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## International Mobility in Research Training Groups and Collaborative Research Centres

*The internationalisation of German research is described as having a defining role to play in the ongoing development of the German university and research system. Networking and links between individual researchers are an important aspect of this process. They help to put local research activities into the context of global scholarly discourse and therefore enhance the quality of research. At the same time, international links often develop a dynamic of their own that goes beyond a mere working relationship to make up a particularly long-lasting aspect of the internationalisation of the German research system. The DFG therefore attaches great importance to the promotion of international mobility.*

*This “Infobrief” presents selected aspects of the internationality of research groups using the examples of two DFG funding programmes: Collaborative Research Centres (CRCs) and Research Training Groups (RTGs). It considers the countries of origin of researchers involved in CRCs and RTGs and the preferred destination countries for research visits abroad. Particular attention is given to differences between academic status groups. The results show in which countries (early career) researchers from Germany see potential for their research careers and how attractive CRCs and RTGs are as research environments to researchers from abroad.*

### 1 Starting point and data base

For several years the DFG has carried out an annual survey of two of its funding programmes, Research Training Groups (RTGs) and Collaborative Research Centres (CRCs), to gather information about the participants. The aim of the survey, which since 2011 has also been carried out for graduate schools and clusters of excellence within the federal and state Excellence Initiative, is to collect empirical data to describe key structural aspects of the programmes, such as internationality, interdisciplinarity, gender aspects and support

for early career researchers. The present analysis is based on data gathered as part of this ongoing monitoring of the CRC and RTG programmes. The analysis draws on data collected between 2008 and 2010.

For both programmes we examine two different status groups of early career researchers, doctoral and postdoctoral. For CRCs there is also data on project leaders and other academic staff. To examine the question of “cultural” differences between disciplines, the survey covers various aspects of activities relating to these areas. In this report, CRCs and RTGs are classified according to the four main

### Research Training Groups

The main aim of Research Training Groups is to train doctoral researchers within a thematically focused research programme and a structured qualification programme. They are designed to provide intensive preparation for the world of professional research while encouraging early independence. In 2012 the DFG funded a total of 233 Research Training Groups with a sum of €153 million.

### Collaborative Research Centres

In a Collaborative Research Centre, researchers from one university work together across the boundaries of their respective subjects, institutes, disciplines and faculties on a challenging, complex and long-term research programme for up to 12 years. Collaborative Research Centres also promote international collaborations to help researchers build international networks with their peers in other countries. In 2012 the DFG funded 254 Collaborative Research Centres with a sum of around €551 million.

categories used by the DFG<sup>1</sup>: humanities and social sciences, life sciences, natural sciences and engineering sciences. In 2010, a total of 15 791 researchers participated in Collaborative Research Centres. The number of people in each status group can be seen in Table 1. 18% were of foreign nationality. By comparison, around 22% of the 5 771 doctoral and postdoctoral researchers involved in Research Training Groups in the same year were of foreign nationality. In both Collaborative Re-

search Centres and Research Training Groups, the proportion of international researchers was highest at postdoctoral level: around 36% of postdoctoral researchers in both CRCs and RTGs were of non-German nationality. Overall, CRCs and RTGs are much more international in their make-up than, for example, the totality of academic staff at universities<sup>2</sup>. In 2010, according to the Federal Statistical Office, around 11% of academic university staff were of foreign nationality (Destatis 2010).

<sup>1</sup> A full explanation of the DFG subject classification system is available at [www.dfg.de/en/dfg\\_profile/statutory\\_bodies/review\\_boards/subject\\_areas/](http://www.dfg.de/en/dfg_profile/statutory_bodies/review_boards/subject_areas/)

<sup>2</sup> The Federal Statistical Office defines academic university staff as professors, associate professors, assistant professors, research assistants and full-time lecturers

Research staff	CRC		RTG	
	Total	of which international	Total	of which international
Project leaders	5.076	10%	–	–
Postdoctoral researchers	2.786	36%	449	36%
Doctoral researchers	6.447	20%	5.322	21%
Other research assistants	1.482	17%	–	–
<b>Total</b>	<b>15.791</b>	<b>18%</b>	<b>5.771</b>	<b>22%</b>

**Table 1: Number of research staff in CRCs and RTGs and proportion of individuals of foreign nationality (2010)**

## 2 International mobility in CRCs and RTGs

One core element of the everyday work of Collaborative Research Centres and Research Training Groups is the close collaborative relationships with researchers in other countries. This collaboration may be seen from two perspectives. The incoming perspective relates to the countries of origin of researchers in CRCs and RTGs, while the outgoing perspective refers to the destinations of researchers who embark on research visits abroad.

