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DEUTSCH-CHINESISCHES
Jahr der Wissenschaft und Bildung
2009/10

Developments in Graduate Education in Germany

Dr. Annette Schmidtman
Berlin, March 31th, 2009



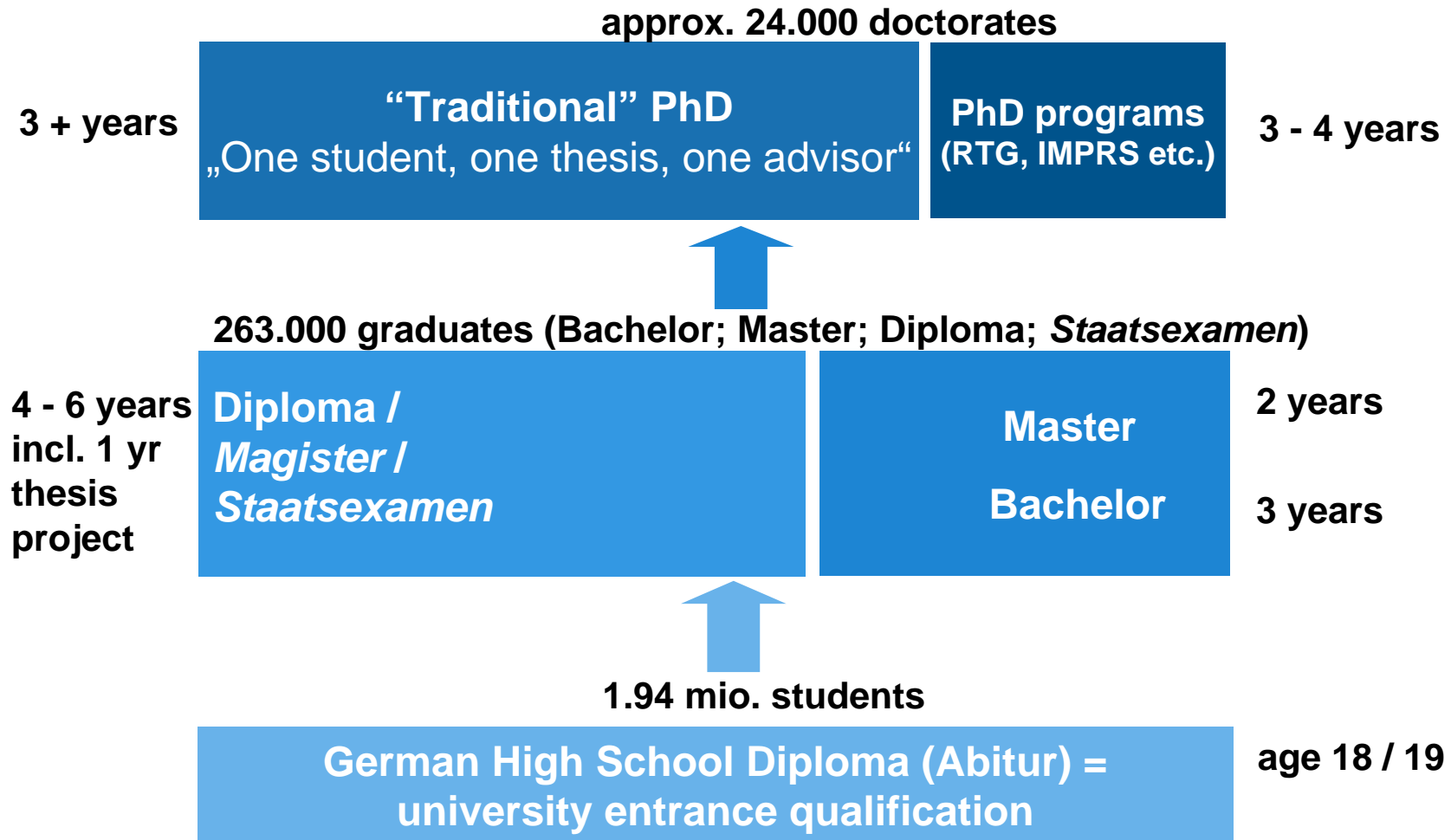
DFG

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Topics

- **The German system of research and higher education**
- **DFG's mission**
- **Scientific career development**
- **New strategies in coordinated programs**
- **The Excellence Initiative**

The Structure of Tertiary Education in Germany



Figures for 2006/07 Source: Statistisches Bundesamt

Institutions of Research and Higher Education in Germany

Institutions of higher learning (391) in Germany, among them:

- 104 universities
- Several colleges of theology, education as well as art and music
- 184 universities for applied research
- 31 colleges of public administration

Non-university research institutions:

- Max Planck Society
- Fraunhofer Society
- Helmholtz Association of German Research Centres
- Leibniz Association
- Research institutions of the federal and the state governments

➤ **N.B. Only universities have the right to award doctorates.**

Publicly funded research outside universities in Germany



Max Planck Society

Outstanding basic research in the life sciences, the natural sciences and the humanities; 80 institutes



Helmholtz Association

Identifying and working on the grand challenges faced by society, science and industry; 15 Research Centres



Fraunhofer Gesellschaft

Applied research of direct utility to private and public enterprise and of wide benefit to society; 56 institutes



Leibniz Society

Research, infrastructure and services in areas of societal relevance; 83 institutes

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Our Mission

- Self-governance of science and the humanities
- Promoting academic excellence on a competitive basis
- Serving all fields of science and the humanities
- **Promoting young researchers**
- Advisory activities in politics
- International co-operation



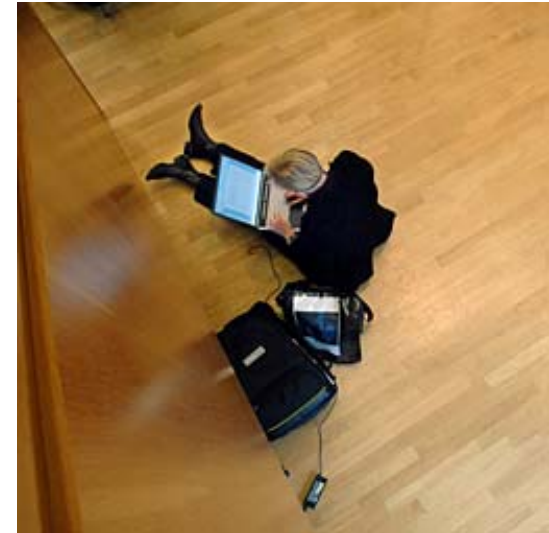
Our Approach: Science Career Development

