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NEuro-BioImaging Poland (NEBI)

National imaging research centre in biological and biomedical sciences

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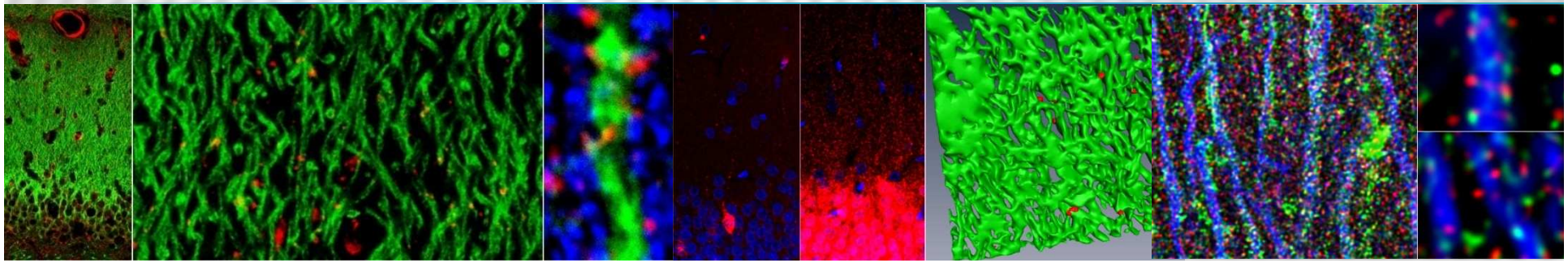

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Outline

- Goals and objectives of NEBI
- NEBI on the Polish RI Roadmap
- Linking to Euro-BioImaging
- Benefits and forms of integration with Euro-BioImaging
- Additional benefits of potential EMBL membership
- Phases of the project and funding sources
- Short-term and long-term plan of action

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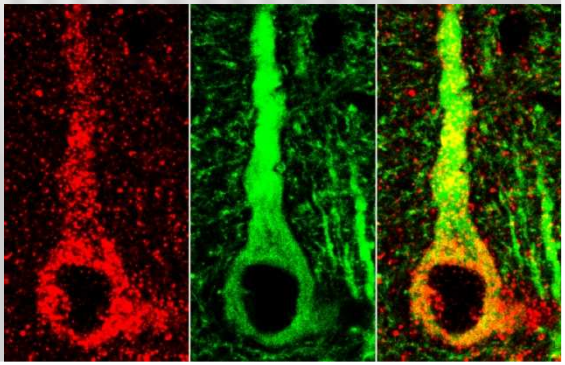
The main goal of NEBI

The main objective of NEuro-BioImaging Poland (**NEBI**) is to provide open access to imaging technologies across biological and medical applications, with emphasis on (but not limited to) neuroimaging.

NEBI will operate as a distributed infrastructure with two main locations (Neurobiology and Brain Imaging Centres in Warsaw and Krakow) and a broader network of associated centres (10 or more legal entities).



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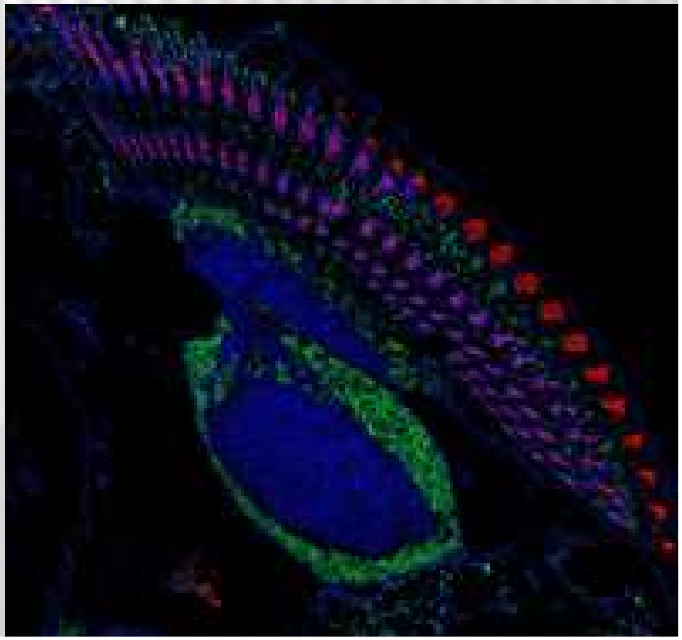
NEBI on the Polish Road Map for Research Infrastructures

