

A blurred, 3D rendering of the letters 'DFG' in a light blue color, set against a background of vertical light streaks and a blue gradient.

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

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

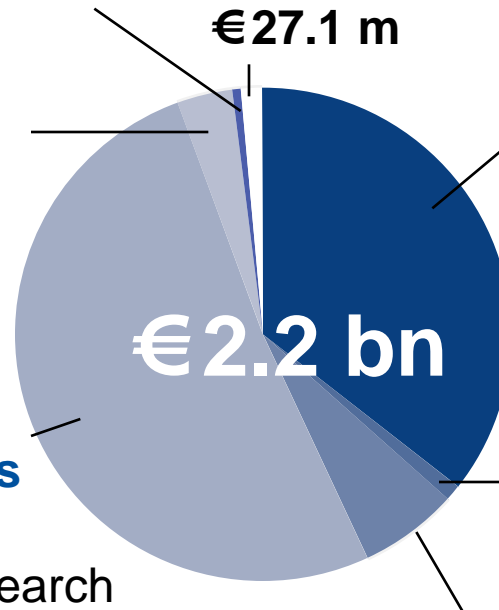
Coordinated Programmes
(e.g. Research Training
Groups, Collaborative Research
Centres, Research Units,
Excellence Initiative)
€1,182.7 m

International Scientific Contacts
€27.1 m

Individual Grants
€635.4 m

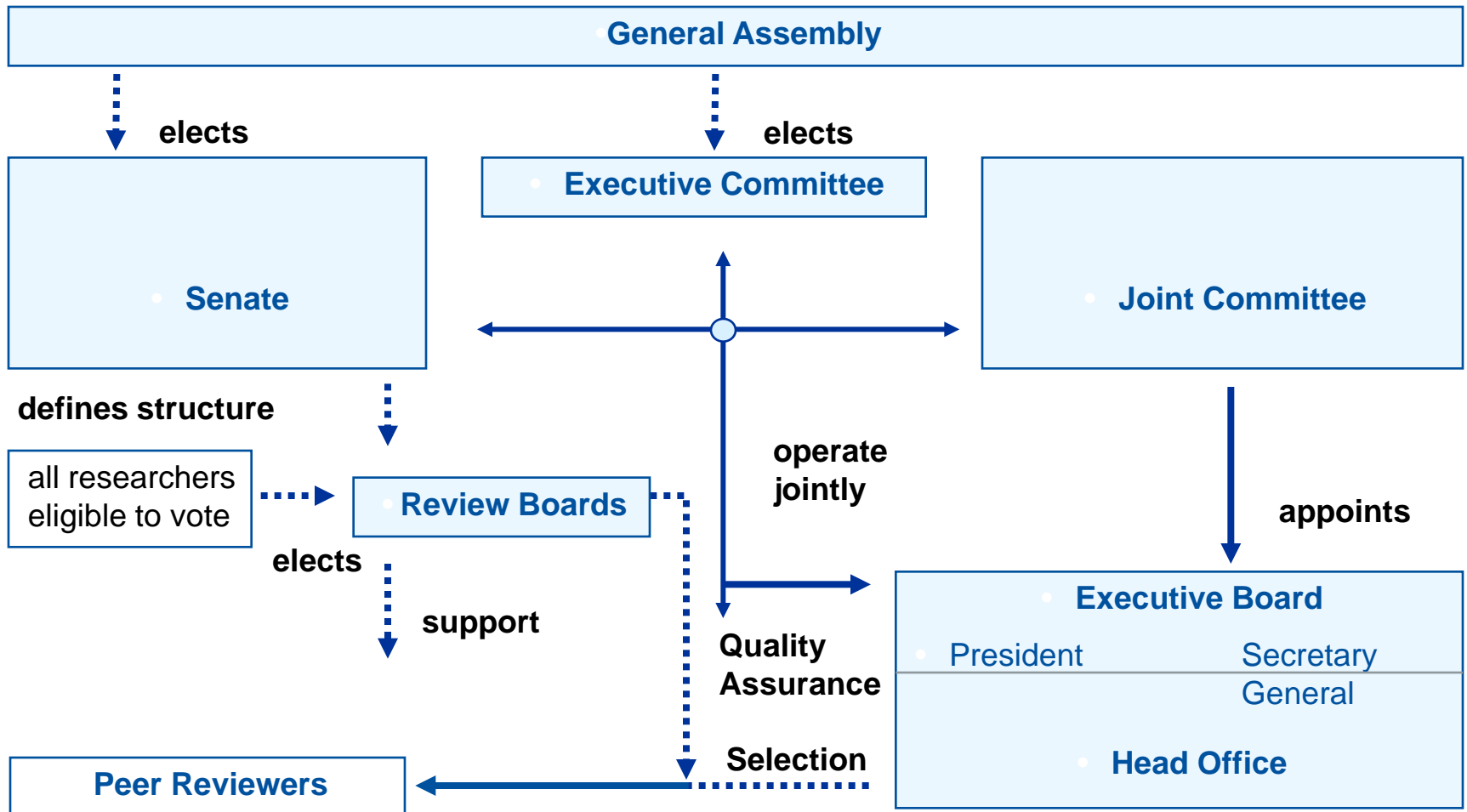
Scientific Prizes
(Leibniz Prize etc.)
€25.2 m