Aims:

- Attract outstanding young researchers
- Provide talents with excellent research topics and first class working conditions
- Pave the way to independent careers at an early stage

Realisation:

- Offer flexible funding instruments to meet the specific requirements of young researchers
- Induce beneficial structures within the research system
- Special attention to: scientific excellence, individual careers



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The Individual in the Centre

Funding Mechanisms to Promote Research Careers

- Unitised
- Flexible
- Transparent
- Quality-oriented

Peer review

- Based on International standards of quality
- Focus on individual's potential and achievement
- Consideration of research environment
- Risk-orientation



The DFG Funding Chain

Qualification phase					
Undergraduate Studies	PhD training	Postdoc phase	Assistant Professorship	Associate Professorship	Full Professorship
				Heisenberg Professorship	
			Emmy Noether Programme	Heisenberg Fellowship	
	RTG Fellowship	Research Fellowship (abroad)	Research Fellowship (abroad)	Research Fellowship (abroad)	
	Position in a RTG	One's own position	One's own position	One's own position	
Student in DFG Project or RTG	Position in a DFG-funded research proj.	Position in a DFG-funded research proj.	Position in a DFG-funded research project	Position in a DFG-funded research project	

New Strategies in Coordinated Programs

Research Training Groups

Structured, research oriented PhD training

Equal opportunity and family-friendly measures

Collaborative Research Centres

Interdisciplinary centres of excellence at universities

Integrate module 'Research Training'

Equal opportunity and family-friendly measures

Graduate Schools / Excellence Clusters

Internationally visible and competitive research and training institutions funded by the **Excellence Initiative**

new

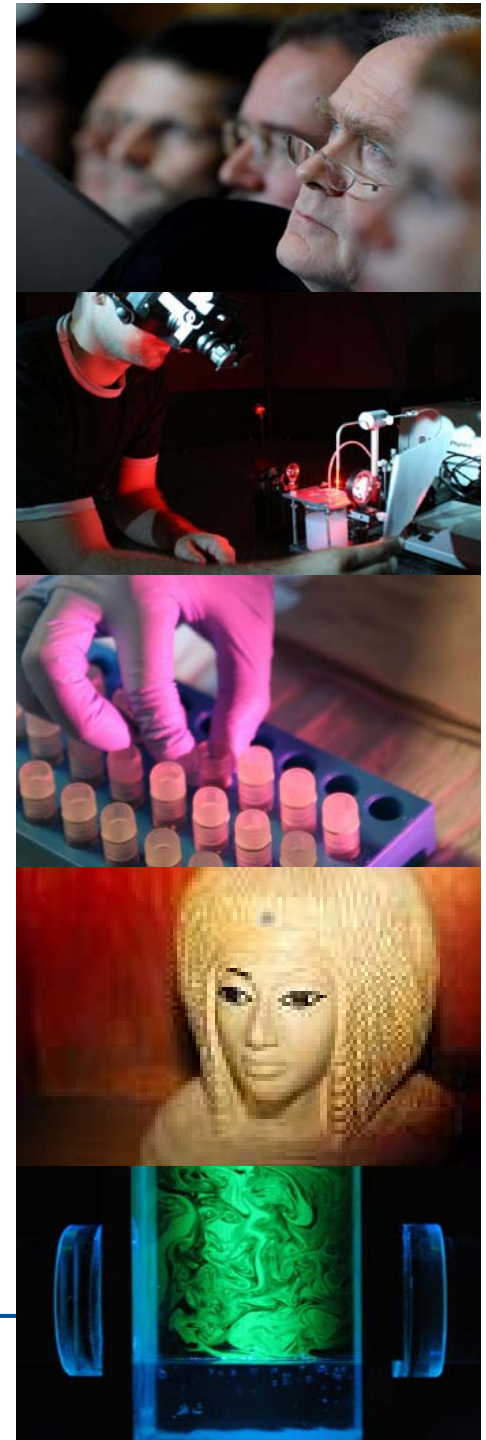


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Principles of DFG Funding

- No quota
- Bottom-up principle
- Highly competitive, peer review

➔ Highly accepted by the community





DFG Research Training Groups (Graduiertenkollegs)

– the idea behind

- Obtaining a doctorate is at the same time the last stage of study and the first stage in life as a researcher
- In this decisive phase all doctoral candidates need to be given the necessary latitude to carry out independent scientific work, develop their own ideas and earn recognition for their work
- They require a demanding research environment that provides stimuli, makes exchange possible and, where necessary, ensures specialist support.



DFG Research Training Groups (Graduiertenkollegs)

- Structured PhD programme
- Thematically focussed research and
- Study programme at universities
- Established at scientific centres of excellence after
- Peer review process
- In all fields of science incl. medicine & the humanities
- Interdisciplinary research program
- Funding: 2 x 4,5 years

N.B. the structured model of PhD training is NOT a taught doctorate



DFG Research Training Groups (Graduiertenkollegs)

- new strategies

Family-friendly measures for stipend-holders

- Prolongation of stipend for PhD candidates with children
- Extra allowance for children
- Extra allowance for child day care

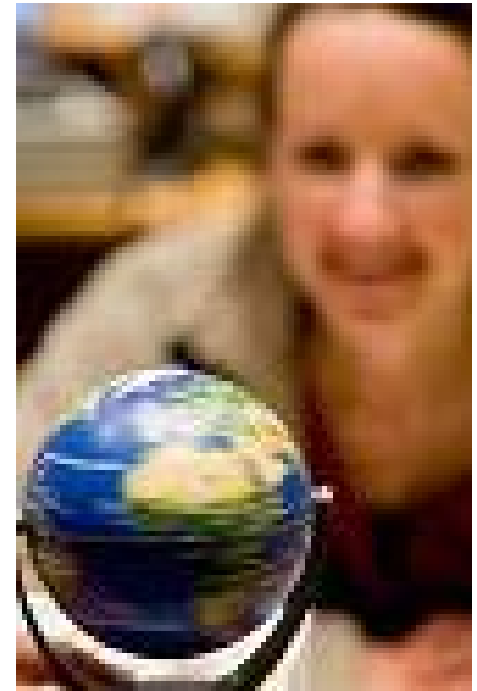
Gender equality measures

- Additional lump sum for enhancing the number of female scientists in a leading position

