The German Research Landscape and Funding Options for International Cooperation

DAAD Science Lectures Hong Kong 2017

DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service
Facts I Structures I Financing
Research in Germany
Facts and figures 2015

Almost 1,000 publicly funded research institutions

Research expenditures: 88.8 bn euros = 2.87% GDP

640,516 people in the R&D sector

Bilateral, European and multilateral cooperation with more than 155 countries
Research expenditures by sector in 2015 (%)

Source: Federal Statistical Office
Pillars of the German research sector

Universities (HEIs)  Non-university research institutes  Industrial research
Diversity | Excellence | Investments
Research institutions
Universities

- Approx. 400 HEIs – 148 authorised to confer doctorates
- Almost 29,000 international doctoral candidates
- Principle of uniting learning, instruction and research
- Excellence Initiative = 4.6 bn euros for cutting-edge research

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## The Big Four

<table>
<thead>
<tr>
<th>Institution</th>
<th>Institutes</th>
<th>Budget</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Planck Society</td>
<td>83 institutes</td>
<td>2.2 bn euros</td>
<td>13,300</td>
</tr>
<tr>
<td>Helmholtz Association</td>
<td>18 research centres</td>
<td>4.24 bn euros</td>
<td>38,200 (staff in total)</td>
</tr>
<tr>
<td>Fraunhofer-Gesellschaft</td>
<td>67 institutes</td>
<td>2.1 bn euros</td>
<td>24,000 (staff in total)</td>
</tr>
<tr>
<td>Leibniz Association</td>
<td>89 institutes</td>
<td>1.73 bn euros</td>
<td>9,300</td>
</tr>
</tbody>
</table>
Max Planck Society

- 83 institutes
- €2.2 bn euros
- 13,300 researchers
- 47% of the researchers are of international origin
Research for the future

- Basic research in the natural sciences, life sciences, social sciences and the humanities
- Innovative research fields which are especially demanding in terms of funding or time requirements
- Person-centered research organisation
- 18 Nobel laureates
Leibniz Association

89 institutes
1.73 bn euros
9,300 researchers
20% of the researchers are of international origin
Theoria cum praxi
Science for the benefit and good of humanity

- Natural, engineering and environmental sciences, economics, spatial and social sciences and humanities
- Knowledge transfer to policy-makers, academia, business and the public
- Scientific infrastructure, research-based services
- Archives, museums, national libraries
18 research centres
€ 4.24 bn euros
38,200 staff in total
7,500 of the researchers are of international origin (2014)
Shaping the future with sustainable research

- Energy, earth and environment, health, key technologies, structure of matter, aeronautics, space and transport
- Research infrastructures
- Basic research with a focus on potential applications
- Applied research

© GSI Helmholtzzentrum für Schwerionenforschung, G. Otto
67 institutes
€ 2.1 bn euros
24,000 staff (in total)
Research dedicated to the future

- Integration of scientific findings into useful innovations for industry and society
- Health, security, communication, mobility, energy and environment
- Contract research for industry and government (70%)
Non-university research (II)

- Länderei Institutions
- Universities
- Federal Institutions
- Max Planck Society
- Academies
- Fraunhofer Gesellschaft
- Helmholtz Association
- Leibniz Association
- Research Infrastructures
- Networks and Clusters

Companies/Industrial Research

Networks and Clusters
Non-university research (II)

- Federal research institutions / departmental research (46)
- “Länder” research institutions (40)
- Academies of Sciences and Humanities
Research infrastructures

- Basic research institutions:
  - Max Planck Society
  - Academies

- Applied research institutions:
  - Länder Institutions
  - Universities
  - Helmholtz Association
  - Fraunhofer-Gesellschaft

- Funding sources:
  - Public funding
  - Private funding

- Organizations:
  - Industrial Research Associations (AiF)
  - Companies/Industrial Research
  - Networks and Clusters
Research infrastructures

Flash II – Free-electron laser, Hamburg
Industrial research

- 69% of all research funding in Germany comes from business and industry
- Innovation-driving sectors: pharmaceuticals, electronics, automotive engineering, mechanical engineering
- Technology transfer – Cluster formation, networks
Current developments in science and research

