DFG's funding programs, Research Training Groups, and Graduate Schools and differences to US graduate schools

(incl. a brief introduction of the DFG)
Content

► German Research Foundation
► Research Training Groups
► Graduate Schools
► Differences to US Graduate Schools
The DFG
– Who we are and what we do

► Central **public funding organization** for academic research in Germany
► The **largest funding organization** in Germany
► The central **self-governing body** of science and research in Germany
► **Member organization** (universities, academies, research organizations)
► The **budget in 2009: 2.2 billion euros**
► **DFG serves all branches of science and the humanities** by funding research projects at research universities and other publicly funded research institutions in Germany
The DFG
– Who we are and what we do

- Promoting **academic excellence** on a competitive basis in order to deal with complexity
- Independent multi-tiered **peer review**
- Special focus on supporting **young academics**
- Promoting **international research co-operation**
- DFG fosters scientific quality by funding the best research projects through competition
- Fostering **links** between **science** and **industry**
- **Advisory function for politics**
The DFG
– Who we are and what we do

The 2.2 billion euros (ca. 3 billion dollars) are allocated to...

Committees & Commissions
€ 3.9 m

Funding of Infrastructure
(Scientific Library Services and Information Systems, Research Vessels)
€ 157 m

Coordinated Programmes
(e.g. Research Training Groups, Collaborative Research Centres, Research Units, Excellence Initiative)
€ 1,182.7 m

International Scientific Contacts
€ 27.1 m

Individual Grants
€ 635.4 m

Scientific Prizes
(Leibniz Prize etc.)
€ 25.2 m

Direct Funding for Young Researchers
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The DFG
– Who we are and what we do

DFG’s Research Training Groups, Graduate Schools, differences to US graduate schools, Jürgen Breitkopf
Washington, DC, April 14, 2010
German Research Foundation in brief

Research Training Groups

Graduate Schools

Differences to US Graduate Schools
Traditional Model of PhD Training
– „Doktorvater“ model

- “One student – one advisor – one thesis“
- research project mostly integrated into respective professor’s research activities
- no lectures or courses (as part of a research and study program)
- mentoring and supervision depend on the individual professor’s personality
- high dependence on one single professor (“Doktorvater”, professor – student = apprentice relationship)
The Structured Model of PhD Training
– more independence

- research and study program as part of broader research context
- additional taught courses (soft skills etc.)
- formalized mentoring and supervision
- umbrella structure for group of PhD students
Research Training Groups (RTG) since 1990 – training and research

Features of Research Training Groups

► structured PhD programme
► thematically focussed research and study programme
► established at scientific centres of excellence
► peer review process
► in all fields of science, incl. medicine & the humanities
► interdisciplinary research programme
► no quota, bottom-up principle
► model, no comprehensive funding
Who runs a Research Training Group?

- applicant is a university
- however, application is written by a small group of cooperating researchers (5-10)
- mainly senior faculty members but integration of junior faculty is highly appreciated
- 10 – 15 PhD candidates
- 1 – 2 postdocs
- 3 – 5 undergraduates as “research students”
- 5 – 20 associates funded by other sources
Research Training Groups
– characteristics

► tailor-made study programme: workshops / seminars for specialised and transferable skills
► mobility period at universities abroad; conferences; summer schools
► regular supervision of PhD students; mentoring programme
► large scope for students initiatives
► three-year stipends for doctoral students
► limited duration (2 funding periods of 4.5 years, max. 9 years)
Research Training Groups
– funds

► fellowships for PhD students, some postdocs, and undergraduate students
► means for research materials, travel funds for students and researchers
► workshops, summerschools, excursions, soft skill seminars
► invitation of visiting researchers
► means for coordination costs
► funds for sabbaticals
► gender means

Average budget of one Research Training Group: almost 600,000 euros p.a. (ca. 800,000 dollars p.a.)
Research Training Groups
– internationality

► international students are welcome to apply for fellowships:
  ● about 30% international PhD students
  ● about 40% international postdocs

► some RTGs offer their programs in English

► international guest scientists

► support for international exchange of senior and junior scientists

► program variant: International Research Training Groups
What is needed?

