

## **Atlanta EU/US Research and Education Workshop**

### **Key messages**

#### **Session IV**

#### **Transatlantic mobility of researchers and innovation**

##### ***Topic A: Global science and technology careers***

#### **US Susan BUTTS**

Multinational companies require employees to have much higher levels of skill in areas such as teamwork in a virtual, multi-national environment, management of employees in other countries, communication, and understanding of business requirements and opportunities in other parts of the world than were needed even a decade ago. Some of these skills could be developed through enhancements in the graduate education curriculum. Others require on-the-job training that can be accelerated through international work assignments.

International mobility of workers transferring to another country but remaining with the same employer could be enhanced if the host country would “fast-track” processes for visas, work permits, etc and simplify approaches to healthcare and other social benefits. Government grants to partially fund international exchange of scientists with valuable skill sets could also make such assignments more attractive to employers. Scientists receiving grants could be required to spend part-time engaged in service to the host country (e.g., lecturing at universities, consulting with government agencies).

Tools now commonly available (internet-based open innovation brokers, e-mail, use of common servers to exchange large documents or datasets, inexpensive telecommunications) make it much easier for employers to innovate globally without travel. The high cost of international assignments involving relocation of employees and their families has driven employers to explore alternatives such as extended business trips which are less expensive but can still meet the needs of employee-based technology transfer, expert problem solving, and leadership development.

Barriers to international research and innovation include export control regulations and the high cost of obtaining patent protection in multiple countries (due to lack of international patent system harmonization and cost of detecting and prosecuting infringement). These barriers are not diminished by worker mobility.

Differences in the treatment of intellectual property (IP) resulting from company-sponsored research at universities can either promote or discourage such international collaborations. In general, European universities offer more sponsor-friendly IP terms (e.g., assignment of patent ownership) so US companies are increasingly attracted to such research partnerships with universities in Europe.

#### **EU Philip SHAPIRA**

- Creative research is a key-driver for scientific and technological progress, and also a precondition for advances in other societal domains.
- It is particularly important to improve our knowledge and understanding of the organizational and institutional factors that support and encourage work that is novel, ambitious and valuable, since these may be influenced by research management, funding and policy strategies.
- The Project on Creativity Capabilities and the Conduct of Highly Innovative Research in Europe and the United States (CREA) is an international collaboration (researchers from the US, UK, Germany, Netherlands) investigating features at the meso-level of the research environment which encourage highly creative and unconventional research.
- The study builds on work which has identified highly creative scientists in the two scientific fields of activities in human genetics and nanotechnology in the US and Europe and which is probing institutional, organizational, team, and career development characteristics and trajectories of this highly creative research through quantitative control methods and in-depth case examinations.
- Case studies of highly creative US and European scientists in nanotechnology and human genetics in the first phase of the CREA project (sponsored by the EU NEST Programme) identified several key organizational and institutional factors, including: small group size – large context; multidisciplinary

linkages; flexible research funding; and independence at early career stages. Mobility (across disciplines, institutions, countries, and continents) was also found to be evident in the career trajectories of highly creative scientists.

- Findings from the CREA project offer insights are offered for research management, research funding, and organizational designs to stimulate highly creative research. The importance of small group size is relevant as research sponsors increasingly emphasize large centers of excellence. Enhancing flexibility and independence at early-stage career development may require institutional changes and the expansion of early career research awards. Mobility – which is hypothesized as linked with scientific creativity through increased knowledge source variety – may be aided by mobility schemes.

Ongoing research in a second phase of work by the CREA team (sponsored by the US National Science Foundation) is undertaking CV analysis to examine the long-term career trajectories of our set of highly creative scientists compared with a large matched panel of US and EU scientists (results expected in mid-2009)

### ***Topic B: Obstacles which prevent innovation***

#### **US Jarrod GOENTZEL**

- Idea mobility (academia-industry): The pace, timing, and scope for developing and applying innovative ideas across academia and industry are often not aligned. PhDs need more career growth options on innovation teams in academia and industry. Ownership of ideas will always be an issue.
- Disciplinary mobility: Universities rarely encourage the entrepreneurial initiative that often requires multiple disciplines and skill sets to take ideas to market. Increasing modularity in curricula enables development of multi-disciplinary interests and skill sets.
- International mobility: Long-standing international collaboration is built on the foundation of permanent faculty members and researchers who work in foreign countries. The path for personal livelihood (salary structures, social security, employment for spouse/partner, etc.) is critical to establishing this foundation. Temporary researchers, including students, can then join with the aid of targeted funding/scholarships and opportunities to transition to permanent positions.
- Multi-National Networks: The future of international innovation lies in the ability to easily form multi-national networks of researchers. Issues of legal establishment, relationship, and affiliation are important to address; but new models of “open source” collaboration should be explored. Funding streams across countries are rarely aligned to facilitate collaborative timing and scope. Technology offers opportunities to overcome some barriers.

#### **EU Jean-Luc CLEMENT**

Excellence in research stems not only from competition between researchers but also from cooperation among researchers. European Union (EU) and United States of America (US) have to foster strategic S&T cooperation which requires a long-term commitment and a new approach to define priority research areas for cooperation and fair agreements to work together for both researchers and public or private laboratories.

Mobility of researchers is an essential feature of international S&T cooperation. Competition for the best brains is intense. It is crucial for EU and US to take benefit of the mobility of their own citizens and facilitate carriers and family development of researchers and faculties.

Cooperation needs to be based on shared principles and practices, reciprocity, equitable treatment and mutual benefits.

The main obstacles for cooperation between laboratories, large facilities and researcher of EU and US are:

- Inadequacy between intellectual property rules of universities and research performing organizations of EU Member states and US
- Social security and pension regimes for permanent and non permanent researchers and faculties
- Visa regulations and taxes
- Family-related constrain
- Administrative obstacles concerning the transfer of materials, money and equipment
- Common evaluation of proposals and methodology of calls for proposals

- Dissymmetry of exchanges from both sides of the Atlantic

EU and US should develop a common approach concerning careers for researchers and mobility between the public and private sector. Good management of intellectual property issues is an important requirement for successful and durable cooperation between EU and US, it promotes trust and the sharing and exploitation of knowledge in cooperative research activities.

New avenues are open with agreements signed between the EU and US in 1999 and 2004. We also have to recognize in common, national sovereignty over all genetic resources and provide that access to valuable biological resources be carried out on mutually agreed terms.

## **EU Per ERIKSSON**

### **Innovation stimulators**

First of all one has to be aware of that in policy for research and innovation most things happens elsewhere. This means that you have to be very good in studying other nation's policies for research and innovation. When you then find good policy instruments that you would like to have also at home, do not copy but translate to your own context.

From US we have learned to use and translate the SBIR-program (Small Business Innovation Research) into a program called "Forska&Väx" (Research & Grow) and this program has become a success and very much appreciated by the SMEs. From Israel we have adapted a very competitive incubator program.

Most interesting now is to establish international links for our Centers of Excellence in Research and Innovation. This means to support them to strengthen international cooperation with other leading centers in the same area all over the world. This is a new program from VINNOVA, the Swedish Governmental Agency for Innovation Systems. We will also invest more in other international programs within Europe and with the great world outside Europe.

Finally it important to understand that in the knowledge based and global economy the universities play a key role. This means that it is not good enough with Public Private Partnership, you need to establish Public Private University Partnership, i.e. Triple Helix.