

# The European Molecular Biology Laboratory: Excellence by choice

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EMBL



# EMBL: promoting excellence for over 40 years

- EMBL was founded in 1974, as **European Intergovernmental Research Organisation**, following the CERN model, to create a centre of excellence for molecular biology research in Europe

- Former Directors General



**John Kendrew**  
Nobel Prize in  
Chemistry 1962

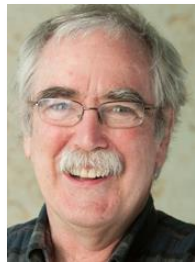


**Lennart Philipson**



**Fotis C. Kafatos**

- Many award winning scientists



**Christiane Nüsslein-Volhard &  
Eric F. Wieschaus**

Nobel Prize in Medicine 1995

# EMBL member states

## Member States (21)

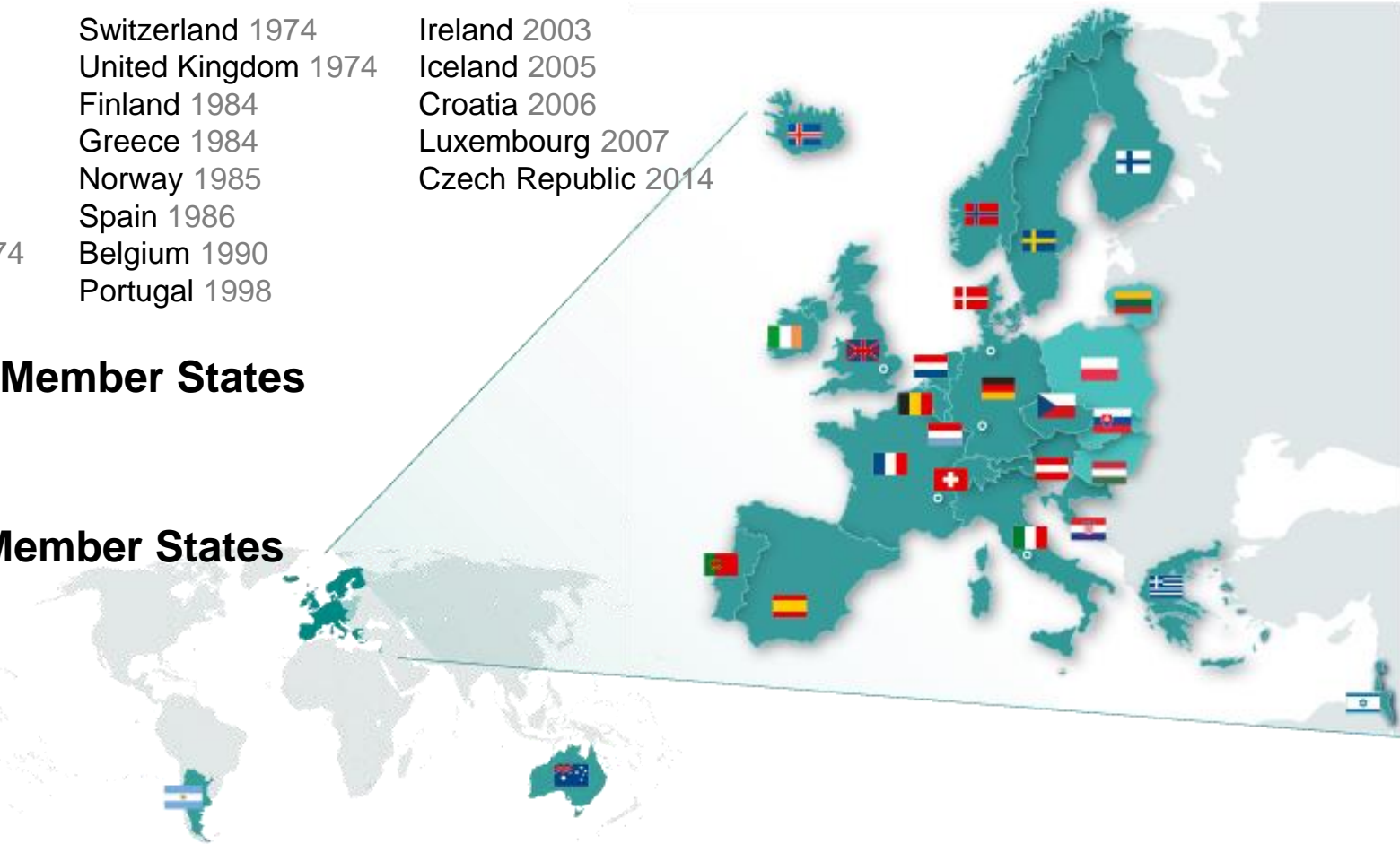
Austria 1974	Switzerland 1974	Ireland 2003
Denmark 1974	United Kingdom 1974	Iceland 2005
France 1974	Finland 1984	Croatia 2006
Germany 1974	Greece 1984	Luxembourg 2007
Israel 1974	Norway 1985	Czech Republic 2014
Italy 1974	Spain 1986	
Netherlands 1974	Belgium 1990	
Sweden 1974	Portugal 1998	