### 2.1 Countries of origin of researchers in CRCs and RTGs

One important aspect of international mobility, and thus an indicator of Germany's visibility and attractiveness as a research location, is the number of international participants in RTGs and CRCs. It is also of interest to see for which countries and regions Germany is particularly attractive as a place to research or participate in a DFG-funded RTG or CRC. For these purposes, and for the sake of simplicity, a re-

searcher's nationality is taken to be his or her "country of origin".<sup>3</sup>

Of the 5771 doctoral and postdoctoral researchers in Research Training Groups, 22% are of foreign nationality. The most common countries of origin for international researchers are China and India. Indian researchers, who make up around 10% of all international participants, are particularly well represented in the life sciences, natural sciences and engineering sciences RTGs, and less so in the humanities and social sciences.

A similar picture can be seen with regard to researchers in Collaborative Research Centres, as shown in figure 2. Russia, China and India top the list, which also includes two European countries – Italy and Austria – among the top five most common countries of origin.

While figures 1 and 2 show a comparison of the most common countries of origin of international researchers according to funding programme, the diagram below makes a distinc-

<sup>3</sup> This indicator only allows limited conclusions to be drawn about countries of origin and places of work prior to joining a research group. The individuals categorised here as "international" may have been born in Germany and have completed their school education there.

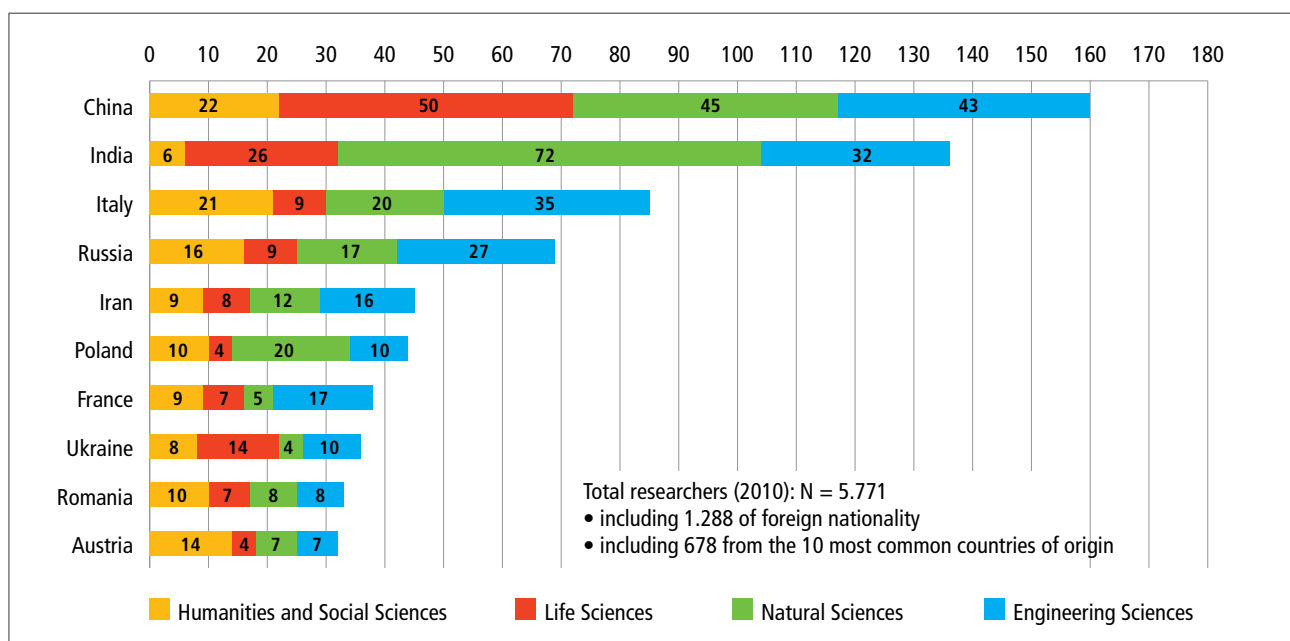
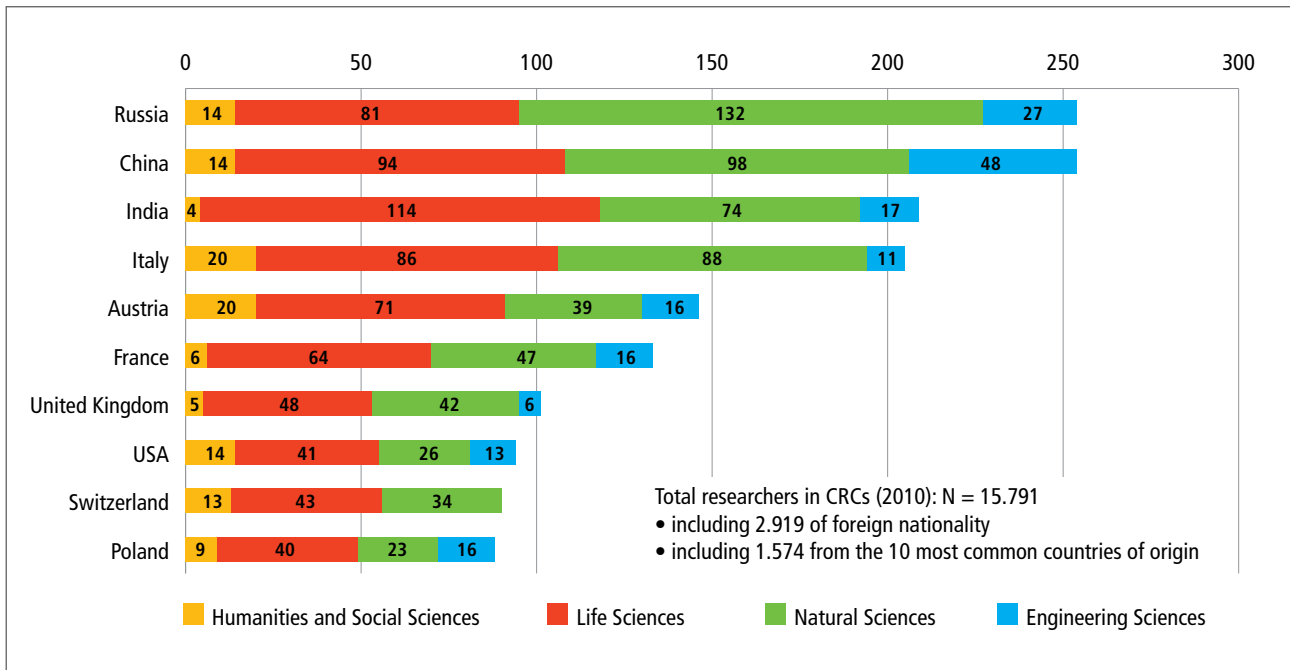