► critical mass on both sides
► complementarity of expertise
► joint research programme – systematic coordination of projects
► joint supervision
► joint qualification programme (joint and local measures)
► reciprocal exchange of doctoral candidates: 6 to 12 months at partner site
► matched funds
International Research Training Groups
– structural problems

► differences in duration or organization of PhD
  ● 3 vs. 4 years

► differences in funding
  ● stipend versus salary, higher payment
  ● DFG: offers additional means for stipends
  ● no reciprocal additional funds available in other countries

► unilateral mobility (country specific)
International Research Training Groups – challenges

- mobility and long distance coordination
- setting into international scientific community
- national differences of
  - research systems
  - funding systems
  - ways of qualification
- solutions
  - identification of adequate partners and common goals
  - ways of (co-)funding
- achievements
  - scientific progress through complementarity
  - new generation of international scientists
International Research Training Groups
– expected benefits

► higher scientific innovation potential
► broader theoretical and methodological training of doctoral candidates
► development of common standards for “design” of the doctorate
► symmetric approach to exchange knowledge and researchers between international institutions
► no brain drain
Research Training Groups
– a few numbers

► 2009: approx. 3,300 PhD students funded

► budget in 2009: approx. 110 million euros (including 20 % overhead) (ca. 150 million dollars)
Research Training Groups
– a few numbers

Number of Research Training Groups

- Humanities and Social Sciences; 61; 28%
- Life Sciences; 65; 30%
- Natural Sciences; 53; 25%
- Engineering; 37; 17%

216 funded RTGs, thereof 55 International RTGs
(Status: March 1, 2010)
Research Training Groups
– 4 scientific disciplines – 4 examples

- RTG 846: Slavery, Serfdom and forced Labour. Forms of Unfree Life and Labour from Antiquity to the 20th Century, Speaker: Elisabeth Herrmann-Otto, University of Trier

- IRTG 1522: HIV/AIDS and associated Infectious Diseases in Southern Africa, Speaker: Axel Rethwilm, University of Würzburg (Universities of Stellenbosch and Cape Town, South Africa)

- IRTG 1143: Complex Functional Systems in Chemistry: Design, Development and Applications, Speaker: Gerhard Erker, University of Münster (Nagoya University, Japan)

International Research Training Groups
– cooperation with other countries

55 International RTGs
23 Countries
(Status: March 1, 2010)
International Research Training Groups
– cooperation with United States I

- IRTG 1015: History and Culture of the Metropolises in the 20th Century, Speaker: Harald Bodenschatz, Berlin Institute of Technology (City University and Columbia University New York)

- IRTG 1062: Signaling Mechanisms in Lung Physiology and Disease, Speaker: Werner Seeger, University of Giessen (Columbia University New York, Northwestern University Chicago)

- IRTG 1131: Visualization of Large and Unstructured Data Sets. Applications in Geospatial Planning, Modeling, and Engineering, Speaker: Hans Hagen, Technical University Kaiserslautern (Arizona State University, University of California/Davis, University of Utah)

- IRTG 1328: Brain-behavior relationship of emotion and social cognition in schizophrenia and autism, Speaker: Frank Schneider, Aachen University of Technology (University of Pennsylvania)
International Research Training Groups
– cooperation with United States II

► IRTG 1373: Brain signaling: from neurons to circuits Speaker: Arthur Konnerth, Technical University of Munich (Georgetown University)

► IRTG 1498: Semantic Integration of Geospatial Information Speaker: Werner Kuhn, University of Münster (University State New York)

► IRTG 1524: Self-Assembled Soft-Matter Nanostructures at Interfaces Speaker: Martin Schoen, Berlin Institute of Technology (North Carolina State University, University of North Carolina at Chapel Hill, University of Pennsylvania)

► IRTG 1525: The Dynamic Response of Plants to a Changing Environment Speaker: Andreas P.M. Weber, Heinrich Heine University of Düsseldorf (Michigan State University)

► IRTG 1360: Genomics and Systems Biology of Molecular Networks Speaker: Edda Klipp, Humboldt University of Berlin (Boston University, Kyoto University in Japan)
Draft Proposal
► submission to DFG
► Decision in Review Boards
► IRTG: DFG informs Partner Organisation (IRTG) on submission and outcome

Full Proposal
► submission to DFG
► DFG coordinates on-site review (especially nomination of reviewers)
► report of evaluation prepared
► Grants Comittees makes decision
► IRTG: DFG informs Partner Organisation on submission and outcome. Funding granted only if both decisions are positive!
Research Training Groups
– characteristics: evaluation

- No quota
- Bottom-up principle
- Peer review
- Highly competitive
- International

