

Academia-industry alliance: Belfer Institute and sanofi-aventis collaborate to develop new cancer therapeutics

Academic-industry collaborations are on the rise worldwide (Boccanfuso, 2010) owing to their potential to synergise the development of new medical treatments. Academic research has an emphasis on discovery, whereas industry excels at product development; the two combined can traverse the drug-development pipeline from start to finish. An example of such an alliance is the collaboration between the Belfer Institute of Applied Cancer Science (Belfer Institute) at the Dana-Farber Cancer Institute (DFCI) in Boston and the pharmaceutical company sanofi-aventis (announced September 23, 2010). The goals of the collaboration are to discover and develop a new generation of targeted cancer therapeutics.

The Belfer Institute was previously known as the Belfer Center for Cancer Genomics, established by Lynda Chin, MD, and Matthew Meyerson, MD, PhD, in 1999 as a site for the high-throughput genomic analyses of human and mouse tumours. The current focus of the Belfer Institute is to translate key insights obtained through basic studies of cancer genomes and biology to identify new therapeutic targets and develop agents against them. The Belfer Institute takes a unique approach towards this aim: a single goal-oriented team integrates the strongest elements of basic academic research with industrial drug-discovery strategies. Ron DePinho, MD, the current Director of the Belfer Institute, is the driving force behind this innovative organisational approach. Other key members of the multidisciplinary team are Kenneth Anderson, MD, and James DiCaprio, MD, who provide clinical and translational oversight to ongoing projects, and Giulio Draetta, MD, PhD, and Pam Carroll, PhD, who provide expertise in pharmaceutical R&D. Work at the Belfer Institute has led to FDA approval of six regimens for the treatment of multiple myeloma. In addition, the institute initiated a collaboration in 2007 with Merck Pharmaceuticals, with whom it now has three ongoing drug-discovery projects.

Similar to its alliance with Merck, the new collaboration with sanofi-aventis harnesses the most effective aspects of academia and industry to facilitate cancer drug discovery and development. In a press release announcing the news, Dr DePinho said, "By combining our expertise in cancer genetics and translational medicine with sanofi-aventis' excellent drug discovery and development track record, this alliance has great potential to change the practice of cancer medicine".

Under the terms of the agreement, the DFCI will receive US\$33 million in upfront and research funding for at least 3 years. The DFCI will also be entitled to preclinical, clinical and commercial milestone payments and royalties on sales of commercial products. Benefits are expected for both partners. Sanofi-aventis will obtain exclusive access to certain components of a transformative cancer target identification and validation platform originally developed in the laboratory of Dr Chin, currently the Belfer Institute's Scientific Director.

The Belfer-sanofi alliance represents one of the largest industry-academia alliances established to date, and could promote the development of a new generation of anti-cancer agents.

Boccanfuso, A. M. (2010). Why university-industry partnerships matter. *Sci. Transl. Med.* 2, 51cm25

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Integrating clinical and basic research at the new Sheffield Institute for Translational Neuroscience



A new centre called the Sheffield Institute for Translational Neuroscience (SITraN) dedicated to the study of the neurodegenerative disorder motor neurone disease [MND; also known as amyotrophic lateral sclerosis (ALS) or Lou Gehrig's disease] will hold its official high-profile opening event on November 18th, 2010. Work at the institute, which will be directed by Professor Pam Shaw at the University of Sheffield School of Medicine and Biomedical Sciences, will aim to harness basic research findings on MND and translate them into a better understanding of the pathology of the disease, as well as into more effective treatments. The institute will also focus on increasing awareness of MND in the UK and worldwide, and will place a strong emphasis on education. In addition to its primary focus on MND, research at SITraN will address outstanding questions in other neurodegenerative diseases, including Parkinson's disease, spinal muscular atrophy (a childhood form of MND) and Alzheimer's disease, which might overlap in some aspects of their underlying pathological mechanisms.

MND is a progressive neurodegenerative disorder caused by the damage and death of motor neurons, which leads to muscle wasting and subsequent impaired movement, speech and breathing. Only 10-15% of patients survive for more than 5 years following the onset of symptoms; this usually rapid disease course is devastating for patients, their families and carers. Many outstanding questions regarding the aetiology of MND remain, but it is considered a relatively under-funded and understudied disease given its incidence and impact on society.

Professor Shaw is a leading expert in MND research and is involved in both clinical activities and basic research. Basic research carried out by her team uses approaches that range from cell-based models to model organisms of MND to analyses of clinical samples from patients with the disease. Several years ago, a patient suffering from MND asked Professor Shaw what she would do if given access to a large amount of research

funding, and she voiced her wish to establish a research institute dedicated to obtaining a better understanding of MND and to developing treatments for the disease. The outcome of this conversation was the birth of the Sheffield Institute Foundation (<http://www.sifoundation.com/>), the aims of which were to raise money and awareness of MND, and ultimately to build SITraN and establish some key new scientific posts at the University of Sheffield. Over the past decade, Professor Shaw, together with Mimoun Azzouz, Professor of Translational Neuroscience, and Paul Ince, Professor of Neuropathology, have established a strong clinical and basic neuroscience team at the University of Sheffield that will see through the goals of the Sheffield Institute Foundation at SITraN.