Direct Funding for Young Researchers
€136.1 m



The DFG

– Who we are and what we do



Content

- ▶ 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



Research Training Groups

– set up

Who runs a Research Training Group?

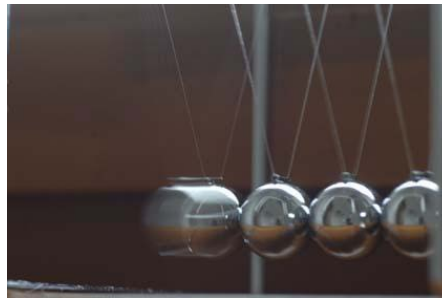
- ▶ applicant is a university
- ▶ however, application is written by a small group of cooperating researchers (5-10)
- ▶ mainly senior faculty members but integration of junior faculty is highly appreciated
- ▶ 10 – 15 PhD candidates
- ▶ 1 – 2 postdocs
- ▶ 3 – 5 undergraduates as “research students”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



International Research Training Groups (IRTG) since 1999

– set-up

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

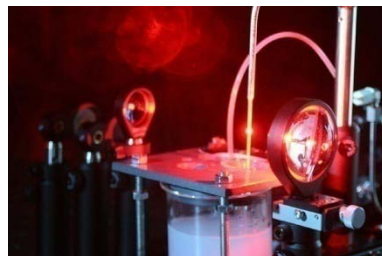
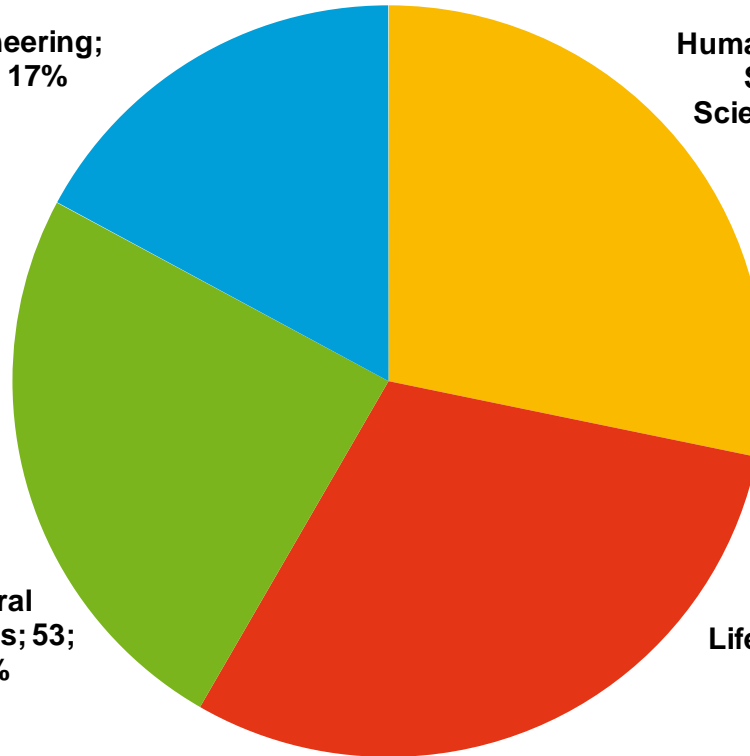