DFG Research Training Groups (Graduiertenkollegs)

- new strategies: enhance international dimension

- International students are welcome to apply for fellowships:
 - about 27% international PhD candidates
 - about 30% international postdocs
- Increasing number of RTGs offer their programs in English
- International guest scientists
- Support for international exchange of senior and junior scientists
- **Program variant:** International Research Training Groups



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International Research Training Groups (IRTG)

- PhD training and scientific cooperation worldwide

- Launched by DFG in 1997
- Encourage bilateral cooperation and research training
- Joint research programme & study programme
- Integration of complementary expertise at centres of excellence
- Systematic coordination of bilateral research projects / joint supervision
- 6-12 month mobility period at partner university

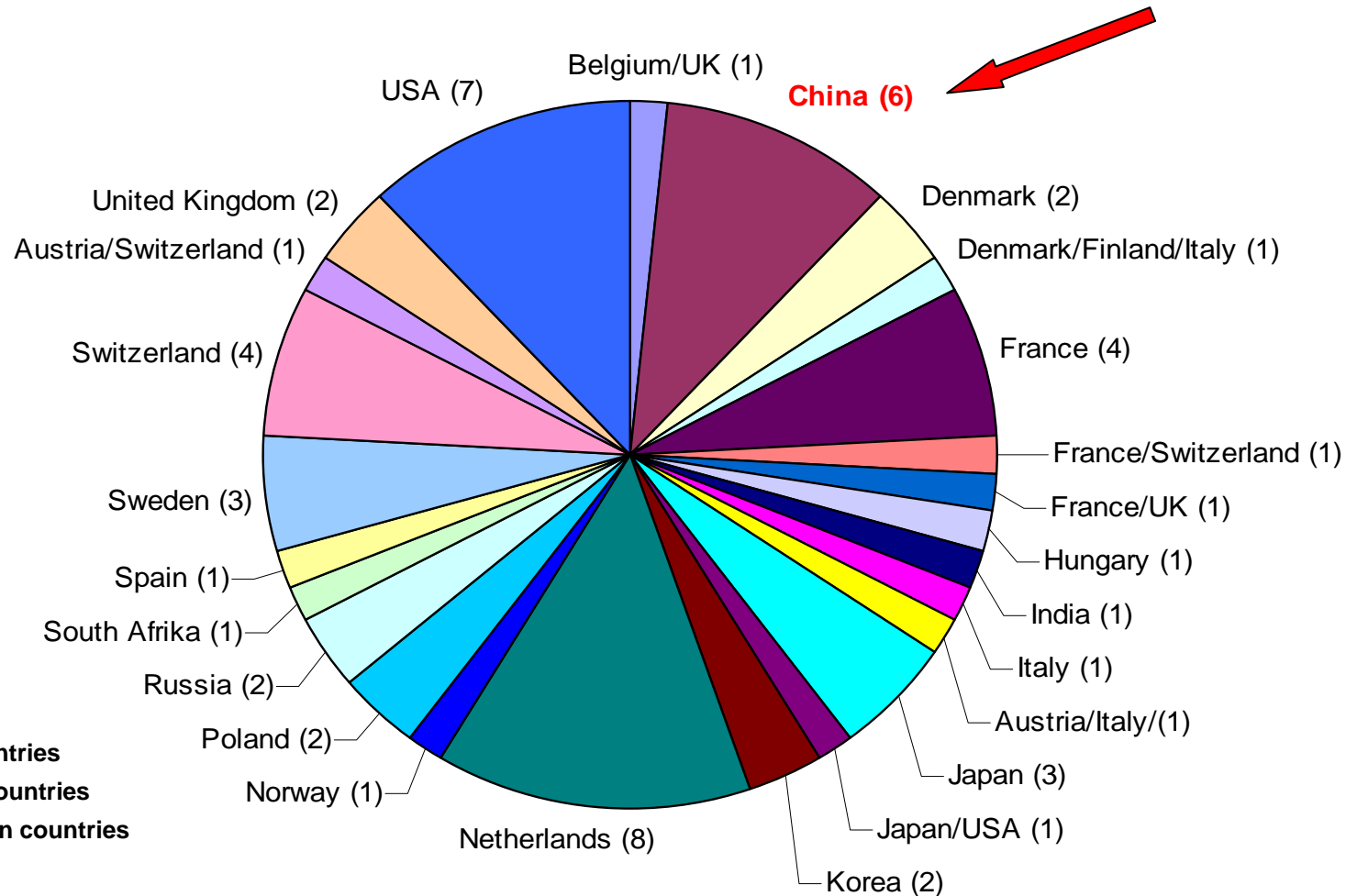


International Research Training Groups

- PhD training and scientific cooperation worldwide

N = 58

(01.05.2009)