- On February 23, 2011 Minister of Science and Higher Education, Prof. Barbara Kudrycka approved the list of infrastructure projects for the Polish Road Map for Research Infrastructures.
- NEBI is one of five projects in the category: "Efficient healthcare and increasing the effectiveness of health promoting activities".
- A national research centre, coordinated by the Nencki Institute, as a part of Euro-BioImaging, an international project from the ESFRI Road Map (primary focus: biology)



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Linking NEBI to Euro-BioImaging

As a part of integrating Polish RI Road Map projects with ESFRI

EURO-BIOIMAGING

The Nencki Institute is a consortium partner

in the preparatory phase (2011-2013);
37 legal entities, FP7 funding 6M

Benefits of participating in pan-European RI:

- adaptation of best practice in management of RI: process planning, financing, legal and governance, user access, collaboration with industry stimulating innovation and economic development
- source and transfer of new technologies and solutions
- networking (staff recruitment, scientist mobility, transfer of knowledge and know-how)

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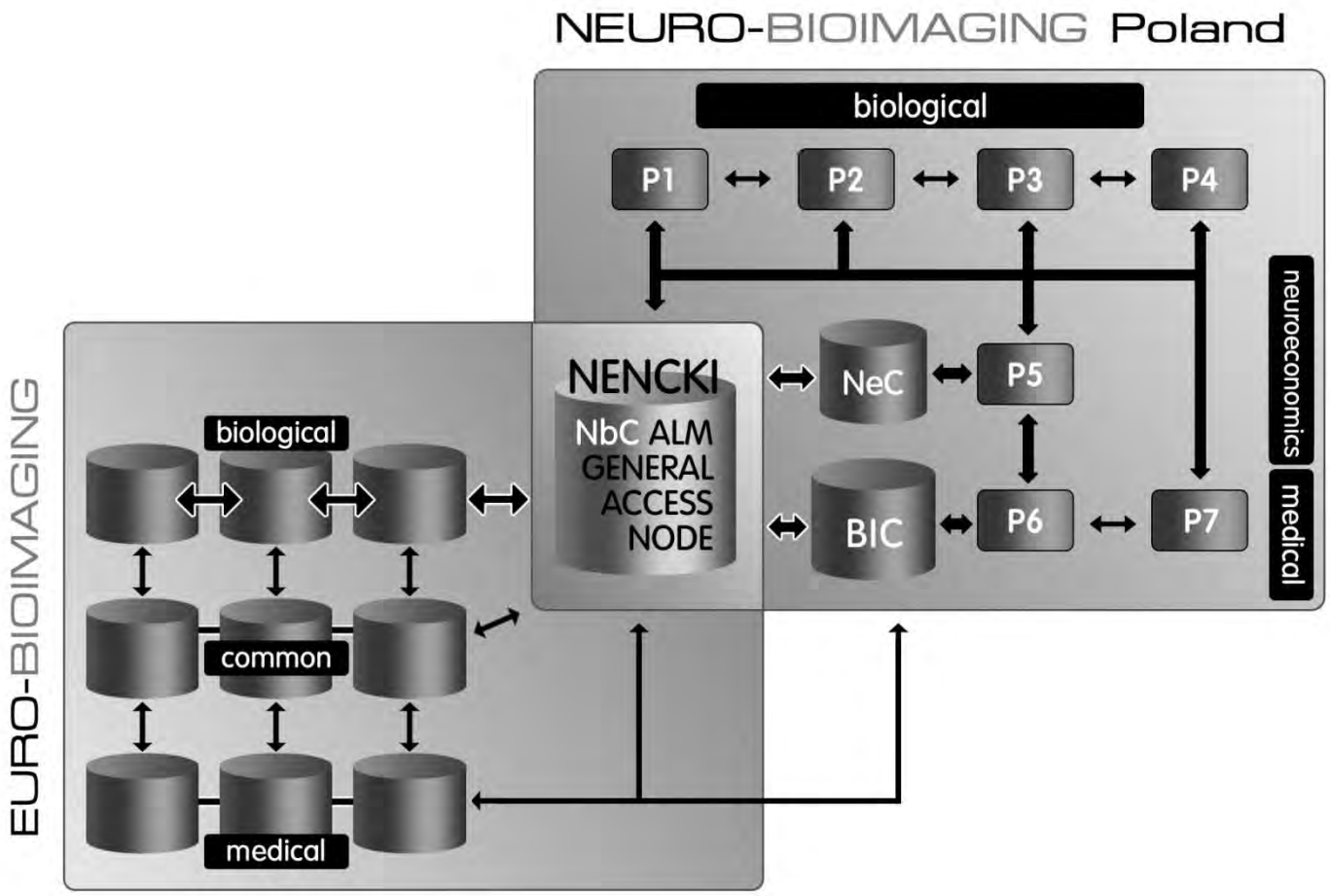
Proposed structure of NEBI in the context of Euro-BioImaging