Engineering;
37; 17%



**Humanities and
Social
Sciences;** 61;
28%

**216 funded RTGs,
thereof 55
International RTGs**
(Status: March 1, 2010)



**Natural
Sciences;** 53;
25%



Life Sciences;
65; 30%

Research Training Groups

– 4 scientific disciplines – 4 examples



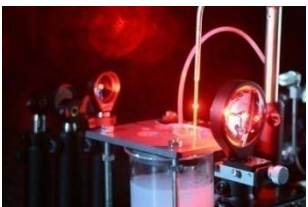
- ▶ ■ RTG 846: Slavery, Serfdom and forced Labour. Forms of Unfree Life and Labour from Antiquity to the 20th Century, Speaker: Elisabeth Herrmann-Otto, University of Trier



- ▶ ■ 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)

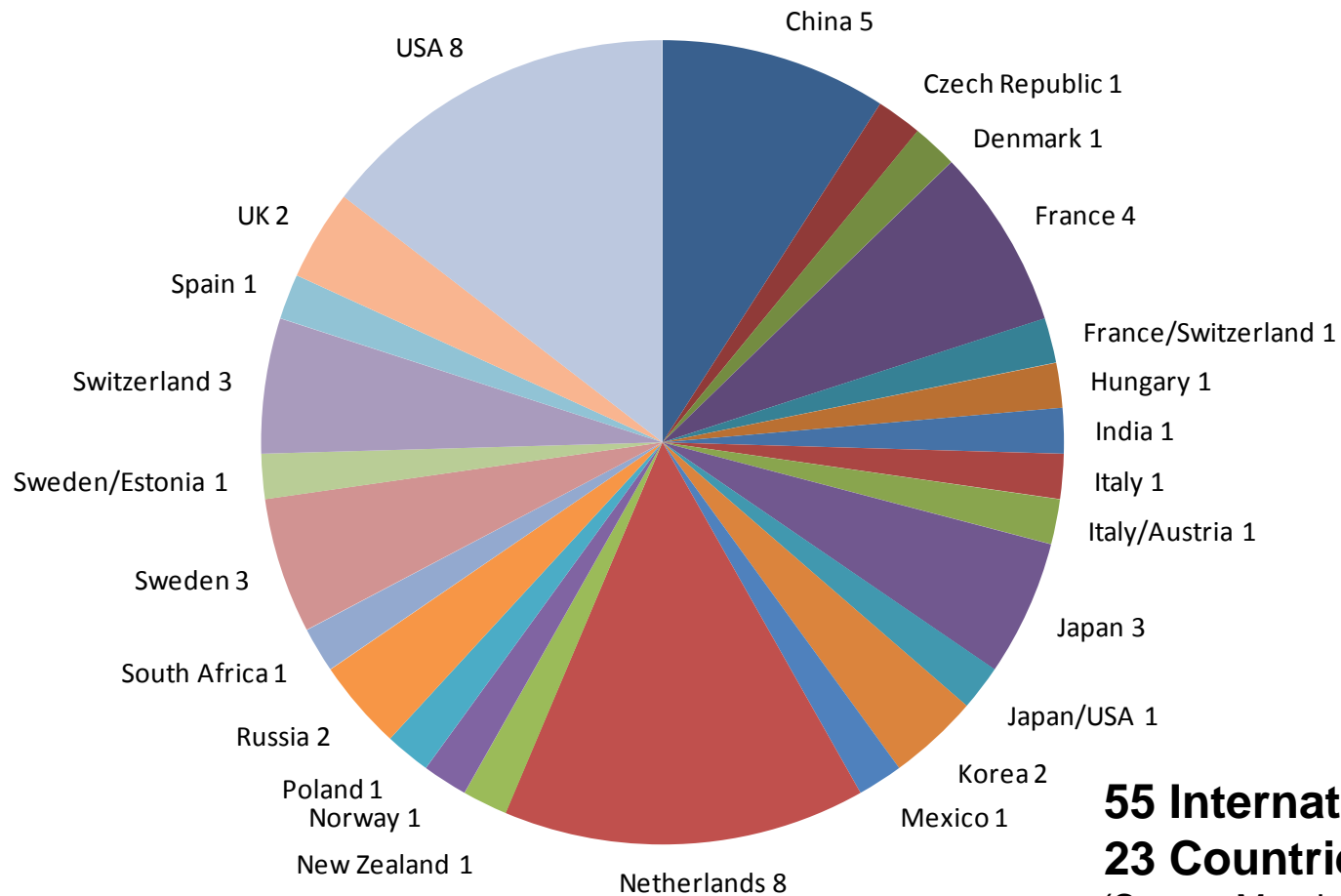


- ▶ ■ IRTG 1143: Complex Functional Systems in Chemistry: Design, Development and Applications, Speaker: Gerhard Erker, University of Münster (Nagoya University, Japan)



