Research Profile

transCampus London–Dresden: a new model for international collaborative research

In our increasingly connected world, collaboration and exchange of scientific ideas is, in some ways, easier than ever before. According to a 2015 report from the UN Educational, Scientific and Cultural Organization, one in four scientific articles published worldwide in 2014 included authors from more than one country, whereas in 2004 only one in five articles had international authorship. However, even with the closest informal collaborations, barriers to completely open sharing of talent and resources will remain, as a result of barriers at the country level (eg, immigration and transfer of samples) and centre level (eg, administrative capacity).

In 2015, the transCampus was created in an effort to bridge this gap for collaborations between two of Europe's research centres of excellence—Technische Universität Dresden, Germany, and King's College London, UK. "Unlike partnerships between universities, professors within the transCampus are professors at both sites", explains Stefan Bornstein, dean of the transCampus. As such, they are eligible to apply for research funding from either Germany or the UK. The transCampus now employs about a dozen professors with full-time positions at either Technische Universität Dresden or King's College London who also hold part-time positions at the other site. transCampus professor Mark Peakman, who is primarily based at King's College London, notes that "King's and Dresden have areas of shared interest—eg, strong research focus in diabetes, endocrinology, autoimmunity, and obesity—but are not direct copies of each other; the different emphases and expertise within a discipline between sites provides added value and opportunity in such a partnership".

Some projects ongoing within the centre require large multidisciplinary teams, for which collaboration in terms of skills and resources is fundamental. These include improved metabolic surgery; islet transplantation; development of monitoring devices; and prevention of autoimmune diabetes—ie, a diabetes vaccination. One recent paper from research teams in the transCampus reports the first successful xenotransplantation of porcine islets into diabetic non-human primates without use of immunosuppressive drugs; the first human trials of islet xenotransplantation in people with type 1 diabetes are now being planned. To bring treatments from bench to bedside—an important goal of the transCampus—differences in regulatory processes between countries can make international collaboration advantageous and streamline research progression. For example, Bornstein notes that "in Germany, experimental treatments could be used in a so-called hospital-exempted individual trial, so long as the physician and patient agree, whereas in the UK approval of an ethical review board would be required. Conversely, working with embryonic stem cells is much simpler in the UK than in Germany."

Andreas Birkenfeld, a professor within the transCampus who is primarily based in Dresden, points out another benefit of the collaborative system: "We initiate common clinical trials as well as clinical care projects within the transCampus. Patients thus also profit from the transCampus and the common knowledge within both sites." For example, patients in the UK with rare lipid disorders, including familial hypercholesterolaemia, have been treated in Germany using lipid apheresis, a life-saving treatment that is not routinely available in the UK. Conversely, patients in Germany who would otherwise have limited access to metabolic surgery have been treated at a world-leading centre in the UK led by transCampus professor Franscesco Rubino.

An important part of the collaboration in the transCampus is the shared PhD training programme—International Research Training Group in Immunological and Cellular Strategies in Metabolic Disease—which has so far received €6 million from the German Research Foundation and other funding from UK research councils and foundations to fund the next 4 years; the hope is, of course, to fund the programme for longer once its success has been shown. "This is, as far as I can see, the strongest diabetes training programme in the world", pronounces Bornstein. Students have the opportunity to work not only with diabetes researchers and clinicians, but also with researchers who specialise in stem cells, immunology, and materials science and with metabolic surgeons. The degree is awarded jointly by Technische Universität Dresden and King's College London. Alice Santambrogio is a first-year PhD student in the programme, who is excited by the unique opportunity to study within the transCampus. "The centres are both scientific leaders in Europe", she explains. "I have the chance to gain the best of the research-led education provided by both universities and to generate high-quality research working in two labs that are experts in complementary fields."

Sharing knowledge and resources between centres has enabled researchers to combine their strengths and overcome their weaknesses, making close collaborations, including international partnerships, fundamental to scientific advance. "It is important to keep doors open to international collaborative working—especially with all the political upheaval and separatism currently happening around the world—and I think the transCampus will be used as a model to set up collaborations in other areas," says Bornstein.

Fiona Mitchell

For the **UNESCO report** see http://unesdoc.unesco.org/images/0023/002354/235406e.pdf

For more on the **transCampus** see http://transcampus.eu

For the report of **islet xenotransplantation** see *Proc Natl Acad Sci USA* 2017; published online Oct 16. DOI:10.1073/pnas.1708420114

For more on the **PhD training programme see** http://transcampus.eu/irtg