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Nencki Research Focus

Research at the **Nencki Institute** focuses on elucidation of biological processes associated with learning and memory, behaviour, development, neurological diseases, ageing and death at all levels – from molecular to whole (animal) organisms.

25 of **31** (80%) research laboratories are involved in **brain research**.

Imaging techniques, in particular **ALM**, represent one of the primary research methods actively used and developed at the Institute.

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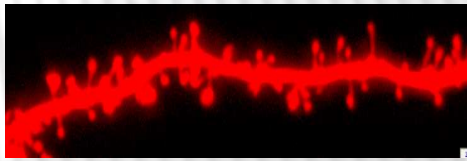
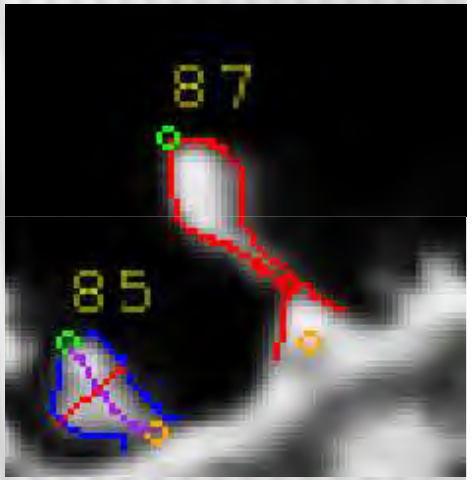
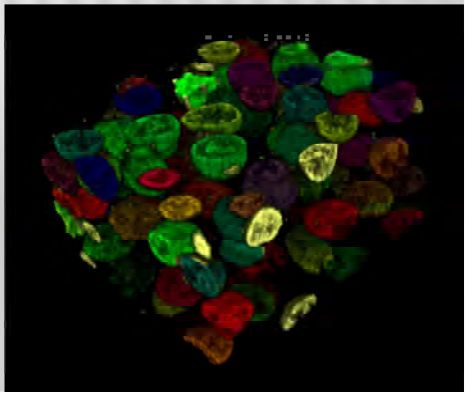
New technologies and proprietary solutions



New methods and tools for:

- *efficient 3D segmentation and morphological analysis of tightly packed cell nuclei in confocal stacks for research and diagnostic applications;*
- *advanced automatic dendritic spine detection and morphology analysis with highly efficient artifact discrimination capabilities.*





Potential for innovation and technology transfer

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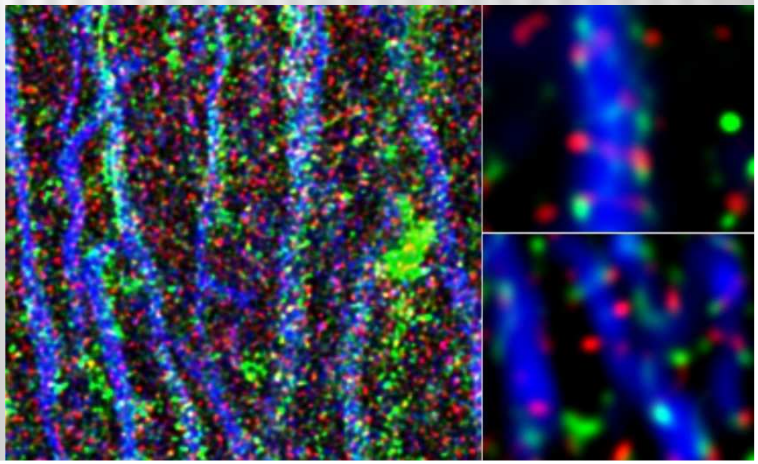
Selected publications using ALM techniques