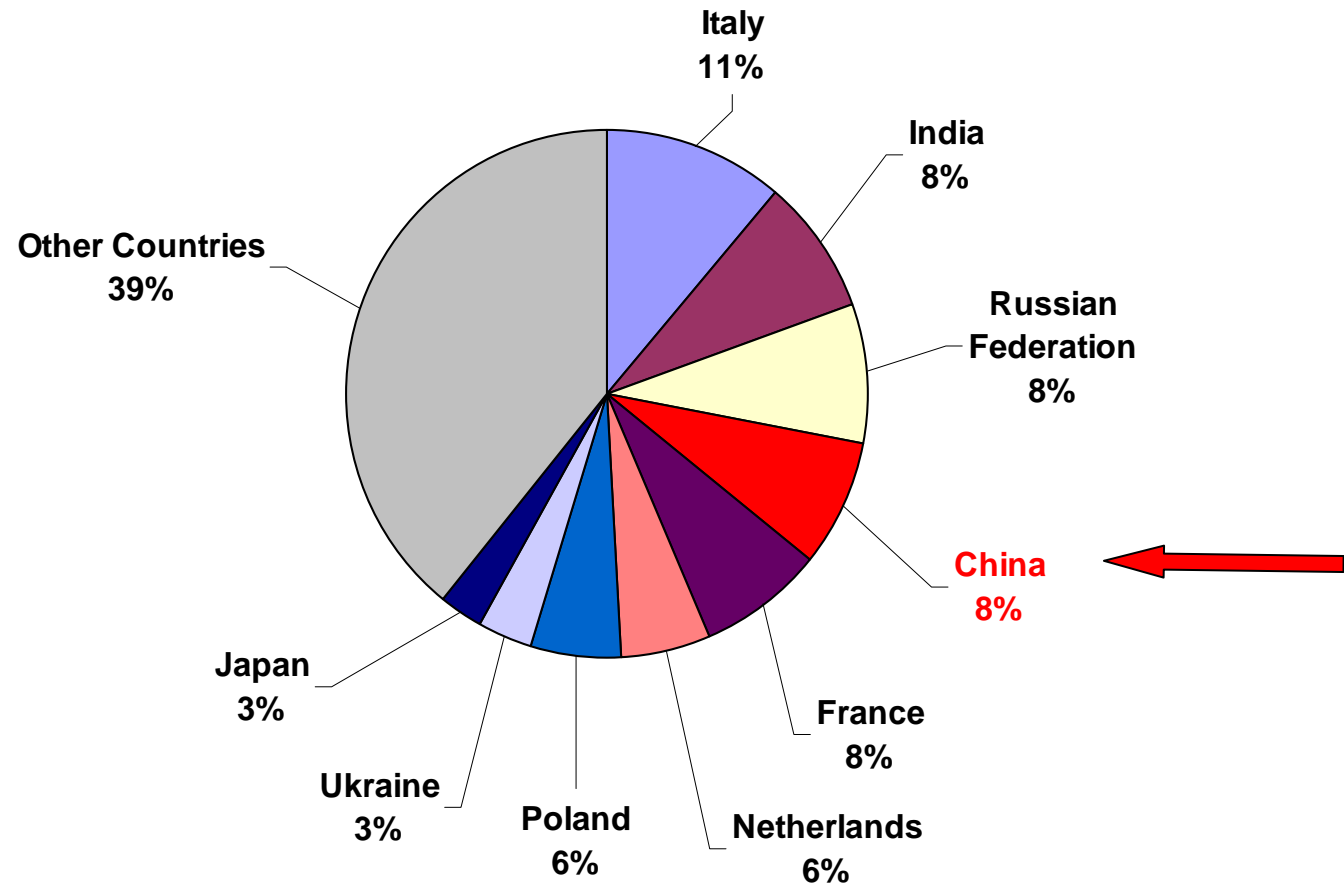


21 different countries
- 15 European countries
- 6 non-European countries

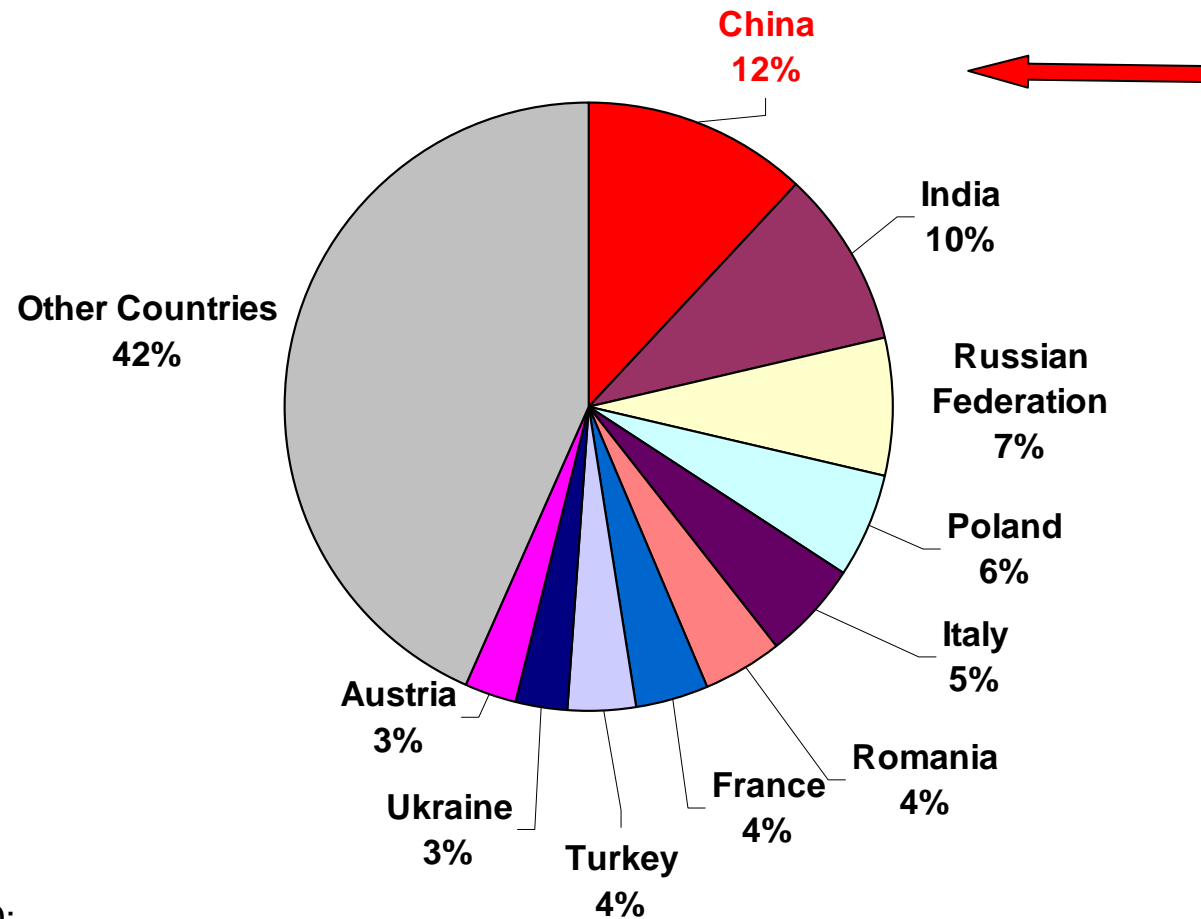
International Postdocs in Research Training Groups (2007)