## Associate Member States

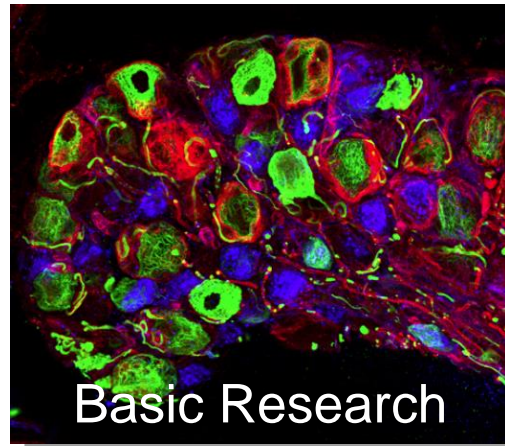
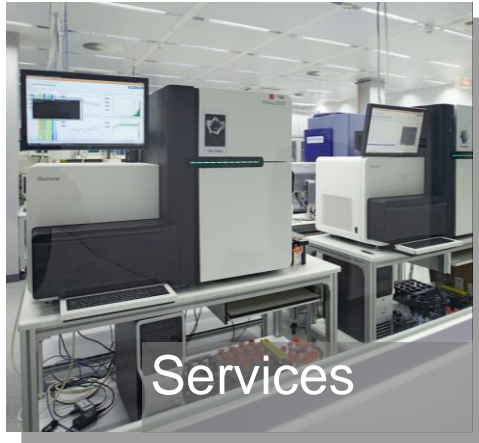
Australia 2008  
Argentina 2014

## Prospect Member States

Slovakia 2014  
Hungary 2014  
Poland 2014  
Lithuania 2015



# EMBL's missions



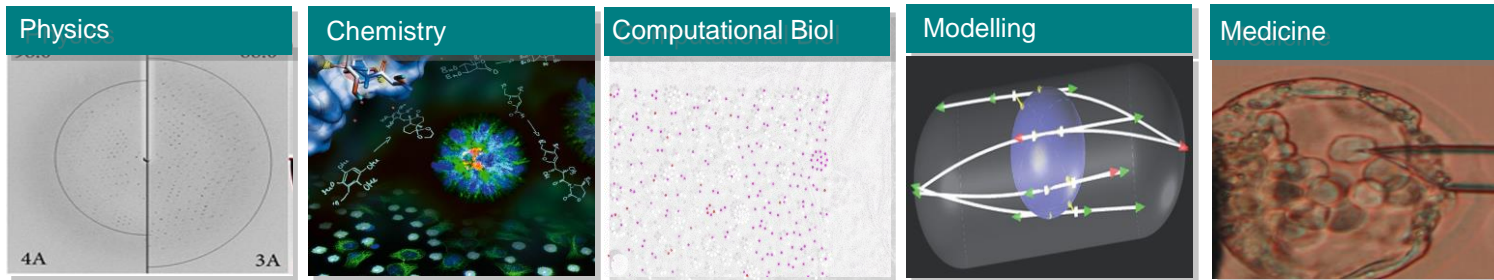
# Organisational principles: The EMBL model

- 'Hire the best'
  - focus on young scientists
  - complete scientific independence
- Stringent quality control
  - Scientific Advisory Committee
- Adaptability & flexibility
  - **continuous turnover**
  - international (> 80 nationalities)
- Financial, intellectual and technical support
  - mentoring
  - creativity & scientific freedom
  - open & collaborative culture
  - non-bureaucratic & efficient processes/systems
  - focus on research, few other tasks (e.g. teaching)