- ▶ ■ RTG 1491: Ramp-Up Management – Development of Decision Models for the Production Ramp-Up, Speaker: Robert Schmitt, TH Aachen

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)

Research Training Groups

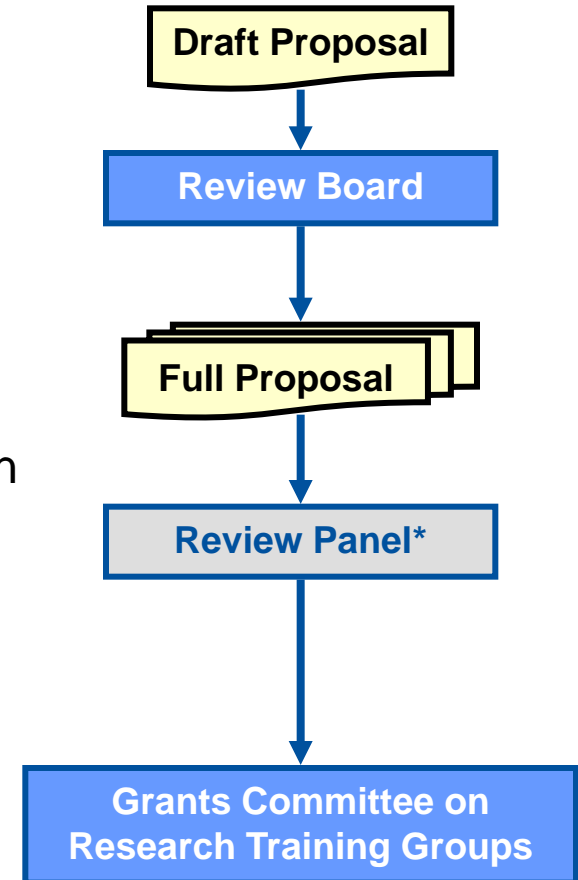
– evaluation and funding (establishment proposals)

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 Committees 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