Total number of
Postdocs:
N = 426

Total number of
international
postdocs:
N = 179



International PhD Candidates in Research Training Groups



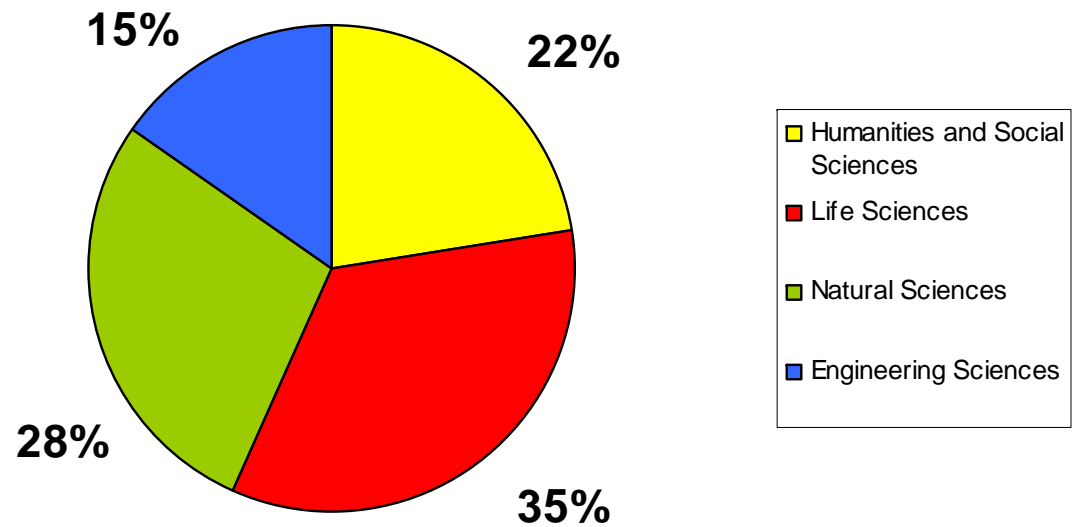
Total number of PhD:
N = 5340

Total number of international
PhD:
N = 1208

Total number of Chinese PhD:
N = 143

PhD Candidates from China according to Scientific Discipline (2007)

PhD Candidates from China



N = 5340 PhD total
N = 1208 non-German
N = 143 from China

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Collaborative Research Centres

(Sonderforschungsbereich, SFB)

Established in 1968

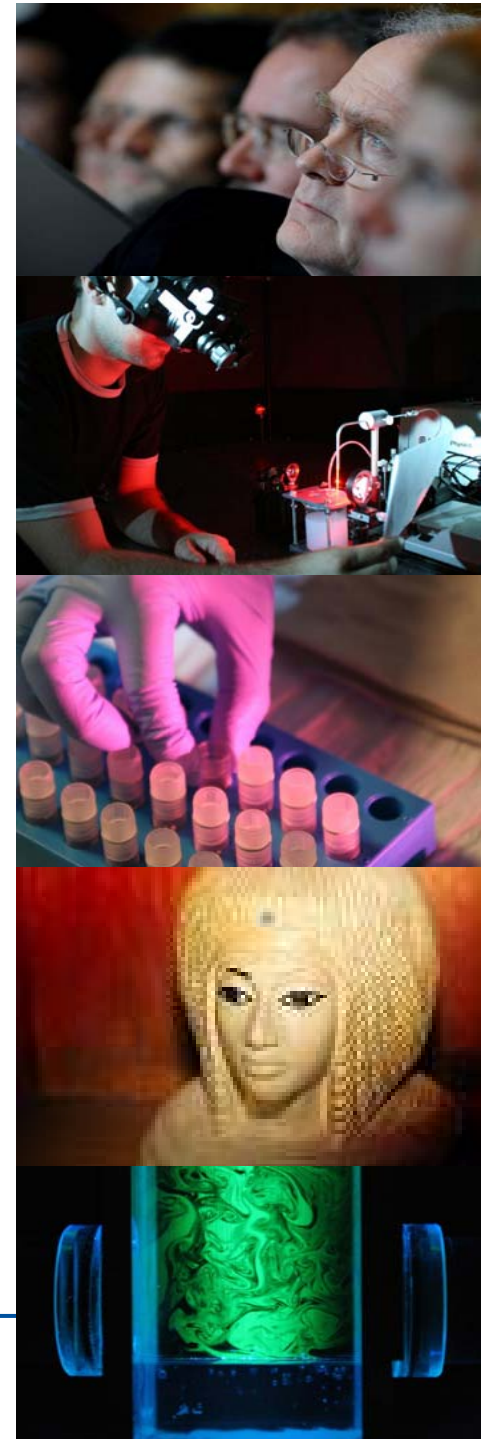
Goal: Establishing temporary centres of excellence

- to enable an ambitious and extensive research undertaking
- on an innovative subject with a far-reaching perspective at an internationally competitive level

Intention: Generating structural effects

- within the university *
- by creating core research areas

* Transregional SFB variant since 1999: transregional network with two or more locations



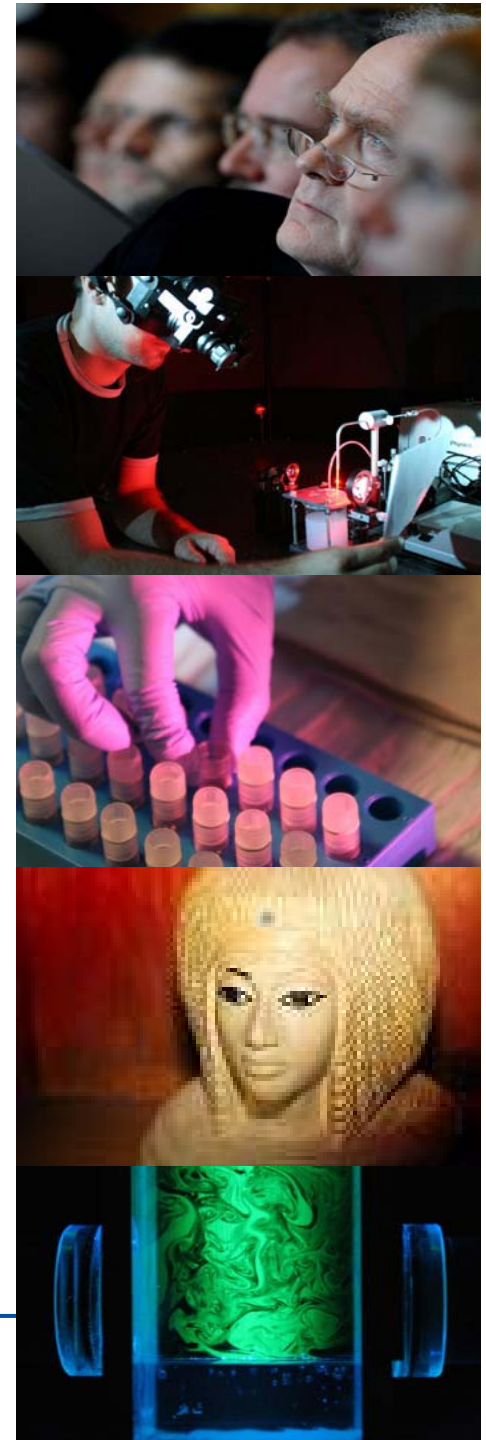
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Collaborative Research Centres