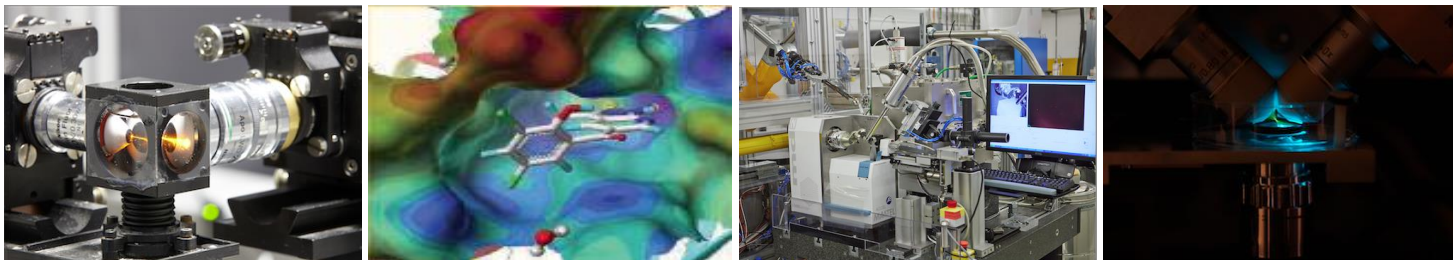


# Motors for scientific excellence at EMBL

- Interdisciplinary expertise & collaboration

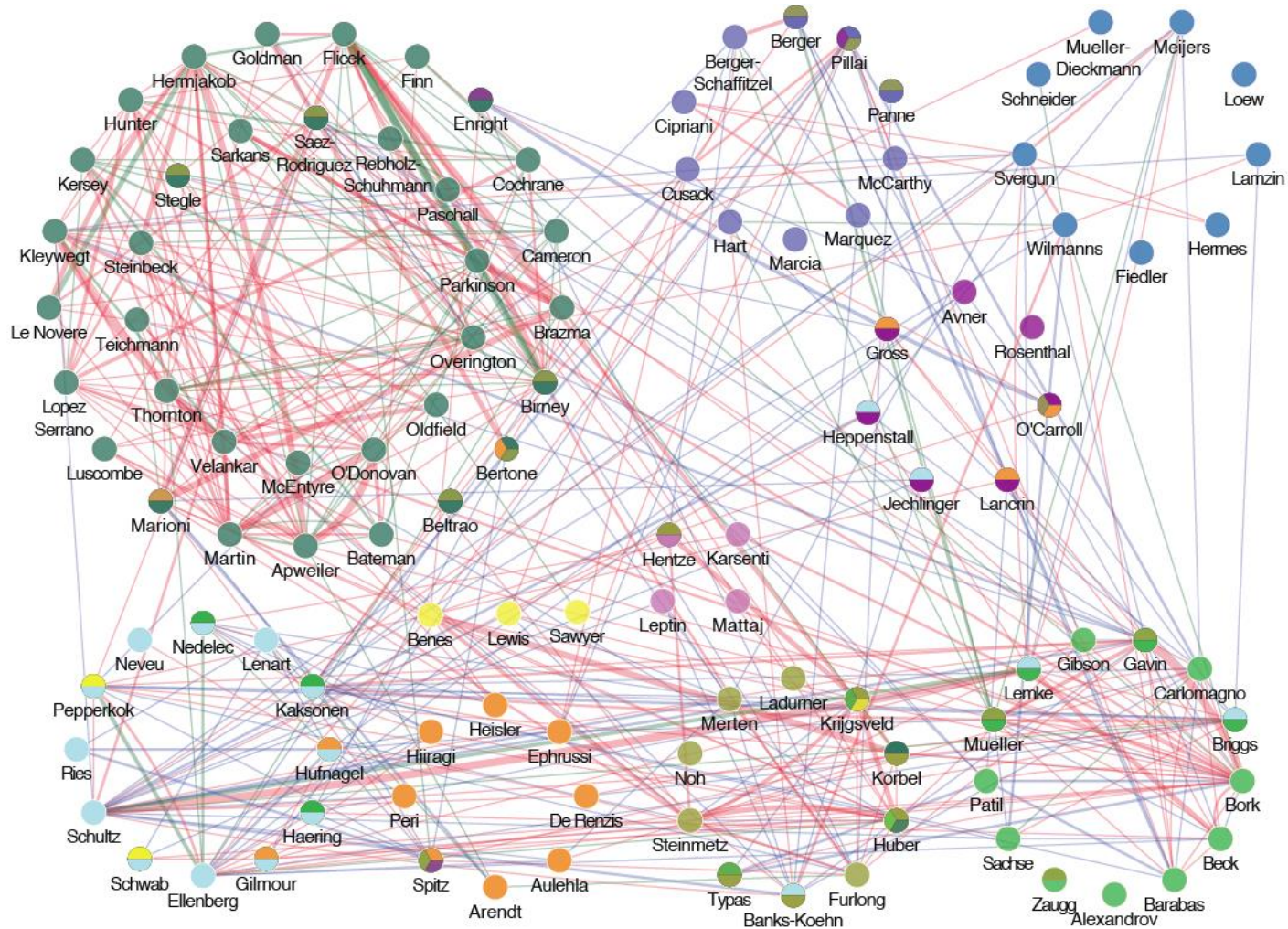


- Cutting-edge infrastructure & innovative technology development

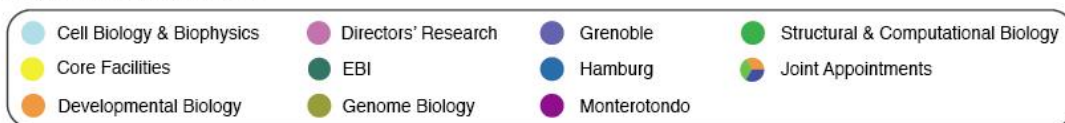


# Interdisciplinary collaboration at EMBL

## 2012-2014



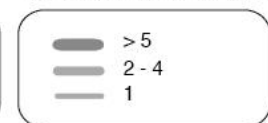
### SCIENTIFIC UNITS & GROUPS



### INTERACTIONS



### NUMBER OF INTERACTIONS



# Scientific publications in collaboration

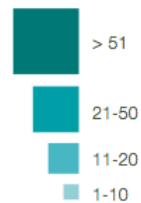
## 2012-2014

- 484 By EMBL
  - 1471 By EMBL with over 800 collaborating organisations worldwide
  - 1288 By EMBL in collaboration with organisations in member states
- 1955 Total

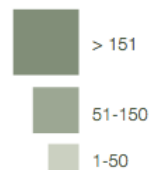


**75%** of EMBL's publications were published jointly with more than **800** institutions worldwide

Number of collaborating organisations