Figure 1: International researchers in RTGs (2010) – 10 most common countries of origin by scientific discipline

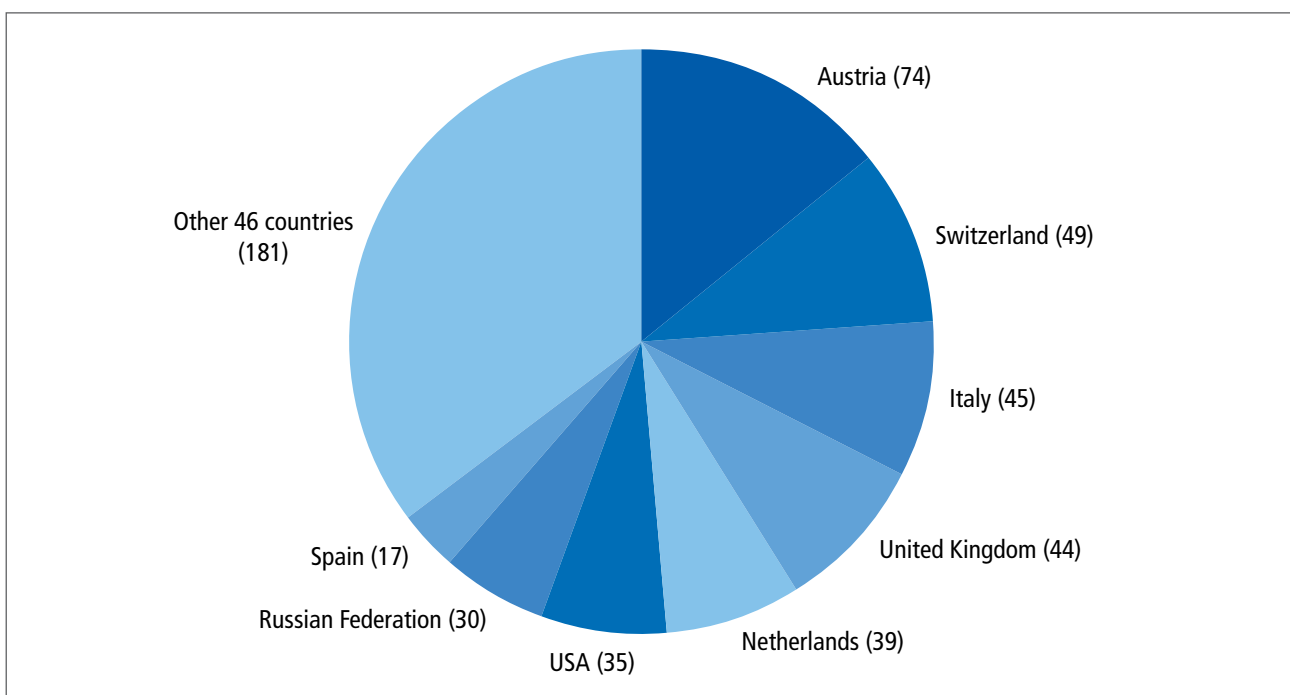


**Figure 2: International researchers in CRCs (2010) – 10 most common countries of origin by scientific discipline**

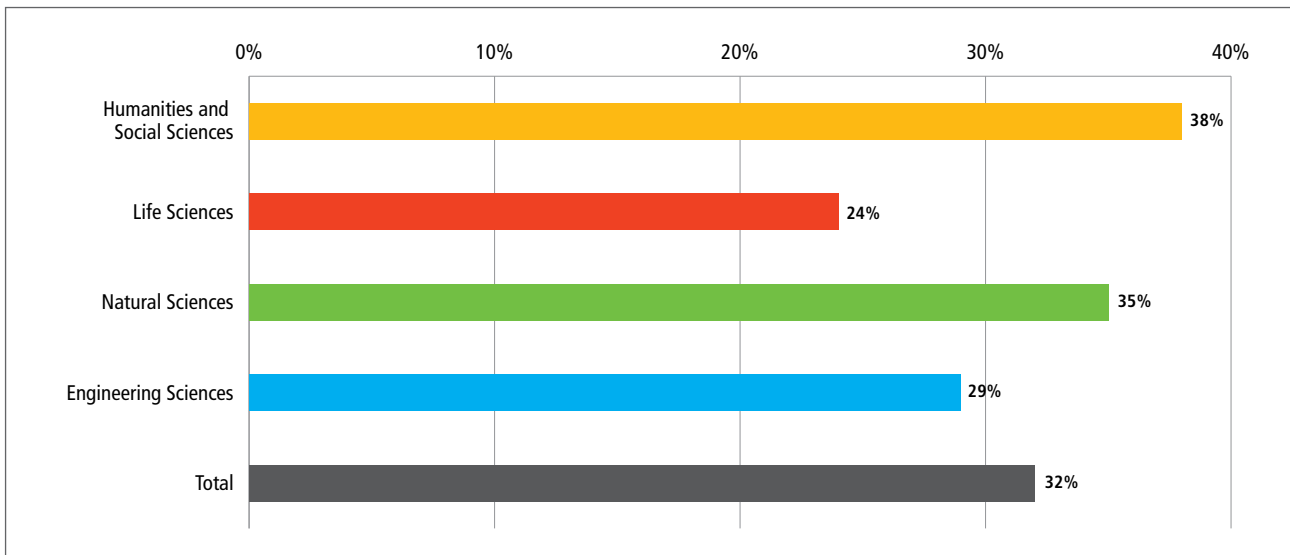
tion between status groups – limited here to the CRC programme, as only here is it possible to differentiate between doctoral and postdoctoral researchers and project leaders.

As shown in figure 3, among the 514 international project leaders the most common countries of origin are Austria (N=74), Switzerland (N=49) and Italy (N=45). There

