How to become a PhD student at EMBL?

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Dean of Graduate Studies
European Molecular Biology Laboratory

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Who are we at EMBL?

EMBL-EBI

Hamburg

Heidelberg

Grenoble

Monterotondo

European Molecular Biology Laboratory
Who are we at EMBL?

- European Intergovernmental Research Organisation
- Founded in 1974
- Five sites in four countries
- About 1400 in staff; ~1100 scientists
  - 79% from EMBL member states
  - representing more than 60 nationalities
- 20 (+1) Member States
The Five Branches of EMBL

- **Heidelberg**: Basic research in molecular biology, Administration EMBO
- **Hamburg**: Structural Biology DESY
- **Hinxton**: European Bioinformatics Institute (EBI) Sanger Centre
- **Grenoble**: Structural Biology ILL ESRF IBS UVHCI
- **Monterotondo**: Mouse Biology EMMA CNR
EMBL’s 20 + 1 Member States

AUSTRIA
BELGIUM
CROATIA
DENMARK
FINLAND
FRANCE
GERMANY
GREECE
ICELAND
IRELAND
ISRAEL
ITALY
LUXEMBURG
NORWAY
PORTUGAL
SPAIN
SWEDEN
SWITZERLAND
THE NETHERLANDS
UNITED KINGDOM

AUSTRALIA (Ass. Member)
What are we doing at EMBL?

EMBL’s five missions

- Basic research
- Development of new technologies and instruments
- Technology transfer
- Services to the Member States
- Advanced Training
What can YOU do at EMBL?

Biology
Chemistry
Physics
Mathematics
Informatics
Engineering
Molecular Medicine

www.embl.org/phdprogramme
www.embl.org/postdocs
www.embl.org/jobs
What makes EMBL so special?

- **Internationality**
  - Five sites in four different European countries
  - More than 60 different nationalities
  - 1104 external collaborations in 2008
  - Global alumni network of > 4500; about 65% in science

- **Interdisciplinarity**
  - Biologists, Chemists, Physicists Mathematicians, Computer Scientists, Engineers, Biomedical Scientists working together

- Secure funding of > €160 mio in 2008, 25% of which external

- 619 peer-reviewed publications in 2008

- EMBLEM – own tech Transfer Company at arms length
EMBL’s citation ranking

- EMBL ranks as top European institute and fourth worldwide in molecular biology and genetics 1999-2009*

<table>
<thead>
<tr>
<th>Institution</th>
<th>Papers</th>
<th>Citations</th>
<th>Citations per paper</th>
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</thead>
<tbody>
<tr>
<td>Cold Spring Harbor Lab</td>
<td>669</td>
<td>63,570</td>
<td>95.02</td>
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<tr>
<td>MIT</td>
<td>1,995</td>
<td>163,596</td>
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<td>Salk Institute for Biological Sciences</td>
<td>707</td>
<td>49,996</td>
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<td>European Molecular Biology Lab</td>
<td>1,435</td>
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<td>Memorial Sloan-Kettering Cancer Centre</td>
<td>1,099</td>
<td>71,250</td>
<td>64.83</td>
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<td>Wellcoem Trust Sanger Institute</td>
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<td>50,997</td>
<td>64.55</td>
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<tr>
<td>Rockefeller University</td>
<td>1,332</td>
<td>83,307</td>
<td>62.54</td>
</tr>
<tr>
<td>Dana Farber Cancer Institute</td>
<td>673</td>
<td>41,627</td>
<td>61.85</td>
</tr>
<tr>
<td>Massachusetts General Hospital</td>
<td>1,447</td>
<td>86,773</td>
<td>59.97</td>
</tr>
<tr>
<td>Cancer Research UK</td>
<td>752</td>
<td>44,343</td>
<td>58.97</td>
</tr>
</tbody>
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* Thomson Essential Science Indicators
What makes a PhD at EMBL so special?
The EMBL International PhD Programme was founded in 1983 and celebrated its 25th anniversary in 2008.