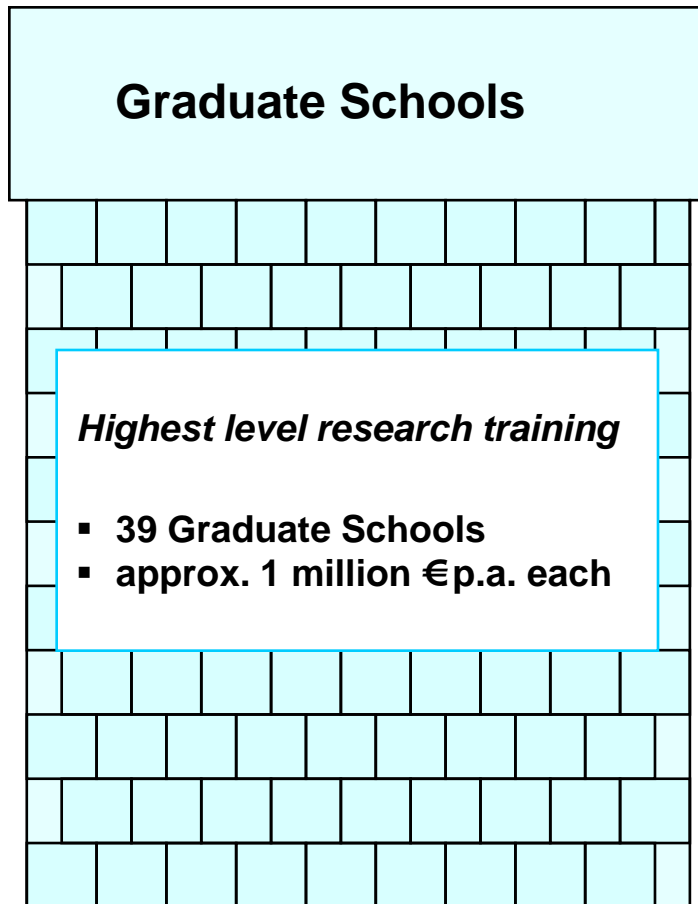
– three funding lines in more detail

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



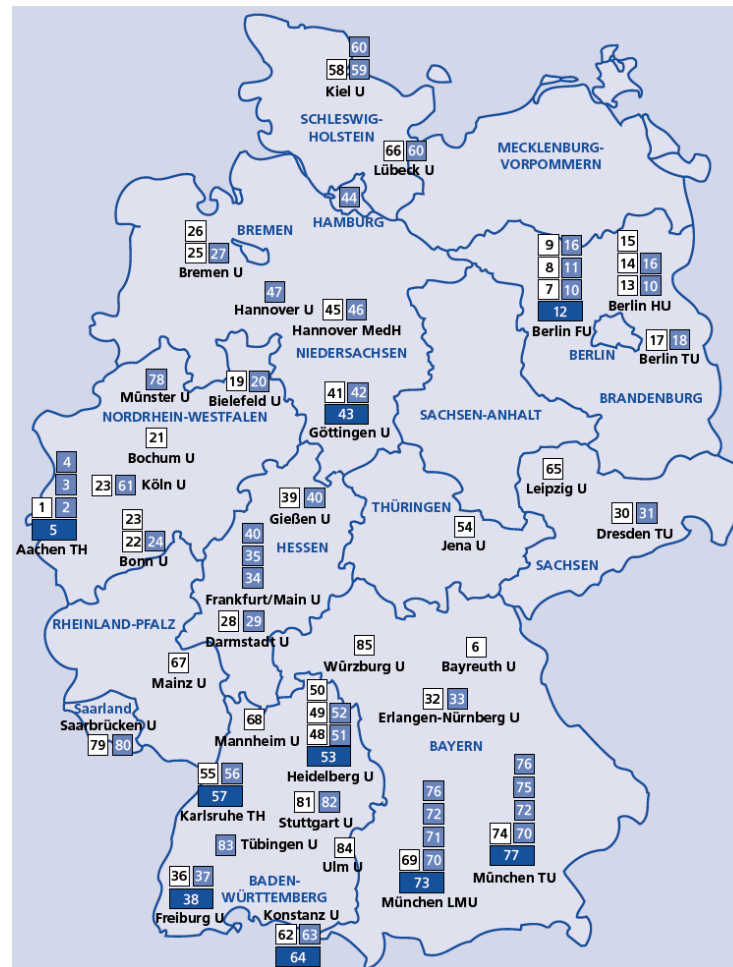
- ▶ Structured research training in an excellent research environment
- ▶ Internationally competitive centres of top-level research by promoting young researchers
- ▶ Instrument of quality assurance in graduate education
- ▶ Professional management (ca. 80 % of budget)
- ▶ 45 – 500 PhD students, postdocs,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

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

– a comparison

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

Content

- ▶ German Research Foundation
- ▶ Research Training Groups
- ▶ Graduate Schools
- ▶ **Differences to US Graduate Schools**

Differences to US Graduate Schools

– which model is more comparable?

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 (Excellence Initiative)

- ▶ larger research area **X**
- ▶ not project-driven, varying degree of cooperation **X**
- ▶ larger group of actors
(ca. 25 PIs, up to 100 PhD candidates) **X**
- ▶ overarching or „umbrella“ structure
(departments/faculties, university-wide) **X**
- ▶ cornerstone of university profile **X**
- ▶ comprehensive funding **X**
- ▶ professional full-time management **X**

X = similar to US Graduate Schools

Differences to US Graduate Schools

– remaining distinction I

Germany

- ▶ „Universities of applied sciences“ cover partly professional education in fields like engineering, economy, social service on BA and MA level
- ▶ Education of students striving for first-professional degrees together with PhD students
- ▶ Same degree („Dr.“) for both groups

United States

- ▶ strict segregation of education of students striving for first-professional degrees and of PhD students
- ▶ different degrees (e.g. MD, PhD)

Differences to US Graduate Schools

– remaining distinction II

Germany

- ▶ There is still individual doctoral education
- ▶ No plans for a complete change
- ▶ Temporally limited DFG funding of RTGs and Graduate Schools (Excellence Initiative)
- ▶ Idea: Graduate Schools should be run permanently by universities
- ▶ Target group: postgraduates (only few pilot projects with master students)

United States

- ▶ No individual doctoral education
- ▶ Graduate Schools are permanent institutions
- ▶ Target group: postgraduates and master students



DFG

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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