- new strategies

Integrate Module “Research Training”

- underline role of SFB in training young scientists
- take use of high acceptance of SFB by researchers and universities to optimise structured training of PhD candidates
- follow well-proven principles of DFG’s Research Training Groups



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Collaborative Research Centres

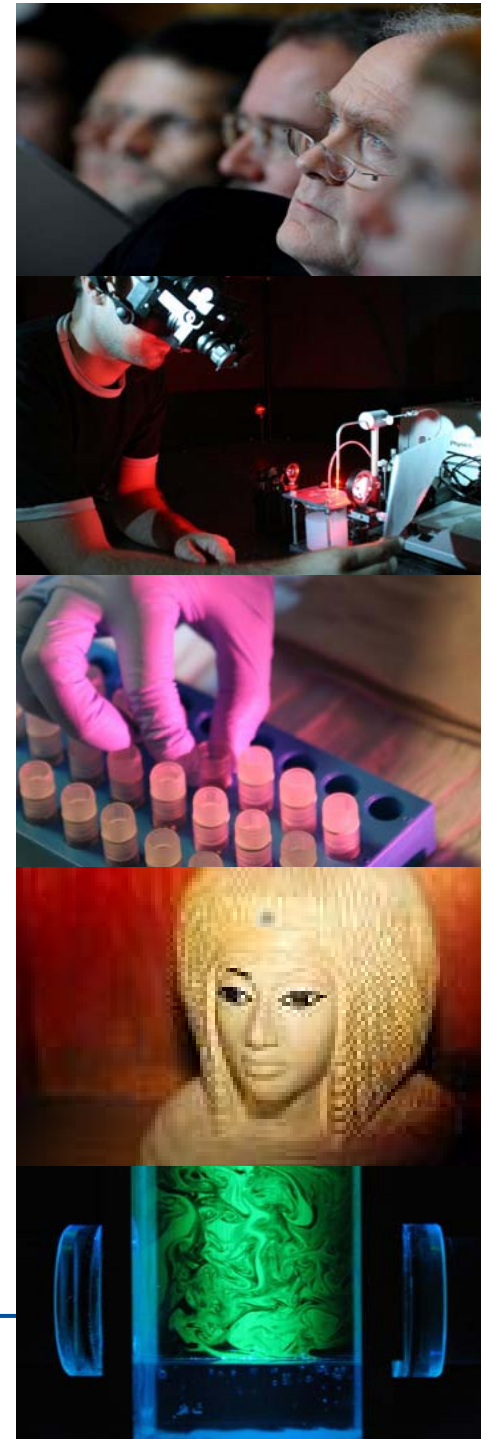
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Collaborative Research Centers: International Cooperation

Sino-German Cooperation in Physics within a Transregional SFB

Transregional SFB 61 Münster - Beijing

- Agreement between DFG and the National Natural Science Foundation of China (NSFC) in 2005
- Joint proposal to DFG and NSCF
- Joint evaluation in 2008: review panel meeting in Beijing
- Joint funding of Sino-German interdisciplinary joint research after positive decision by the DFG and NSFC



Speakers: Prof. Harald Fuchs and Prof. Xi Zhang

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Collaborative Research Centers: International Cooperation

Sino-German Cooperation within a Transregional SFB



Official Visit during the Panel Meeting in March 2008

The German Excellence Initiative

„The development of the science system in Germany is not to have a flat field but a picture of the alps.“



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: 1.9 billion € government funding for 5 years (2007 – 2012)

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The German Excellence Initiative

- Established 2005
- Joint funding by the government (75%)
and the federal states (25%)
- Implemented by



and



German Council of Science and Humanities

Germany's Excellence Initiative

- program with three lines of funding:

- **Graduate Schools (39):** highest-level research training; ~ 1 Mio. € p.a.
- **Clusters of Excellence (37):** centers of excellence in research; ~ 6.5 Mio. € p.a.
- **Institutional strategies to promote top-level research (9):**
excellent research, research training and institutional planning; ~ 21 Mio. € p.a. (including minimum of one Cluster and School)



Graduate Schools

Graduate Schools *Highest level research training*

- 39 Graduate Schools
- approx. 1 million €p.a. each

- 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 (~80 % of budget)
- 45-500 PhD students, postdocs, undergraduates, junior researchers, professorships
- International recruitment (25%)

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From Research Training Groups.. To Graduate Schools