- *Wilczynski et. al, Important role of matrix metalloproteinase 9 (MMP-9) in epileptogenesis.* ***J Cell Biol*** 180: 1021-1035, 2008
- *Winiarska et al. Statins impair antitumor effect of Rituximab by inducing conformational changes of CD20* ***Plos Medicine***, 5:e64, 2008
- *Gorlewicz et. al, CD44 is expressed in non-myelinating Schwann cells of the adult rat, and may play a role in neurodegeneration-induced glial plasticity at the neuromuscular junction.* ***Neurobiol Dis*** 2009; 34:245-258
- *Konopka et al. MicroRNA Loss Enhances Learning and Memory in Mice.* ***J Neurosci*** 2010; 30: 14835-14842
- **New talented scientists +**

  new modern facilities +

  integration with ESFRI →

  research development & better science



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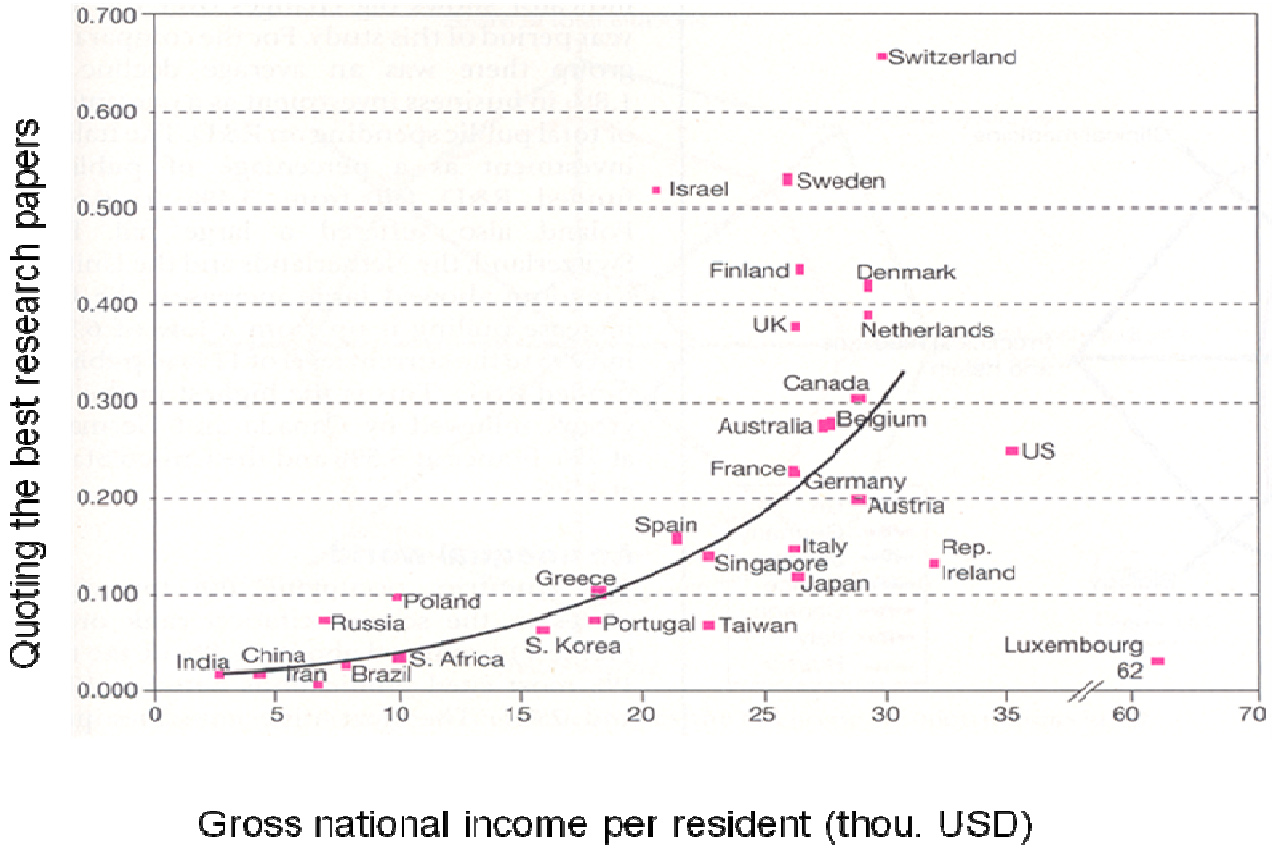
Polish R&D scientific output as a function of GDP