Strategies for innovation, excellence and international cooperation

Research in Germany
Land of Ideas
Goals | Measures | Instruments
Research policy
Strategies & Measures

**National focus**
- High-Tech Strategy
- Leading-Edge Cluster Competition
- Research infrastructures
- Research agreements
  - Excellence Initiative
  - Excellence Strategy
  - Higher Education Pact
  - Pact for Research and Innovation

**Internationalisation**
- Internationalisation Strategy
- Science Offensive
- Internationalisation Action Plan
- European Research Area
High-Tech Strategy

- National cross-departmental strategy
- Thematic priorities – future tasks
- Interconnecting science and industry
- Creating fertile ground for innovation
- Cementing Germany’s position as a leading innovator in the world
High-Tech Strategy
Fields of the future

Healthy living

Sustainable economy and energy

Intelligent mobility

Innovative world of work

Civil security

Digital economy and society

Research in Germany
Science and industry

Creation of networks and clusters

**Leading-Edge Cluster Competition**
- 15 leading-edge clusters funded nationwide
- 600 mn euros
- Technology transfer, junior research promotions
- 2017 Competition: Internationalisation of Leading-Edge Clusters

**Research campus**
- 9 research campuses
- Public-private partnership
- Science and industry under one umbrella organisation
- Research fields with high research risk and particular potential for game-changing innovations
Envisioning energy transition and mobility as a single challenge
Research agreements / measures

Universities (HEI)
- Excellence Initiative
- Excellence Strategy
- Higher Education Pact

Non-university research institutes
- Pact for Research and Innovation
Excellence Initiative

Federal- and state-funded research programme

- Duration: 2006-2017
- Total funding volume: 4.6 bn euros
- Focus: university research activities
- Cooperation with regional, national and international partners
### Excellence Initiative

**Funding structures**

<table>
<thead>
<tr>
<th>Graduate schools</th>
<th>Excellence clusters</th>
<th>Future concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured PhD programmes</td>
<td>Internationally visible beacons of research</td>
<td>Universities among the best-ranked internationally</td>
</tr>
</tbody>
</table>

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Excellence Initiative
Future concepts
Excellence Strategy
Funding structures

Excellence Universities
Permanent support for universities with 2-3 Clusters of Excellence

Clusters of Excellence
Project funding for internationally competitive areas of research
Pact for Research and Innovation

- Non-university research institutes and university research projects
- 2016-2020 five percent funding increase to institutions annually
- Goals: identification of future-oriented research fields, promotion of junior researchers, cross-institutional networking, internationalisation, knowledge and technology transfer, partnerships with industry
Research agreements

First results

- Created additional study opportunities
- Opened up new research topics
- Established new institutes
- Attracted international researchers
- Produced more world-class publications
- Led to successful patent strategies
Internationalisation strategy

Instruments

- Funding bilateral research projects
- Transnational joint research projects
- Internationalisation of leading-edge clusters/networks
- Mobility
- Research marketing campaign “Research in Germany”
International researchers

Number of international researchers in Germany
Source: Wissenschaft Weltoffen
Funding opportunities in Germany

Various funding options available for PhD candidates, postdocs, young academics, experienced scientists and world-class researchers.
Funding for PhD students
Paths to a PhD

Individual vs. structured PhD

Individual PhD
- Individual research under supervision of supervisor
- Optional courses or other forms of teaching / learning
- Mostly informal admission and marginal formalisation

Structured PhD
- Guidance by a team of supervisors / supervising committee
- Mandatory, fixed supporting curriculum (interdisciplinary)
- Defined application process
- Offered by research training groups / graduate schools
## Funding for PhD students