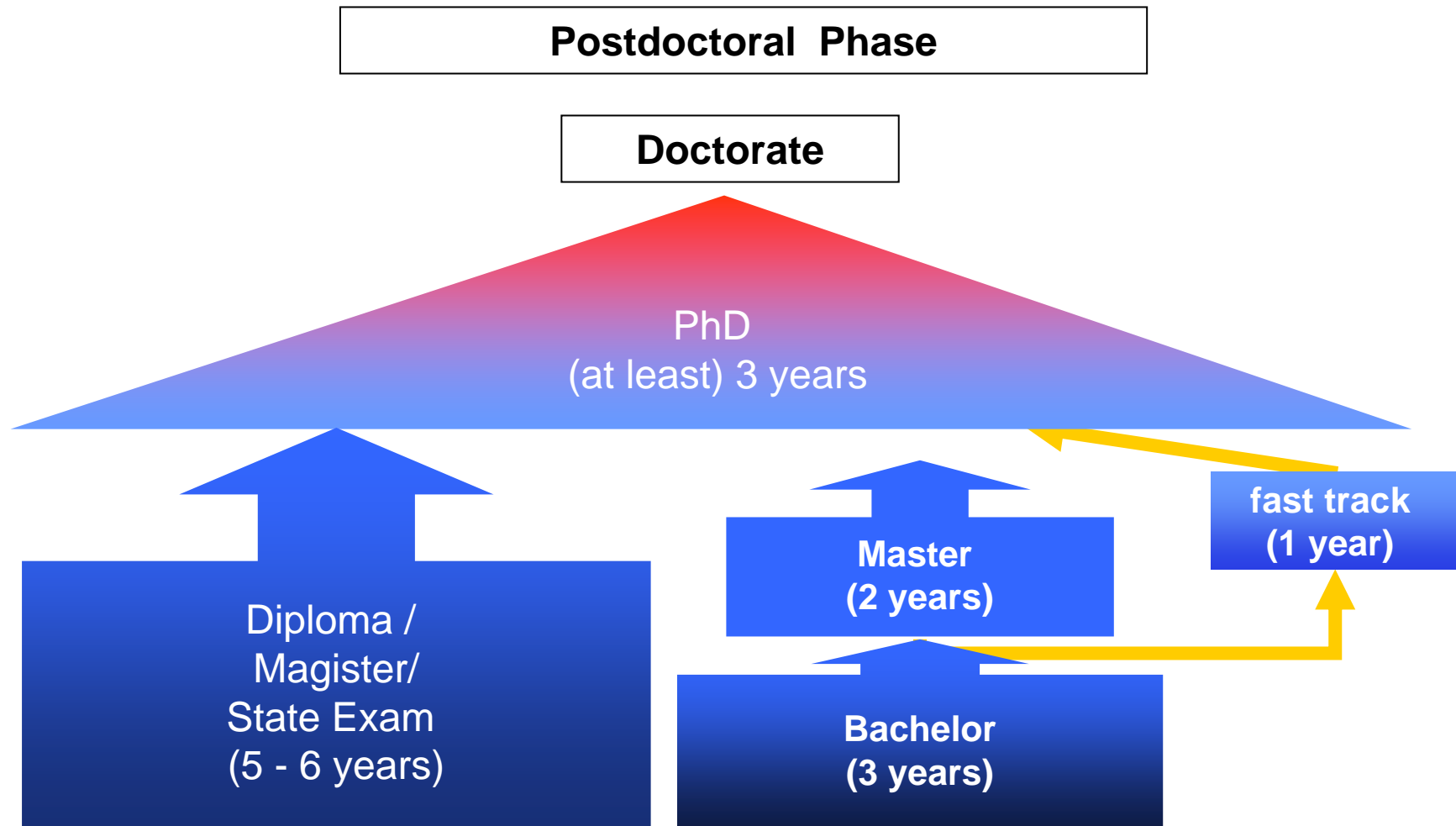
More of the same?

- Structured research training in an even larger and excellent interdisciplinary research environment
- Incorporating non-university research institutions in the region
- Best possible structures for PhD students, career centres
- Professional leadership and efficient management
- Number of PhD students: 45 - 500

List of Graduate Schools currently funded:

http://www.dfg.de/en/research_funding/coordinated_programmes/excellence_initiative/graduate_schools/list/gsc_gesamt.html

From Bachelor to Postdoctoral Phase at German Universities



Clusters of Excellence

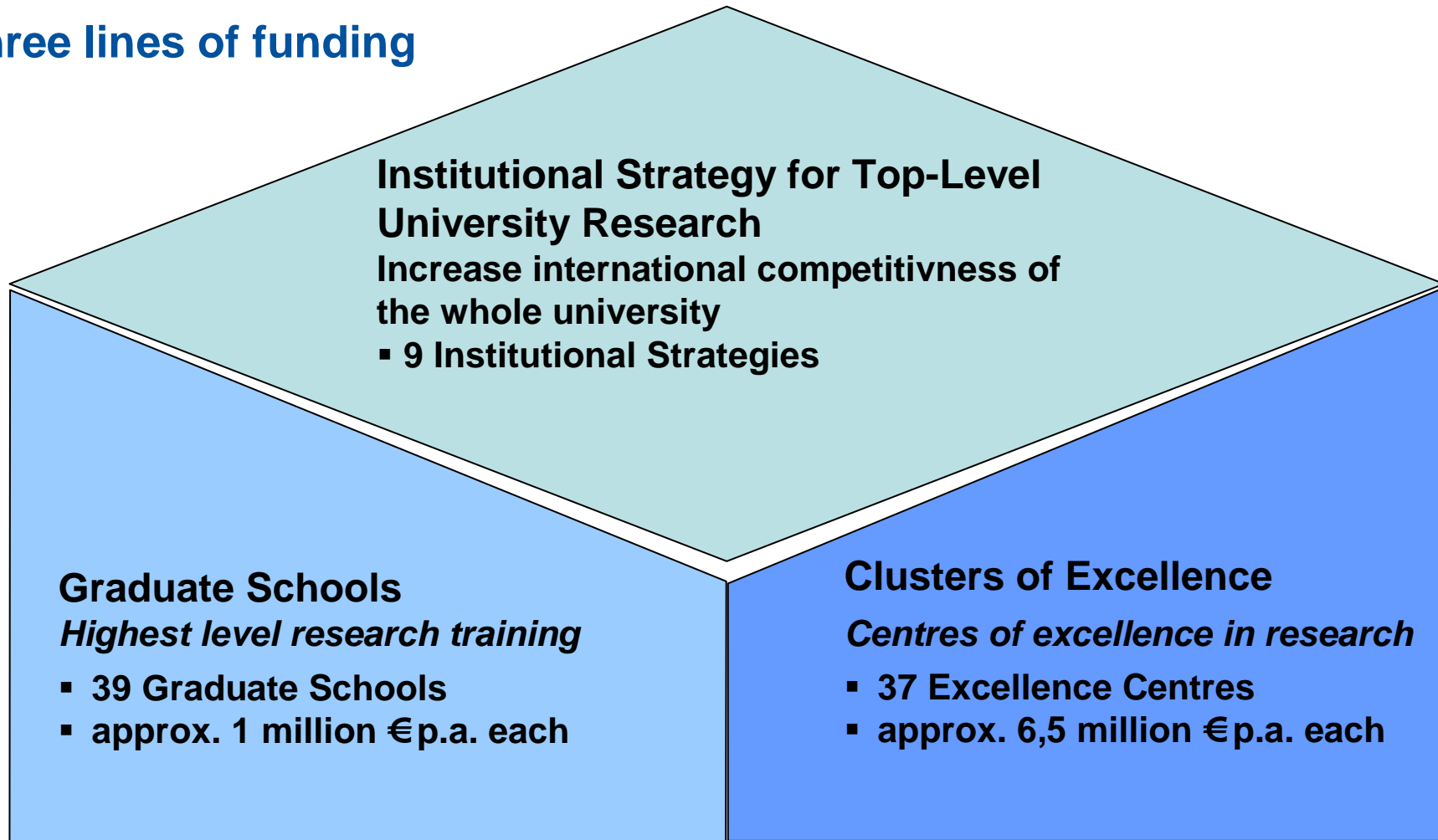
- Local concentration of research competence, thematic focus, internationally visible and competitive, network under university leadership
- Significantly raise a university's profile, build on already existing strengths
- 5-15 new professorships, 50–100 postdocs and graduate students, international recruitment