are also significant numbers of project leaders from the United Kingdom (N=44) and the Netherlands (N=39). Germany's close neighbours and other European countries are therefore well represented in this status group and include both countries with a linguistic advantage and countries with a strong research culture.



**Figure 3: International project leaders in CRCs (2010) – distribution by country of origin**



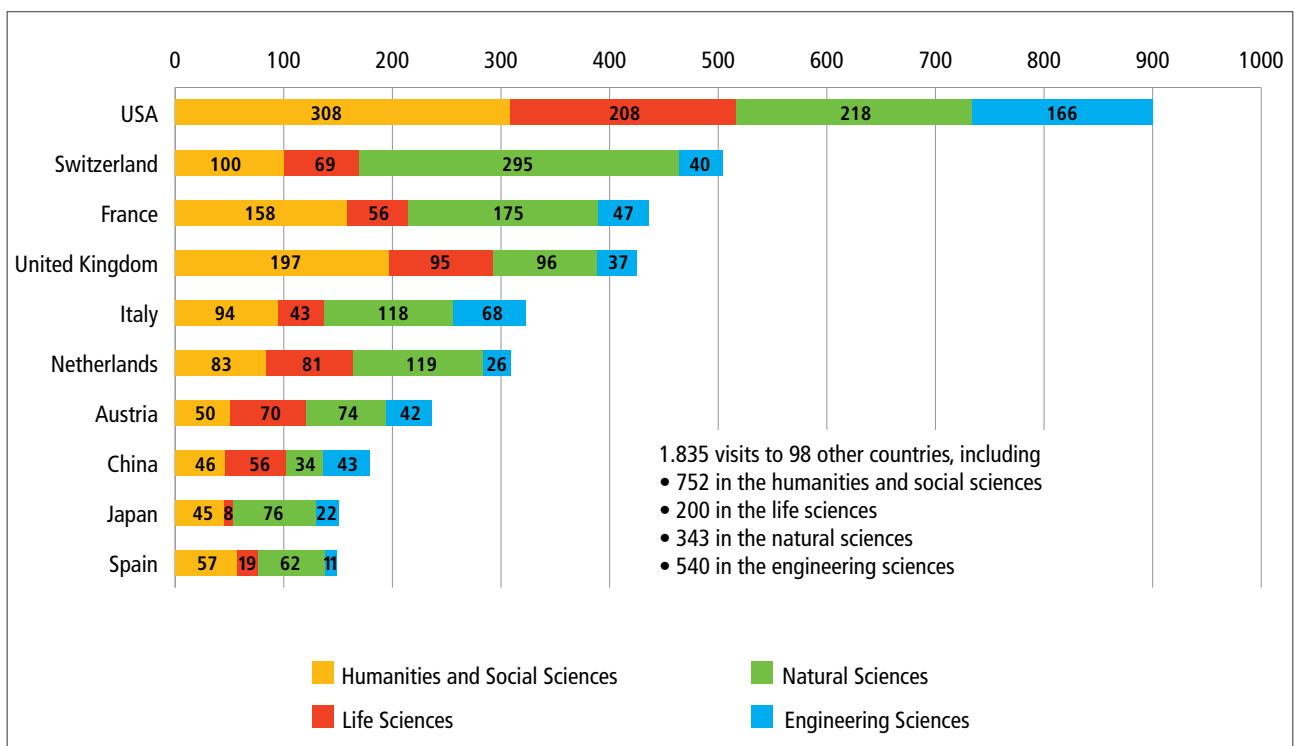
**Figure 4: Proportion of RTG doctoral researchers (2008 – 2010) who made at least one visit abroad, by scientific discipline (%)**