Highly accepted by the community
Content

- German Research Foundation
- Research Training Groups
- Graduate Schools
- Differences to US Graduate Schools
The German Excellence Initiative
– a contest

Aim:
► Strengthen Germany’s universities
► Make them more visible and attractive internationally

Three lines of funding:
► Graduate Schools
► Clusters of Excellence
► Institutional Strategies

Input:
► 2007 – 2012: 1.9 billion € (ca. 2.6 billion dollars)
► 2013 – 2017: 2.7 billion € (ca. 3.7 billion dollars)

public funding (25 % federal states, 75 % federal government)
The German Excellence Initiative
– three funding lines in more detail

Program feature: Universities can apply for funding of …

► **Graduate Schools** (39): highest-level research training; ca. 1 Mio. € p.a.
  • coordinated PhD training
  • professional management

► **Clusters of Excellence** (37): centers of excellence in research; ca. 6.5 Mio. € p.a.
  • huge centers of interdisciplinary research
  • new in terms of size and budget, flexibility of money

► **Institutional Strategies to promote top-level research** (9): excellent research, research training and institutional planning; ca. 21 Mio. € p.a. (including minimum of one Cluster and School)
Graduate Schools
– details

- Structured research training in an excellent research environment
- Internationally competitive centres of top-level research by promoting young researchers
- Instrument of quality assurance in graduate education
- Professional management (ca. 80 % of budget)
- 45 – 500 PhD students, postdocs, undergraduates, junior researchers, professorships
- International recruitment (ca. 25%)

Highest level research training
- 39 Graduate Schools
- approx. 1 million € p.a. each
Germany after Excellence Initiative – regional distribution

Funding lines in the Excellence Initiative 2007

- 39 Graduate Schools
- 37 Clusters of Excellence
- 9 Institutional Strategies
## Research Training Groups versus Graduate Schools

### Research Training Groups
- Focused research programme
- Defined projects with extensive cooperation
- Small group of actors (5-10 PIs, 5-20 PhD candidates)
- "Pioneer" unit in university
- Structural effects expected
- Funds mainly for PhD candidates
- Part-time coordination

### Graduate Schools
- Larger research area
- Not project-driven, varying degree of cooperation
- Larger group of actors (ca. 25 PIs, up to 100 PhD candidates)
- Overarching or "umbrella" structure (departments/faculties, university-wide)
- Cornerstone of university profile
- Comprehensive funding
- Professional full-time management
### Differences to US Graduate Schools
– which model is more comparable?

<table>
<thead>
<tr>
<th><strong>Research Training Groups</strong></th>
<th><strong>Graduate Schools (Excellence Initiative)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>► focused research programme</td>
<td>► larger research area X</td>
</tr>
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<tr>
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<td>(ca. 25 PIs, up to 100 PhD candidates) X</td>
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<td>► „pioneer“ unit in university</td>
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<td>► part-time coordination</td>
<td>► professional full-time management X</td>
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**X = similar to US Graduate Schools**
# Differences to US Graduate Schools
– remaining distinction I

<table>
<thead>
<tr>
<th>Germany</th>
<th>United States</th>
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<tbody>
<tr>
<td>„Universities of applied sciences“ cover partly professional education in fields like engineering, economy, social service on BA and MA level</td>
<td>strict segregation of education of students striving for first-professional degrees and of PhD students</td>
</tr>
<tr>
<td>Education of students striving for first-professional degrees together with PhD students</td>
<td>different degrees (e.g. MD, PhD)</td>
</tr>
<tr>
<td>Same degree („Dr.“) for both groups</td>
<td></td>
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<tr>
<td>Germany</td>
<td>United States</td>
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<td>------------------------------------------------------------------------</td>
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<tr>
<td>There is still individual doctoral education</td>
<td>No individual doctoral education</td>
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<tr>
<td>No plans for a complete change</td>
<td>Graduate Schools are permanent institutions</td>
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<td>Temporally limited DFG funding of RTGs and Graduate Schools (Excellence Initiative)</td>
<td></td>
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<td>Idea: Graduate Schools should be run permanently by universities</td>
<td></td>
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<tr>
<td>Target group: postgraduates (only few pilot projects with master students)</td>
<td>Target group: postgraduates and master students</td>
</tr>
</tbody>
</table>
Thank you for your attention!

Further Information:
► about the DFG: www.dfg.de/en
► about projects funded: www.dfg.de/gepris (German only)
► about more than 17.000 German institutions of research: http://research-explorer.dfg.de/research_explorer.en.html

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