Clusters of Excellence
Centres of excellence in research

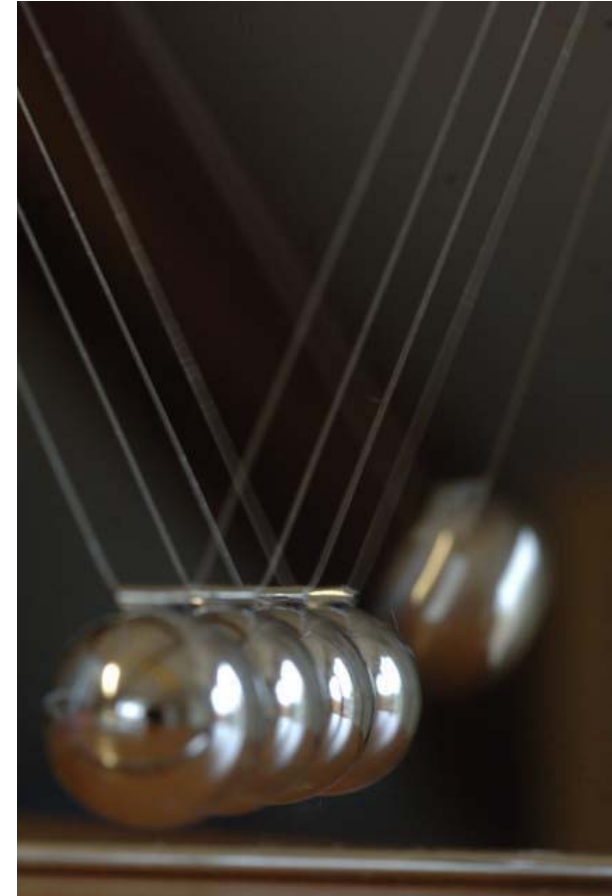
- **37 Clusters**
- **approx. 6,5 million €p.a. each**

Three lines of funding



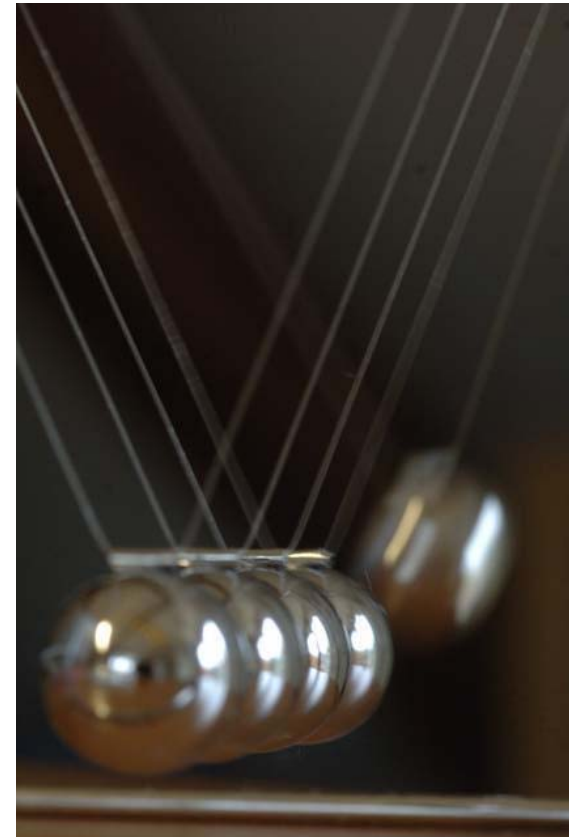
Impact on German Universities

- Creativity boost for the university system
- Competition and differentiation between universities gains momentum
- Structural changes
- Improved networking between universities and other research institutions
- **Impulse towards greater internationalisation, improved gender balance, more diversity**
- Increased awareness for universities and research in the media and the general public
- Alumni culture, fundraising strategies
- 4000 new research positions at all levels



New Beneficial Structures induced by the Excellence Initiative

- Overarching structures new in terms of size, financial budget and cooperation
- Professional administration and management structures
- **Tenure track options**
- Industry cooperation
- **Career centres for PhD students**
- **Tailor made study and mentoring programs**
- Open and international atmosphere
- Double career programs
- Child care services
- Welcome centres for international researchers
- High flexibility of budget
- High pressure to succeed due to evaluation



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**Thank you
for your attention!**

Dr. Annette Schmidtman

**Research Careers
- Head of Division -**

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Emmy Noether Programme: - fast track to a professorship

Aim:

Supporting young researchers in achieving early independence.

Young postdocs gain the qualifications required for a university career during a 5 year funded period, in which they lead their own Independent Junior Research Group.

Eligibility:

Researchers with two to four years significant international of postdoctoral research experience





Heisenberg Fellowship - preparing for a tenured professorship

Aim:

Provide outstanding researchers with the opportunity to prepare for a leading position in science and research and to use the time to work on an advanced research topic.

Eligibility:

Researchers fulfilling the requirements for long-term professorship, e.g.

Junior professors

- Junior professors
- German researchers returning to Germany
- Foreign researchers interested in a scientific career in Germany.



Heisenberg Professorship - with tenure track option

Applicants for a Heisenberg professorship must also participate in the host institution's professorial appointment process.

The host university must

- create a position and indicate how this position constitutes a **structural development**.
- guarantee funding from its **own budget** once the DFG's five-year funding period has expired.



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