## 2.2 Destinations for research visits abroad

In addition to the participation of international researchers, visits abroad by German researchers in CRCs and RTGs represent an important component of international cooperation. Researchers may go abroad for several reasons: to carry out research in the field or in

archives, to learn new methods or to work on a project as part of an international team of researchers. These visits give German researchers the chance to use international contacts for the benefit of their research projects.

Doctoral researchers in RTGs and CRCs receive financial support for visits abroad. This is intended to give them the opportunity to estab-



**Figure 5: 10 most common international destinations for RTG doctoral researchers in the period 2008 – 2010 by scientific discipline (number of visits)**

lish themselves internationally as independent researchers. About a third of the 7301 doctoral researchers involved in Research Training Groups between 2008 and 2010 made at least one trip abroad during this period. Differences may be noted between disciplines. In the humanities and social sciences and in the natural sciences, 38% and 35% respectively of doctoral researchers made at least one visit abroad during the period in question; in the life sciences, less than a quarter took advantage of the opportunity to undertake a research visit abroad.

By far the most popular destination for doctoral researchers is the USA. Between 2008 and 2010, RTG doctoral researchers made a total of 900 research visits to the USA. In the natural sciences, Switzerland is also a very popular destination. Overall, the preferred destinations for doctoral researchers are clearly leading research nations in Europe and North America.

It is also evident that visits abroad often result in long-term links. Of the 1345 doctoral researchers in RTGs who made at least one visit abroad between 2008 and 2010, more than half, namely 744, made at least one return visit.

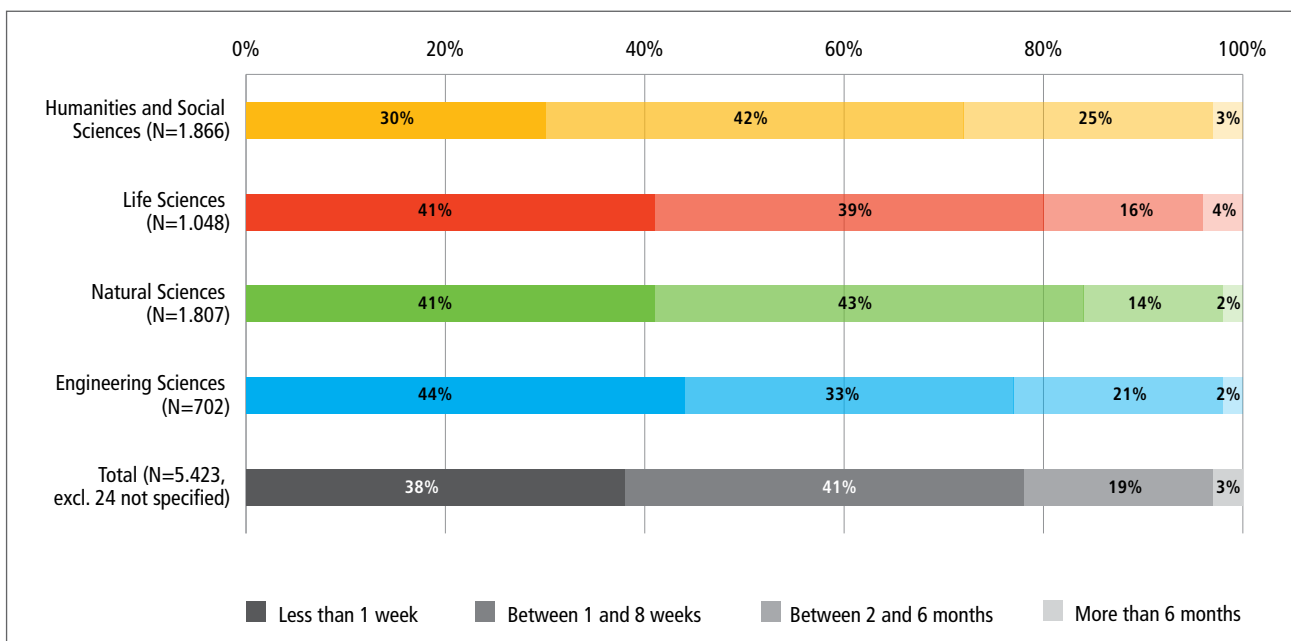
The amount of time spent abroad varies. Around 40% of visits abroad are one week or

less in duration. Approximately 22% last more than two months. The duration tends to be longer in the humanities and social sciences, with some 28% of all visits abroad lasting more than two months (see fig. 6).