Source:
Presentation by
Jerzy Duszynski
Prague, 2009

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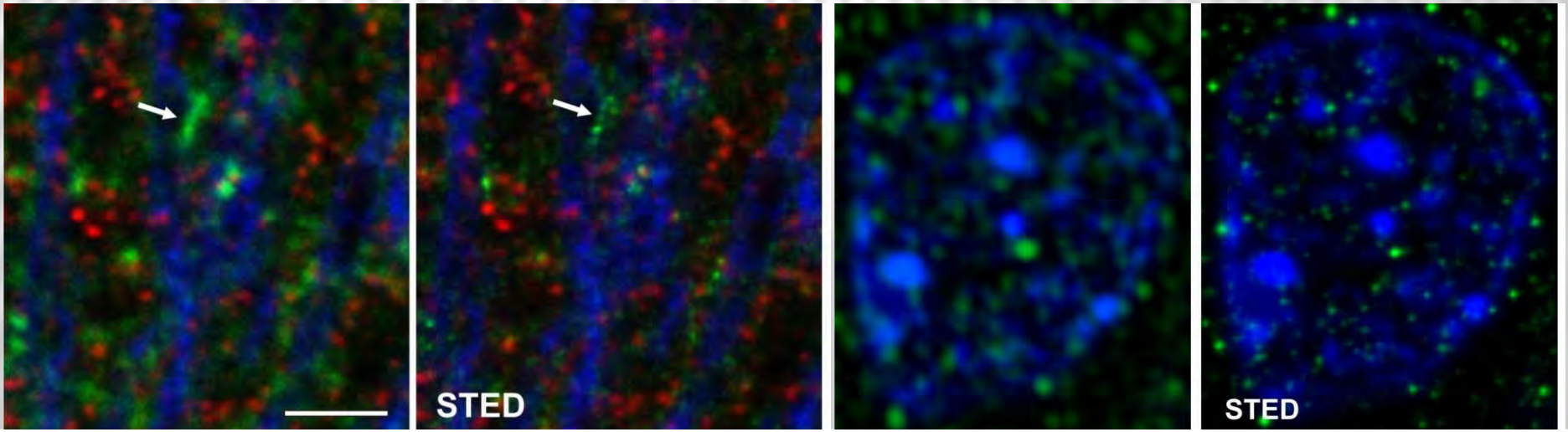
Using European Funds for investment in RI and research

Structural Funds (ERDF):

- 10 projects (3 coordinated, 7 as participant)
- Total value: **74 648 166 PLN**

Framework Programmes (7FP):

- 12 projects
- Total value: **4 476 341 EUR**



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Establishment of the Neurobiology Centre (2007-2013)

<u>Advanced light microscopy (ALM)</u> core facility (CF)

focused on tissue structure and function imaging

Brain imaging core facility using 3T MRI scanner

ERDF investments close to 15M euro

Part of the Centre for Preclinical Research and Technology (CePT) investment programme (100M euro)

Recruitment of CF leaders and post-doctoral fellows within an FP7 Capacities (increasing regional potential) project – BIO-IMAGINE

PEOPLE*TECHNOLOGIES*KNOW-HOW

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Timeline and estimated costs for NEBI

- *Preparatory phase: 2010-2012*
- *Initial „construction" phase (catching up): 2011-2013*
- *Integration with Euro-BioImaging 2012-2013*
- *Operational phase: 2013 – onwards*
- *Construction upgrades (Euro-BioImaging constr phase) 2014-2016*

- *Preparatory phase (incl. equipm. upgrades) 6M euro (4.6 secured)*
- *Initial construction (catch up) phase: 41 M euro (28M secured)*
- *Construction upgrades 20-30 M euro (TBD)*
- *Annual operations: 4-5 M euro*
- *Decommission cost: N/A*

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Current and potential sources of funding

CURRENT PROGRAMMING PERIOD (2007-2013)

- *Regional operational programmes (RPO)*
- *Innovative Economy Operational Programme*
- *FP7 Capacities Programmes: Regional Potential (reg pot)*
- *National Centre for Research and Development (NCRD)*
- *Ministry of Science and Higher Education*

NEXT PROGRAMMING PERIOD (2014-2020)

- *Dedicated programmes in „knowledge economy" for Road Map RI*
- *Targeted cluster financing via regional and national ERDF funding*
- *Strategic programmes via NCRD*
- *Mobility (start-up packages), recruitment and training (MSHE, ESF)*
- *FP8 for access and scientist mobility*