Number of collaborating organisations from rest of the world, by continent





# Scientific excellence at EMBL



**650** publications/year on average

**40%** of EMBL's publications in the top **5%** of journals in biochemistry, genetics and molecular biology

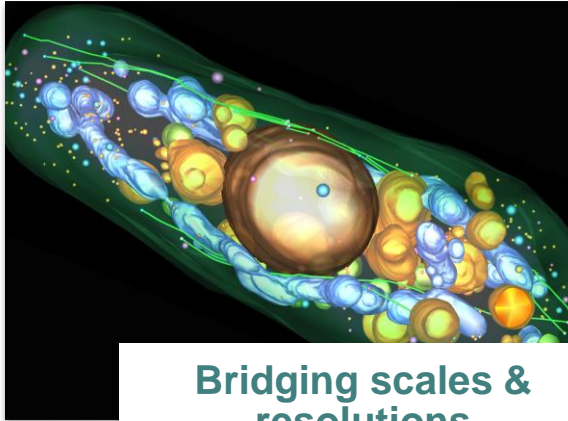
**4** EMBL publications in the top **100** highest cited papers ever

Overall quality of its publications places EMBL in the top **10** research institutions worldwide

**~30%** of EMBL's research group leaders hold ERC awards



# Promoting excellence for the future



**Bridging scales & resolutions**



**The BIG data challenge**



**Towards human biology & molecular medicine**

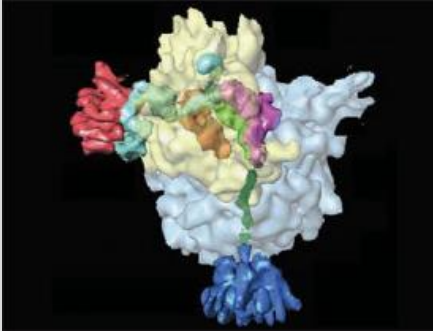
# World-leading infrastructures and services promote scientific excellence