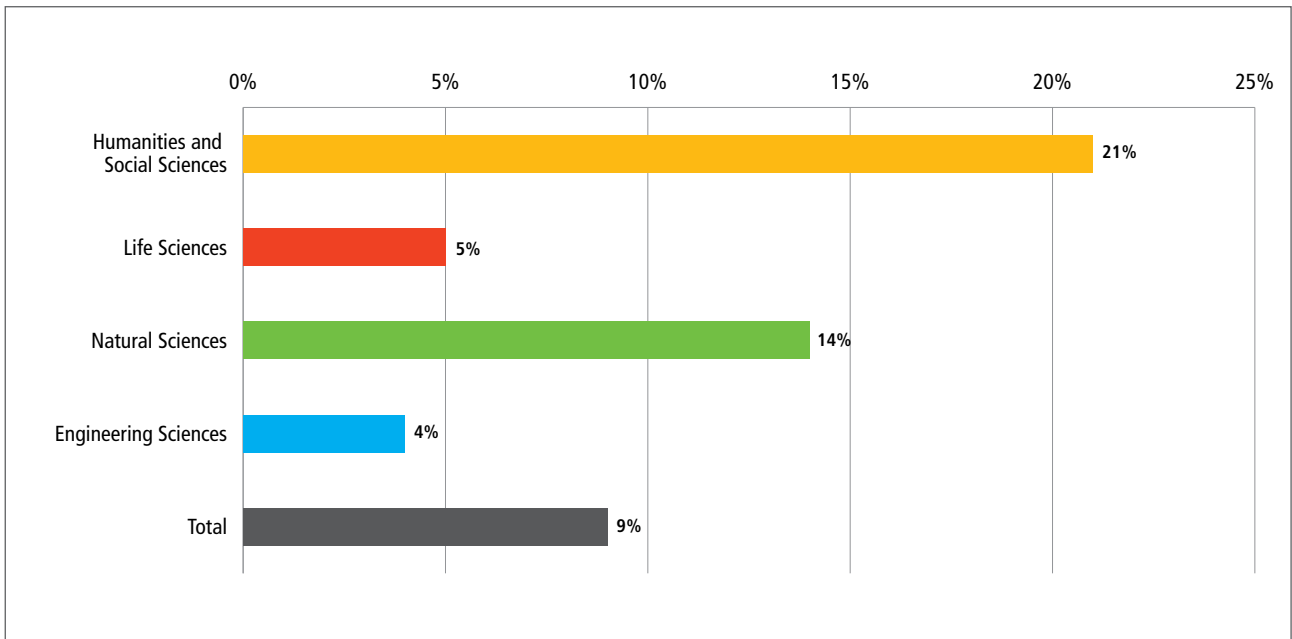
Researchers participating in the CRC programme can also apply for funding to enable them to undertake a research visit abroad. The proportion of CRC researchers who spent a period abroad in 2009 or 2010 was 9%. As with Research Training Groups, the figure is much higher for the humanities and social sciences, at 21%, than in the natural sciences (14%), life sciences (5%) and engineering sciences (4%).

### 2.3 Comparison of regions of origin and destination regions

The countries of origin of researchers working in Germany and the destination countries for visits abroad give an indication of key areas of research in the various countries and mobility patterns at different career stages. A comparison of regions of origin and destination regions between doctoral researchers, postdoctoral researchers and project leaders in CRCs and RTGs