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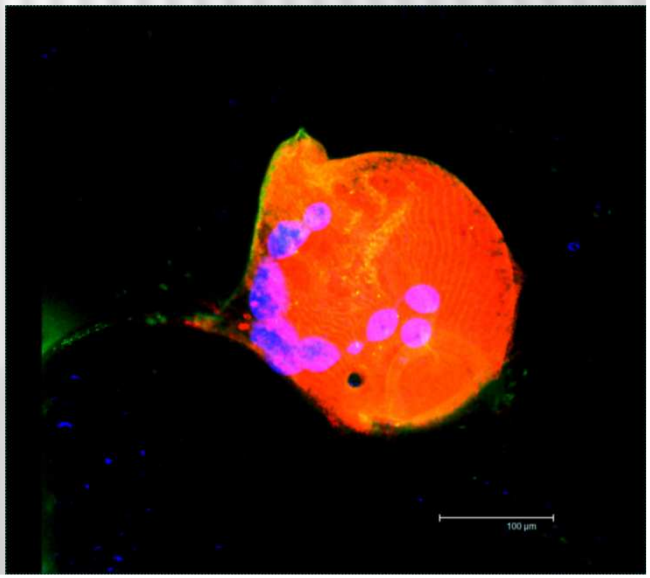
Greatest financing needs

- *Mobility and brain gain*
  - *Min 3-year competitive start-up grants for scientists and professionals returning from abroad with competitive salaries and ability to recruit supporting staff (scientists, managers, CF and group leaders)*
  - *Outgoing training missions to visit and work at functioning facilities and RI*
- *Operating and membership costs*
  - *Initial funding for operating newly created RI*
  - *Membership fees in international organisations – i.e. European Molecular Biology Laboratory (EMBL)*
- *Development of self-sustainable funding system*
  - *Access fees to cover part of operating costs (grants)*
  - *Attractive industry access fees*
  - *Industry partnership programmes*



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Potential Benefits from EMBL Membership

- *Participation in decision making on all the issues concerning the EMBL and its outstations via voting in the EMBL Council*
- *opportunity to obtain EMBL funding for PhD and Postdoctoral studies*
- *preferred access to the EMBL core facilities, which represent the best equipment in the respective areas, more activity in FP8 consortia*
- *ability to participate in highly successful partnerships that the EMBL nourishes with its member states*
- *insight into construction, operations and taking strategic decisions related to pan-European research infrastructures coordinated by EMBL (Euro-BioImaging, ELIXIR) discussed and made at the EMBL Council*
- *access to peer review (i.e. national life science strategic programmes) and excellent prospects for networking of Polish molecular biology scientists on the European level*
- *benefits of close cooperation and transfer of know-how and experience with innovation management and science-industry partnerships*

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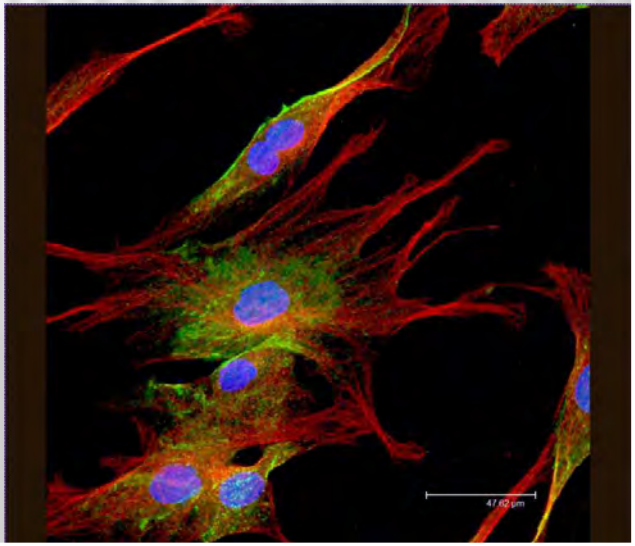
Long-term action plan

- Identifying investment needs and strategic competence centres
- Successful establishment of ALM general access node
- Development of coherent NEBI strategy for deployment, governance, operational financing, access policy and sustainable funding schemes
- *Building scientific excellence and closer ties with industry*
- *Creating capacity to develop new technologies in niche competence areas (observation and image analysis)*
- *Training of young scientists, managing access and implementation of new technologies*
- Developing benchmarking schemes and RI activity evaluation methods
- Closer integration with the European and international imaging community



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NEuro-BioImaging Poand

Building imaging capacity for achieving scientific excellence

People **Ideas** **Tools**