Since 1997, EMBL can award its own PhD degree.

Since its inception several hundred EIPP students have defended their PhD-thesis at more than 90 universities.

EIPP alumni account for more than 10% of EMBL alumni (>4500).
No need to be a rich student to join the EMBL

- EMBL covers cost for travel and accommodation for the interview week
- All PhD positions come with generous fellowships including broad health care benefits
- EMBL reimburses the fees potentially associated with university registration
- No bench fees!
- After finishing a 'former' Predoc may continue to stay up to 4.5 years in total as a 'bridging Postdoc'
Key performance indicators of a PhD at EMBL

Graduation ceremony at EMBL in December, 2008
Key performance indicators of a PhD at EMBL

- Application rate is at about 20:1
- Predoc to supervisor ratio is on average 2:1
- It takes about 3.5 – 4 years to finish a PhD
- Thesis submission rate of > 95% (predoc data since 1993)
- Majority of EIPP predocs obtains a doctoral degree with distinction (>75%)
- Broad network of partner universities for joint degrees
- Excellent Predoc publication record
EMBL International PhD Programme

Philosophy, Procedures & Pathways
Corner stones of the predoc lifecycle

- Recruitment
- Core Course
- Thesis Advisory Committee (TAC)
- University Registration & Thesis Submission
- Complementary skills training
- Alumni
Recruitment

Advertisement – Application – Admission
Application & eligibility

- Seeking excellent students - based on self-selection
- Application timelines twice a year
- On-line application
- Admission requirements according to rules of national system
- Need 2 academic/scientific references
- National evaluation of application by EMBL faculty
- Evaluation of applications by two designated EMBL Units
- Invitation of 2-3 candidates per position; about 50 open positions annually
- “Shared Applicant Pool“ Initiative
Admission

- No quota system

- Individual 5-day selection by EMBL Faculty:
  - Initial Admission Assessment (panel interview)
  - Successful candidates interviewed by 15-20 Group Leaders

- Tandem formation between candidate and supervisor based on students preferences

- All eligible candidates may enter the waiting list

- Invited candidates may start any time after admission, preferably latest with the core course in October
What does EMBL expect from you?

- Good grades
- Taking pleasure in interdisciplinary thinking
- A profile matching a group leader’s expectations regarding the requirements of a specific project
- Enthusiasm, curiosity, dedication, creativity, diligence ...
- Becoming a valuable team member!
Core course

Speak the same scientific language & meet your classmates and faculty
Core Course

- Core course at the beginning (~400 contact hours)
- Teaching materials on-line (password protected)
- Eight modules with lectures and practicals taught in an interdisciplinary fashion
  - Basic module
  - Chromatin and Translation (5 days)
  - Cell Biology (4 days)
  - Disease Mechanisms and Pathogens (4 days)
  - Genomics (5 days)
  - Proteomics and Structural Biology (7 days)
  - Outstation visit
  - Developmental Biology and Behavior (4 days)
  - Evolution (5 days)

- One module on non-scientific bits
- Bioinformatics course (2nd year; ~30 contact hours)
Thesis Advisory Committee (TAC)

Mentoring & Guidance
Thesis Advisory Committee

- Your first tailor-made networking opportunity!

- Thesis Advisory Committee (TAC)
  - Three EMBL Group Leaders and one external member (University Professor)

- Annual TAC meetings
  - present a written report and discuss annual progress
  - discuss proposed future work