**Figure 6: Visits abroad by RTG doctoral researchers between 2008 and 2010 by duration and scientific discipline (%)**

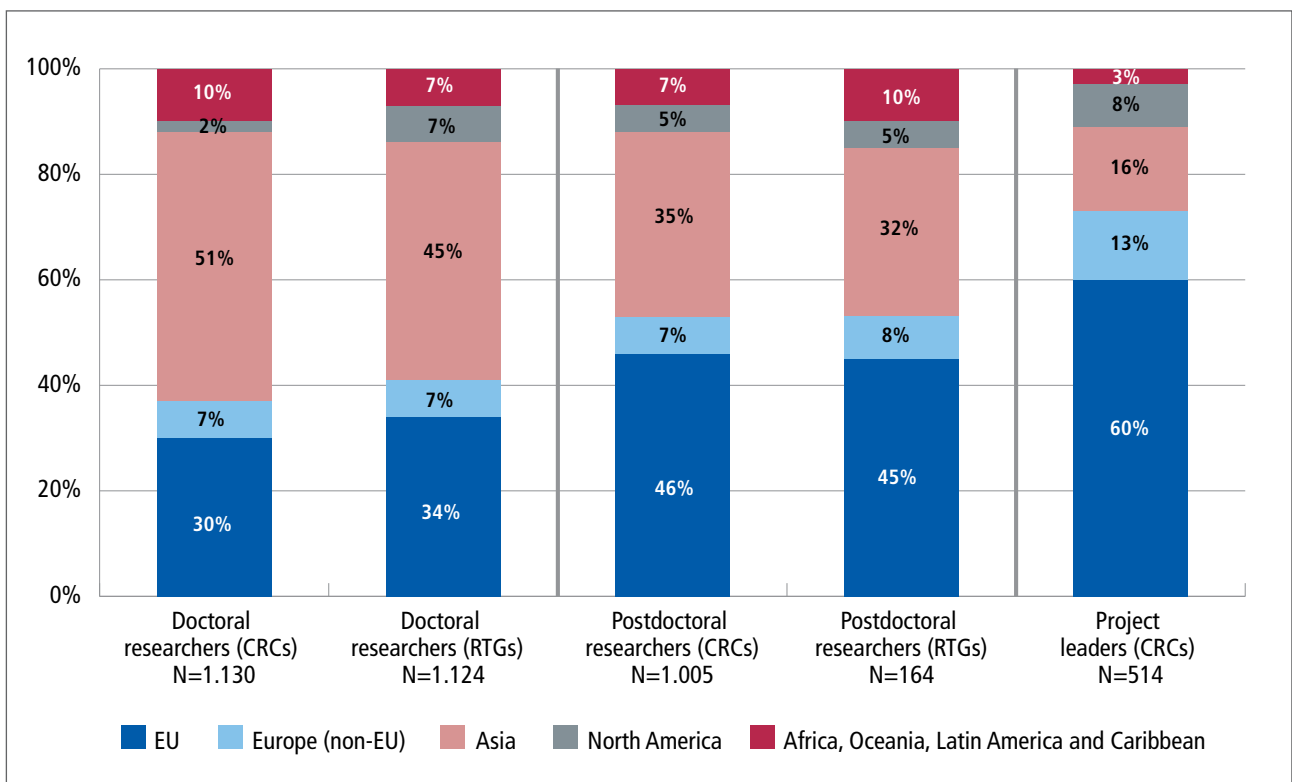


**Figure 7: Proportion of researchers in CRCs (2009 – 2010) who made at least one visit abroad in 2009 and 2010, by scientific discipline**

shows corresponding differences between status groups and home/destination regions.

In CRCs and RTGs, the proportion of participants of Asian origin is particularly high at doctoral level: 51% of international doctoral researchers in CRCs and 45% in RTGs are of

Asian nationality (see fig. 8). Both figures are considerably higher than the 33% calculated by the Federal Statistical Office for the winter semester 2010/2011, relating to the total number of international doctoral researchers in Germany (Federal Statistical Office 2012).



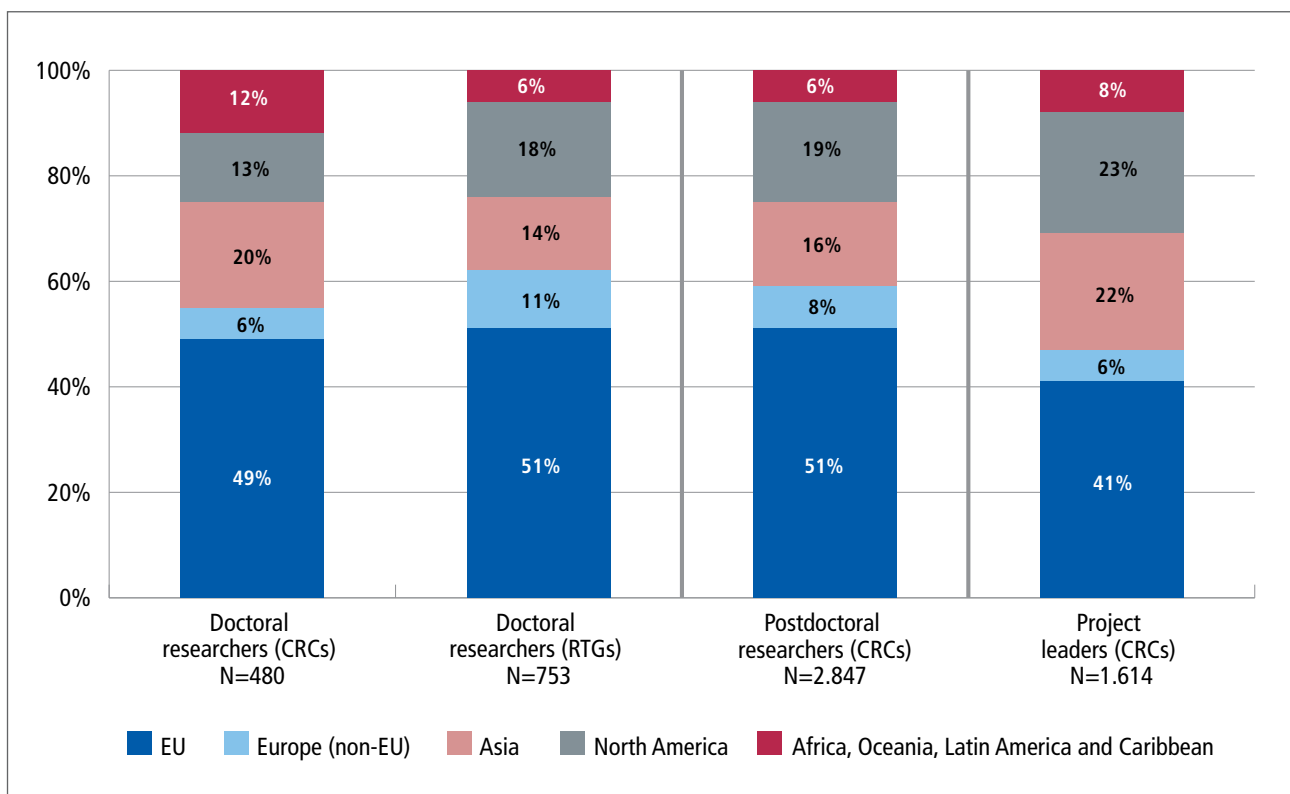
**Figure 8: Nationalities of foreigners participating in RTGs and CRCs in 2010 by region and status group (%)**