- generate scientific breakthroughs
- attract talent & provide optimal working conditions for researchers



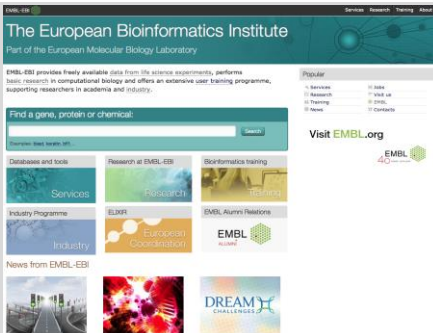
- training of young scientists
- development of new technologies and innovation

# EMBL infrastructure and services



## Structural Biology

~ 2,500 user visits per year  
many users of complementary services



## Bioinformatics at EMBL-EBI

> 11,000,000 web visits per day

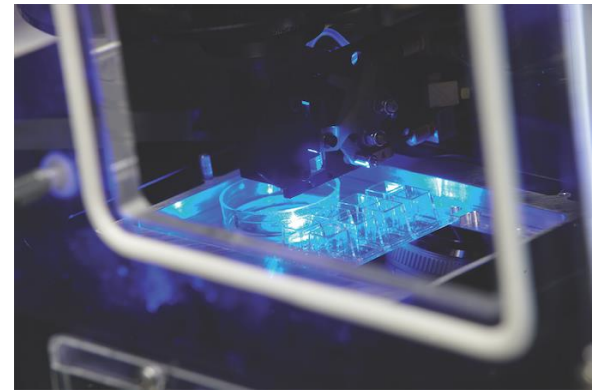


## Core Facilities

> 1,200 internal and external  
users per year

# The EMBL model for research infrastructures and services

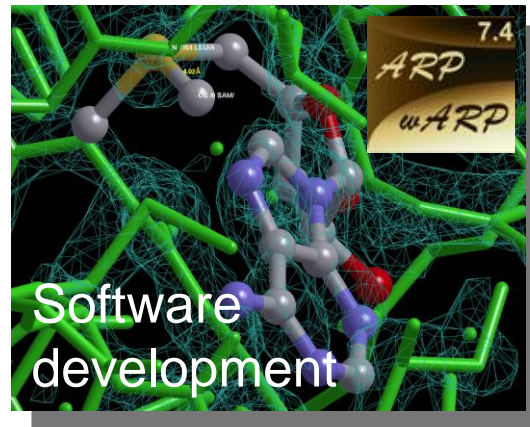
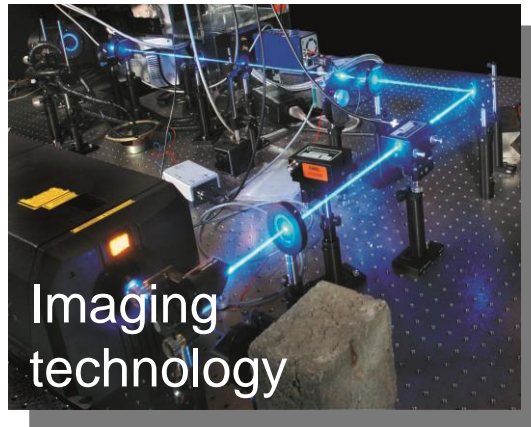
- Close interaction with the scientific community
  - research collaborations
  - user feedback
- Stringent review
  - Scientific Advisory Committee
- Rapidly adapting to changing landscape
  - scientific needs
  - new technologies



# Excellence through innovation: Technology development & transfer

EMBL develops a broad spectrum of technology and instrumentation for life science research