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<tr>
<th>Funding Programme</th>
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<th>Type of Funding</th>
<th>Type of Doctorate</th>
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<tbody>
<tr>
<td>DLR-DAAD Research Fellowships</td>
<td>Research stay (up to 2 years)</td>
<td>Grant/scholarship</td>
<td>Individual doctoral project</td>
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<tr>
<td>Graduate Schools (DFG)</td>
<td>Complete doctorate</td>
<td>Work contract*</td>
<td>Structured doctoral programme</td>
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<tr>
<td>Green Talents (BMBF)</td>
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<tr>
<td>Indiv. Doctoral Projects at Fraunhofer Institutes</td>
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<td>Indiv. Doctoral Projects at Helmholtz Centres</td>
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<td>Internat. Helmholtz Res. Schools &amp; Grad. Schools</td>
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<tr>
<td>International Max Planck Research Schools</td>
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<td>Internat. Visiting Researchers at Max Planck Inst.</td>
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<td>Leibniz Graduate Schools and ScienceCampi</td>
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<tr>
<td>MSC Innovative Training Networks</td>
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<td>Re-invitation Programme (DAAD)</td>
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<td>Res. Grants – Bi-nationally Superv. Doct. Degrees (DAAD)</td>
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<td>Res. Grants – Doctoral Programmes (DAAD)</td>
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<td>Res. Grants – One-Year and Short-Term (DAAD)</td>
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<td>Research Training Groups (DFG)</td>
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<td>Support Early Career Res. in Clusters of Exc. (DFG)</td>
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*generally includes own salary and expenses for staff and consumables*
PhD students in research training groups, graduate schools and non-university institutes collaborate on research projects, work as research associates or finance their work with research grants.
Funding for PhD students

Graduate and research schools

- DFG Research Training Groups at universities
- Excellence Initiative Graduate Schools at universities
- DAAD-funded doctoral programmes at universities or non-university research institutes
- International Max Planck Research Schools (IMPRS)
- International Helmholtz Research Schools and Graduate Schools
- Leibniz Graduate Schools and ScienceCampi
- European programme: MSC Innovative Training Networks
Funding for PhD students

Individual funding

At universities, doctoral students are often employed as research associates on part-time contracts or receive a scholarship.
Funding for PhD students

Individual funding

- Individual doctoral projects at universities
- Individual doctoral projects at non-university research institutes:
  - Fraunhofer Institutes
  - Helmholtz Centres
  - Leibniz Institutes
  - Max Planck Institutes
- DLR-DAAD Research Fellowships
- …
Funding for postdocs
### Funding for postdocs

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<th>Career Level</th>
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</thead>
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<tr>
<td>Bilateral Exchange of Academics (DAAD)</td>
<td>Short term (up to 1 year)</td>
<td>Fellowship/grant</td>
<td>Postdoctoral researcher</td>
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<td></td>
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<td>Work contract</td>
<td>Junior research group leader</td>
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<tr>
<td></td>
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<td>Funding**</td>
<td>Junior professor</td>
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<tr>
<td>DLR-DAAD Research Fellowships</td>
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<tr>
<td>Emmy Noether Programme (DFG)</td>
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<td>ERC Consolidator Grants</td>
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<td>ERC Starting Grants</td>
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<tr>
<td>Fraunhofer Attract</td>
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<td>Georg Forster Research Fellowship (Humboldt)</td>
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<tr>
<td>Head of Max Planck Research Group</td>
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<td>Helmholtz Young Investigators Groups</td>
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<td>Leibniz Junior Research Groups</td>
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<td>Max Planck Grants for Advanced Postdoc. Training</td>
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<td>MSC European Fellowship</td>
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<tr>
<td>Sofja Kovalevskaja Award (Humboldt)</td>
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Funding for postdocs

Working as a postdoctoral researcher

- DAAD & DFG research grants
- DLR-DAAD & Leibniz-DAAD research fellowships
- Humboldt research fellowships
- Max Planck grants
- European programme: MSC European Fellowships
- ...

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Funding for postdocs
Heading a junior research group

- Emmy Noether Programme
- Fraunhofer Attract
- Head of a Max Planck Research Group
- Helmholtz Young Investigators Groups
- Sofja Kovalevskaja Award
- European programmes: ERC Starting / Consolidator Grants
- ...
Funding for postdocs

Junior professorship

- Support for early career researchers within DFG-funded
  - Clusters of Excellence
  - Collaborative Research Centres
Bilateral exchange of academics

In Brief
Research and study visits as part of bilateral exchange of researchers and scholars with partner countries

Who?
Postdocs / Junior researchers
Senior researchers

Duration?
2 weeks–3 months

Value?
Fellowship: 2,000–2,150 €/month

www.funding-guide.de
Funding for senior researchers
## Funding for senior researchers