The situation changes as careers develop. Among postdoctoral researchers and project leaders, EU and other European countries are the most common countries of origin, accounting for about half of postdoctoral researchers and around three quarters of project leaders. In 2010, 62% of all international academic staff at German universities came from European countries and 23% from Asian countries (www.wissenschaft-weltoffen.de 2013). At project leader level the distribution largely corresponds to the overall distribution at German universities, while among postdoctoral researchers there is a slight emphasis on Asian countries.

When we consider the destination regions of individuals participating in CRCs and RTGs, the picture is somewhat different. The most popular destination region for all status groups is Europe, with European countries accounting for around half of all visits abroad. The North American countries, especially the USA, also play an important role (see fig. 9). In CRCs, these figures correspond, with the exception of project lead-

ers, to the preferences that may be observed in the German research system as a whole. Around 47% of doctoral researchers and 37% of postdoctoral researchers who undertook a funded visit abroad in 2010 chose a European destination. North America was the chosen destination of 22% of doctoral researchers and 49% of postdoctoral researchers who undertook a funded visit abroad (www.wissenschaft-weltoffen.de 2013).

A comparison of countries of origin and destinations at postdoctoral and project leader level reveals a balanced picture, Europe being the most common destination and region of origin. At doctoral level, however, there is an unbalance: while the proportion of doctoral researchers from Asia, particularly India and China, is relatively high compared with the total number of doctoral researchers in CRCs and RTGs, Asian countries are less important destinations in purely quantitative terms for research visits. This could be seen as a sign that the research system in China and India is growing, but is not yet seen as a prime environment for developing research skills.



**Figure 9: Visits abroad as part of CRCs (2009 – 2010) and RTGs (2008 – 2010) by destination region and status group (%)**

(Visits abroad by postdoctoral researchers in RTGs are not reported due to inadequate numbers of cases.)



### 3 Summary and outlook

The results show that a substantial proportion of researchers who receive funding through Research Training Groups and Collaborative Research Centres are of non-German nationality.

Networking with colleagues abroad plays an important role. The high proportion of international doctoral researchers in RTGs and CRCs indicates that a clear research profile and a structured environment for doctoral research provide easier access to the German research system for international researchers.

The pattern of internationalisation varies according to status group, with Germany appearing to be particularly attractive to postgraduate and postdoctoral researchers from Asia. At project leader level, however, the largest group among international researchers are those from leading research nations in Europe and German-speaking countries.

In the other direction, German researchers in CRCs and RTGs also participate enthusiastically in international exchanges. Around one third of those surveyed stated that they had completed at least one visit abroad during the period in question, with around one fifth of these visits lasting more than two months. The most popular destinations were research institutions in leading European research nations and the USA.

Although the internationality of the German research system has increased considerably in recent years, the example of RTGs and CRCs shows that migration patterns remain unbalanced. While the USA and leading European research nations are attractive destinations for German researchers, Germany is an attractive destination for (early career) researchers from China and India, especially at doctoral level. In this respect the pattern of internationalisation in RTGs and CRCs largely corresponds to that described for the German research system as a whole.

In summary it may be said that international mobility is an integral part of Collaborative Research Centres and Research Training Groups. Both programmes are internationally highly at-

tractive and contribute to the internationalisation of the German research system through both the funding of visits from abroad and the funding of visits by German researchers to other countries.

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(Version dated: 2 December 2013)

## DFG infobrief

### Legal information

Issue 1.13

The DFG infobrief is published by the Information Management Section of the German Research Foundation (DFG), Bonn.

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Basic layout: besscom, Berlin; Tim Wübben, DFG  
Design: Olaf Herling, Warstein