe forskere ved Farmasøytisk institutt bruker i sin forskning og produksjon av masterstudenter og ph.d.-kandidater.

Fakultetets tanker om videreføring av NCMM

Etter en samlet vurdering av investeringer som er gjort i infrastruktur og drift av de fire resonansmiljøene i perioden fra 2015 – 2021 opp mot det meget begrensede forskningssamarbeid som har oppstått mellom de aktuelle forskningsgruppene ved NCMM og instituttenes egne forskningsmiljøer, finner hverken fakultetet eller våre institutter grunnlag for å videreføre det formelle samarbeidet med bidrag til finansieringen av NCMM.

Undervisningen ved fakultetet har i noen grad dratt nytte av de 20% stillingene som er opprettet, men ikke alene nok til å forsvare de totale kostnadene.

Fakultetet anerkjenner det faglige nivået på forskningen ved NCMM, men må konstatere at den opprinnelige intensjonen ved opprettelsen av resonansmiljøene ikke har latt seg omsette i dokumenterbare resultater for vårt eget fakultet.

MN-fakultetet har ikke forutsetninger for å vurdere det bredere grunnlaget for en videre investering i NCMM. Dette må etter vårt syn overlates til MED-fakultetet.

Med hilsen

Jo Døhl
fakultetsdirektør

Dette dokumentet er godkjent elektronisk ved UiO og er derfor ikke signert.

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