- 4 years to complete PhD work
### Mentoring & guidance throughout your PhD

#### Expected outcome of the TAC meetings

<table>
<thead>
<tr>
<th>1(^{st}) TAC:</th>
<th>2(^{nd}) TAC:</th>
<th>3(^{rd}) TAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well defined thesis project including risk assessment</td>
<td>Monitoring adequate progress in view of the PhD project</td>
<td>Timing of thesis submission</td>
</tr>
<tr>
<td>Predoc well acquainted with the scientific landscape in which the thesis project is embedded</td>
<td>Refined path forward for following period</td>
<td>What experiments still need to be done to finish up</td>
</tr>
<tr>
<td>Paperwork ready for university registration</td>
<td>Plan/schedule for publication(s)</td>
<td>Recommendation on contract extension beyond the 3.5 year mark</td>
</tr>
<tr>
<td>Individual development plan</td>
<td>Report/outlook on conference attendance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual development plan</td>
<td></td>
</tr>
</tbody>
</table>
University Registration & Thesis Submission

Since 1997, EMBL can award its own PhD degree

0 months                                             42-48 months max!

THE ORIGIN OF THE THESSES
Why university registration?

Predocs can defend and obtain their PhD degree

- from EMBL (since 1997)
- jointly from EMBL and one of its 29 partner universities in 19 countries
- from national universities
29 Partner Universities in 19 Countries plus:

- Katholieke Universiteit Leuven
- University of Zagreb
- University of Copenhagen
- Technical University of Denmark
- Åbo Akademi University
- University of Helsinki
- University of Turku
- Université Louis Pasteur de Strasbourg
- Université Joseph Fourier de Grenoble
- Université Denis Diderot de Paris VII
- Université Pierre et Marie Curie de Paris VI
- University of Heidelberg
- University of Munich
- University of Crete
- Eötvös Lorand University
- University of Iceland
- University College Cork
- University of Milano
- University of Bergen
- University of Oslo
- Universidade de Lisboa
- Universidade Nova de Lisboa
- University of Moscow
- Universidad Autonoma de Madrid
- Karolinska Institutet
- University of Stockholm
- University of Geneva
- Radboud University
- University of Dundee
- Australia
- Group of Eight
At which universities do EIPP predocs register?

Predocs can defend and obtain their PhD degree

- from EMBL (since 1997)
- jointly from EMBL and one of its 29 partner universities in 19 countries
- from national universities

180 students in total as of April 2009

- Heidelberg (84)
- Cambridge (28)
- Grenoble (11)
- Paris VI & VII (4)
- Milano (4)
- Dundee (2)
- Hamburg (ext; 4)
- Zurich (ext; 2)
- Wuerzburg (ext; 3)
- Others (ext; 17)
- Other partner universities (11)
- Not set (17)
- Others (ext; 17)
Complementary skills training

How to balance between 'too much vs. not enough'?  
The right thing at the right time...
-  
And what to do after the PhD?
... how to avoid the Cecilia phenotype?
Predoc activities at EMBL – fostering early independence

- 12th International EMBL PhD Student Symposium 2010
  at EMBL ATC in Heidelberg on October 21-23, 2010
  http://phdsymposium.embl.org/

- Annual retreats
  - PhD retreat
  - Predoc representatives retreat

- Lab Day & Career Day

- Predoc Wiki

- Skiing, cooking, diving, theatre, choir, ...

- ...
Participating in non-scientific training activities

- Language training (German, English, French)
- IT courses (Microsoft Office and more)
- General training and development programme
  - Personal skills (time management, personal effectiveness, ...)
  - Communication skills (presentation skills, scientific writing, ...)
  - Project management
  - Grant applications & interviewing skills
  - Team building & conflict management
  - ...
- Career day – insight into alternative careers
EIPP alumni

The EIPP product: successful alumni worldwide!
Global alumni network of more than 4500

- About 65% of EMBL alumni are active in science
- EIPP alumni account for more than 10% of EMBL alumni
- Visiting PhD's account for another 10% of the EMBL alumni
What do EIPP students do after their PhD?
(Data from students that defended since 01/2004)

- **Academic research (80%)**
- **Scientific careers outside research (13%)**
- **Private sector research (7%)**

108 students in total.
There is always space for your ideas!
Thank you!