The new two-storey building in which SITraN is housed consists of 2800 m² of research laboratories, offices, meeting rooms and training facilities, and is located within the University of Sheffield campus across from the Medical School buildings at the Royal Hallamshire Hospital. Research activities at SITraN will involve preclinical studies with established model systems (including cell-based models and model organisms such as zebrafish and mice), as well as the development of new models, such as embryonic stem-cell-based systems. In addition, SITraN will explore novel therapies for treating MND, such as gene- and cell-therapy approaches, and aim to identify compounds with neuroprotective effects through screening of drug libraries. Facilities at SITraN include a microarray laboratory, drug-screening laboratories, a histology facility, viral culture rooms and an imaging suite. SITraN staff will also carry out clinical research and clinical trials of new therapies for MND.

SITraN is aiming to significantly expand the size and capacity of its current research programme by attracting additional experts to Sheffield, and through training new clinicians and scientists. Priority posts available within SITraN include Senior Scientist positions in neurobiology/stem cell biology; neurogenetics; preclinical drug development and bioinformatics; a Clinical Fellowship; and a Scientific Fellowship. Positions for postdoctoral fellows and graduate students will also be available in the future.

The integrated approach at SITraN, involving close collaboration between a critical mass of clinicians and basic scientists with expertise on MND, is expected to accelerate the pace of developing new therapies for the disease.

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'Champalimaud Centre for the Unknown' opens in Lisbon

October 5th, 2010 marked the official opening of the Champalimaud Centre for the Unknown (<http://www.fchampalimaud.org/care-research/champlimaud-centre/>), a new institute where clinicians and basic scientists will work together in the areas of cancer and neuroscience research. The centre is located in Lisbon, bringing Portugal into view for the global scientific community as a leader in translational research.

The Champalimaud Centre for the Unknown is named in part after its founder, Portuguese businessman and billionaire Antonio de Sommer Champalimaud (1918-2004), and in part for its

location near the historically significant Tower of Belém in Lisbon: it is from this area that 15th and 16th century ships reportedly set sail on voyages to explore 'the unknown'. So, the name of the centre reflects the parallel between the challenging quests of these early pioneers and of modern-day scientists. From a distance, the centre even resembles a ship, tilting into the water towards the unique site at which the River Tagus meets the Atlantic Ocean.

Up close, the facilities of the centre are world-class, designed to attract the best scientists and clinicians in the world. The centre houses a large cancer clinic, as well as laboratories for clinical and basic research focussed on cancer and neuroscience. An important emphasis at the centre is to promote translational approaches, which it encourages both through the characteristics of its infrastructure (see below) and its design: clinical and laboratory areas are open to each other, encouraging exchange between clinical activities and basic research. In particular, the aim of the Champalimaud Cancer Centre, currently directed by Raghu Kalluri, of the Beth Israel Deaconess Medical Center and Harvard Medical School in Boston, is to make progress in metastatic cancer translational research.

International recruitment of investigators to the centre is ongoing. Thus far, ~15 neuroscience investigators previously working at locations such as the National Institutes of Health, Cold Spring Harbour and Harvard Medical School are involved, with many others coming from European institutes. Clinician scientists are particularly interested in employment opportunities at the Champalimaud Cancer Centre owing to highly competitive salaries that provide protected time for research. Dr Kalluri comments: "The Champalimaud Cancer Centre made a decision early on that clinicians at the centre seeing patients would have 50% protected time to do research – basic research, clinical research, epidemiological research – while being paid as a clinician... because the goal of the Champalimaud Foundation is really to foster thinking that is aligned between clinician scientists and basic scientists – to create a bridge. So, it's not just wishing for the translational emphasis, but putting the finances in place to make it happen."

The Champalimaud Centre for the Unknown is also actively recruiting graduate students, postdoctoral fellows and junior group leaders. The Champalimaud Neuroscience Centre and its associated graduate programme have been operational for ~2 years and, until the official opening of the centre on October 5th, were housed in rented space at the Gulbenkian Institute de Ciência in Lisbon. The graduate programme associated with the Champalimaud Cancer Centre will begin taking applications for prospective Master's and PhD students at the beginning of 2011, and is likely to become associated with the University of Lisbon in the near future. Finally, the centre hopes to attract more junior group leaders, and is currently taking steps to identify the strongest candidates among highly successful students who are nearing the end of their PhDs.

Beyond its scientific importance, the centre's design has also caught the attention of architects around the world. The bid to design the site was won by Indian architect Charles Correa (<http://www.charlescorrea.net/>), who also designed the Brain and Cognitive Sciences Complex at the Massachusetts Institute of Technology (MIT). The centre features a large interior rainforest

connecting clinics and laboratories, chemotherapy suites with gardens, and many areas open for public use, including exhibition halls, an outdoor amphitheatre and landscaped walking areas. It is hoped that the location of the centre in the heart of Lisbon, as well as the openness of the site to the public, will encourage awareness of the centre and the Champalimaud Foundation (<http://www.fchampalimaud.org/home/>), as well as

the health and medical issues that their work is aiming to address.

Excerpts from an interview with Raghu Kalluri can be heard in the podcast associated with DMM Vol. 3 Issue 11/12 at

<http://www.biologists.com/DMM/podcasts/index.html>

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