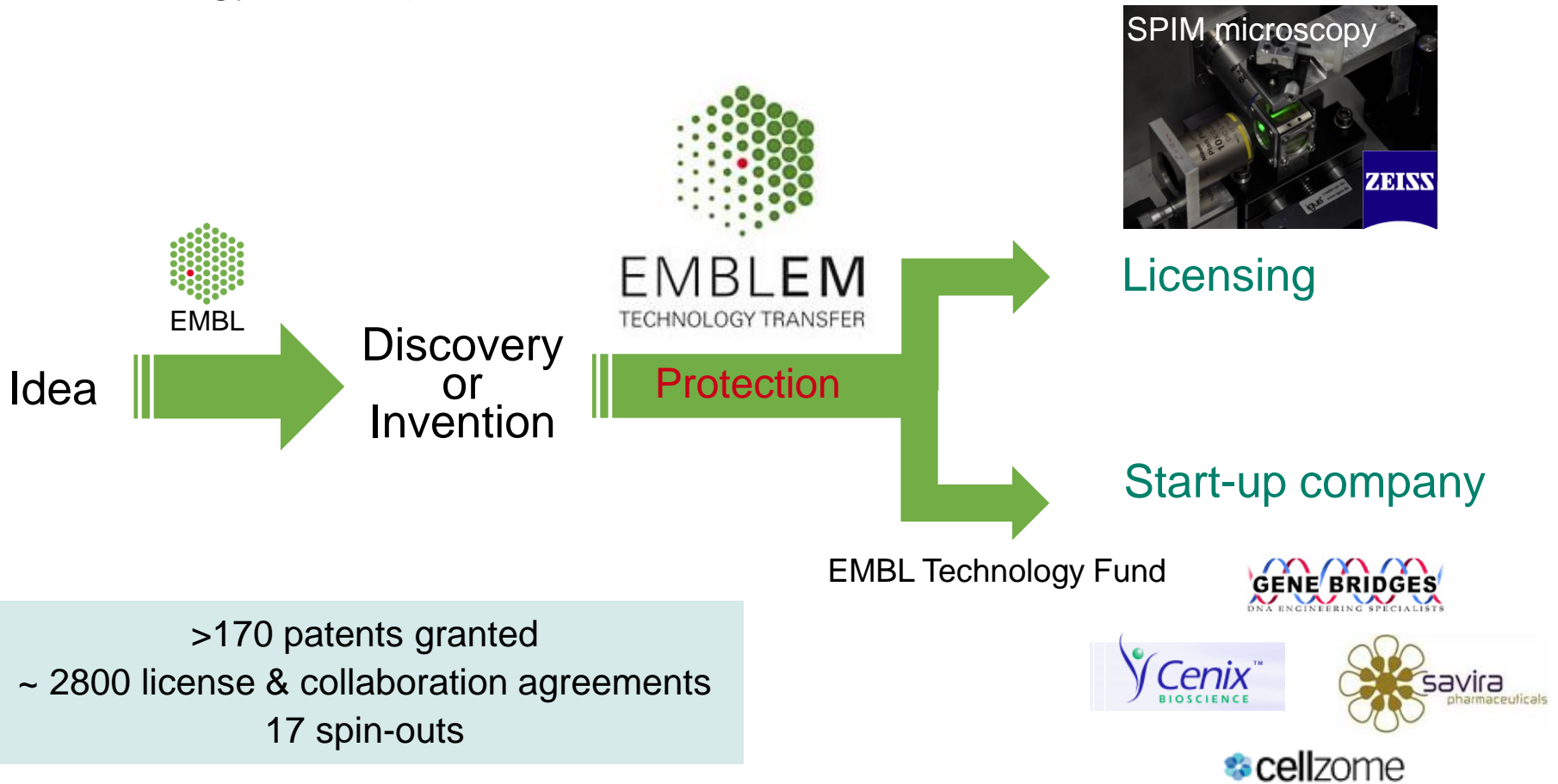
- Cross-fertilisation between research activities and technology development