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<tr>
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</thead>
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<tr>
<td></td>
<td>Shorterm (up to 1 year)</td>
<td>Longterm (more than 1 year)</td>
<td>Fellowship/award</td>
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<tr>
<td>Alexander von Humboldt Professorship</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Annlieze Maior Research Award (Humboldt)</td>
<td>✔</td>
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<tr>
<td>Bilateral Exchange of Academics (DAAD)</td>
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<td>ERC Advanced Grants</td>
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<td>Fraunhofer Attract</td>
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<td>Fraunhofer-Bessel Research Award (Humboldt)</td>
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<td>Friedrich Wilhelm Bessel Research Award (Humboldt)</td>
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<td>Grants to Support the Initiation of Intern. Collab. (DFG)</td>
<td>✔</td>
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<td>Heisenberg Programme – Fellowship (DFG)</td>
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<td>Heisenberg Programme – Professorship (DFG)</td>
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<tr>
<td>Internat. Visiting Researchers at Max Planck Inst.</td>
<td>✔</td>
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<tr>
<td>Internat. Visiting Scholars at Leibniz Inst.</td>
<td>✔</td>
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</tr>
<tr>
<td>MSC European Fellowship</td>
<td>✔</td>
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<td>Re-invitation Programme (DAAD)</td>
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Funding for senior researchers

Working as an experienced researcher

- Research Awards:
  - Anneliese Maier
  - Fraunhofer-Bessel
  - Humboldt
  - ...

- Visiting researchers at Max Planck/Leibniz Institutes

- European programmes:
  ERC Advanced Grants, MSC European Fellowships

- ...

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Funding for senior researchers
Heading a research group

- Alexander von Humboldt Professorship
- Fraunhofer Attract
Funding for senior researchers

Professorship

- Professorship within the Heisenberg Programme
Funding Programmes by DAAD

- University Summer Courses at German Universities for Foreign Students and Graduates
  Application deadline: 1 December

- Study Scholarships (for Master studies) in the fields of architecture, music, performing arts, fine art, film, design & visual communication
  Application deadline: 31 October (for architecture: 30 September)

- Research Grants for Completion of a Doctoral Programme in Germany (1 – 3 years), Application deadline: 15 October

- Research Grants (Short-term up to 6 months, non renewable)
  Application deadline: 15 November for stays beginning from April and 30 April for stays beginning from October

- Research Grants (Long-term 7 to 10 months, non renewable)
  Application deadline: 15 October

- Research Stays for University Academics and Scientists
  Application deadline: 15 Apr for stays that start between August of the same year and Jan of the following year/15 Oct for stays that start between Mar and Jul of the following year

- Re-Invitation Programme for Former Scholarship Holders
  Application deadline: 15 Apr for stays that start between August of the same year and Jan of the following year/15 Oct for stays that start between Mar and Jul of the following year

- Project-related Bilateral Exchange Programme
  Germany/Hong Kong Joint Research Scheme (with UGC)

- The Croucher Foundation Programme (for Natural Sciences, Medicine or Technology) ==> only Hong Kongers

www.study-in.de
Sources of information
Need more information?

Brochure “Funding your research in Germany”

www.research-in-germany.org/funding-programmes
Need more information?
www.research-in-germany.org
Websites and databases

- http://www.research-in-germany.org
- http://www.funding-guide.de
- http://www.euraxess.de
- http://www.research-explorer.de
- http://www.higher-education-compass.de
Useful links

Finding a doctoral position

- PhD Germany
  www.phdgermany.de
- Research in Germany
  www.research-in-germany.org/jobs
- EURAXESS
  www.euraxess.de
- Academics
  www.academics.com
The German Academic Exchange Service – THE German National Agency for Exchange and Internationalisation

DAAD Information Centre
Hong Kong & Macau
Hong Kong Baptist University
Academic & Administration Building,
Room 1126, 11th Floor

Weekly Consultation:
1st & 3rd Monday of each month, 4 pm – 7 pm
Every Tuesday, 10 am – 12 noon

appointment (required for PhD / research)

Mr Orange Cheung, Education Officer

Dr. Siegbert Klee, Director DAAD IC
Vielen Dank
und
Herzlich Willkommen
in Deutschland!