- Economic impact

# Technology transfer

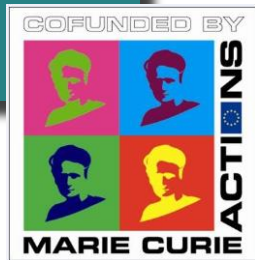
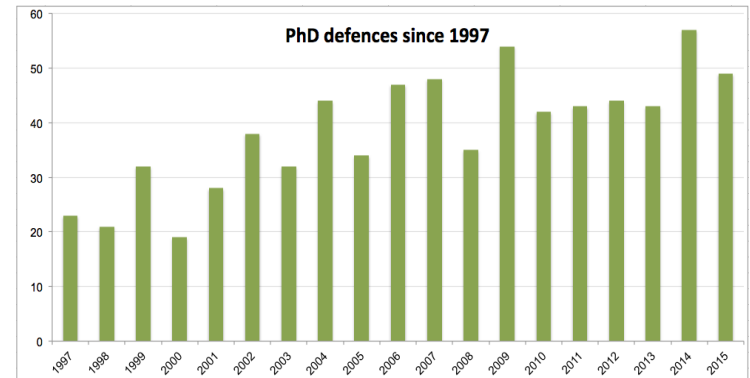
The scientific community and society at large benefit from EMBL's technology development and research discoveries



# Promoting excellence at EMBL: Internal training

## EMBL International PhD Programme

- Joint PhD degree with 25 universities in 17 countries
- ~ 240 students from over 40 countries



## Postdoctoral programmes

- Classical postdoctoral scheme
- EMBL Interdisciplinary Postdocs (EIPODs)
- EMBL Sanger Postdocs (ESPODs)
- EMBL-EBI BRC\* Postdocs (EBPOD)

(\*BRC: NIHR Cambridge Biomedical Research Centre)



# Promoting excellence beyond EMBL: External training 2014

- Courses and conference programme across all five EMBL sites
  - 22 conferences and 43 courses
  - > 6000 participants from > 80 countries
    - 147 CPP fellowships and/or travel grants
- Off-site training (mainly by EMBL-EBI staff)
  - ~ 150 training events
- Online bioinformatics training at EMBL-EBI
  - 90 online courses with > 130k unique users
- Visitors' Programme
  - > 500 visitors/year



# Exporting the EMBL model: EMBL Partnerships

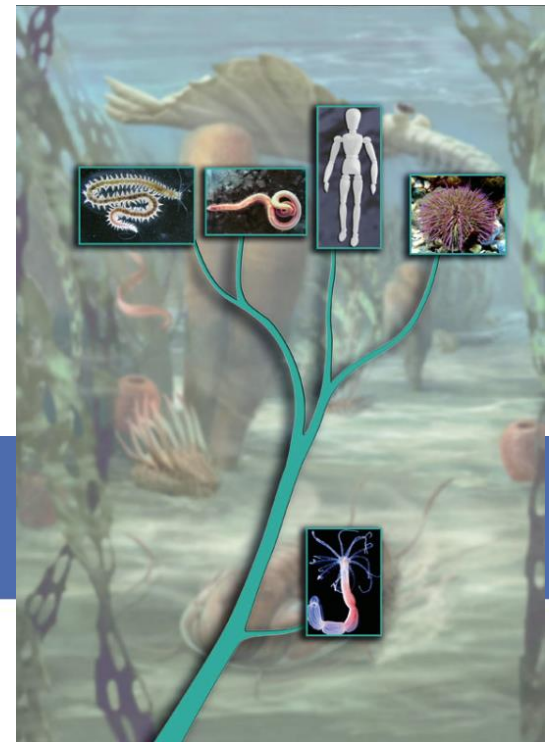
- Close cooperative affiliation with national institutions in EMBL member states
- Establish network of international centres of scientific excellence and advanced training modelled on EMBL
- Exploit complementarity or synergy
- Transfer know-how



# EMBL Partnership in Marine Molecular Biology with the Sars Centre

Promoting scientific exchange and collaboration in basic research on marine organisms and the study of animal evolution

- Focus on study of animal evolution and establishment/use of marine model organisms
- Established in 2003
- Renewal of partnership agreement for ten years in 2015



# The Nordic EMBL Partnership for Molecular Medicine

Fostering translational research and promoting exchange of expertise in basic and clinical research

- 2007 – partnership initiated between University of Oslo, Umeå University, University of Helsinki and EMBL
- 2013 – renewal of partnership agreement for 10 years and opening of Danish node at Aarhus University



**NCMM** Centre for Molecular Medicine Norway

**MiMS** Laboratory for Molecular Infection Medicine Sweden

**FIMM** Institute for Molecular Medicine Finland

**DANDRITE** Danish Research Institute of Translational Neuroscience

**>25** research group leaders have been recruited to the Nordic EMBL Partnership Nodes using the EMBL model since 2007

Thank you!