

BIOTECH FOR BUSINESS



OPEN INNOVATION 2012

Open Innovation is a term that has recently gained popularity to describe the process of companies looking to organisations and groups external to their own in order to advance their technology/expertise. In reality, the process of 'open innovation' has been around for many years, with third level institutes often providing this option to industry. Nevertheless, this newfound enthusiasm for collaboration provides many opportunities for the third level sector. With national funding for R&D at a premium and ever increasing competition for European funds, directly funded collaboration with industry provides an invaluable alternative revenue stream. As well as this it provides an opportunity for the third level sector to engage more closely with industry, benefiting both in terms of general knowledge transfer and meeting key Government metrics for the provision of a return on investment on state funded researchers.

Shannon ABC are hosting Open Innovation 2012 on the 4th and 5th April in Limerick Institute of Technology and will bring together leaders in Industry with the world class research and development scientists operating in Ireland. The Conference will focus on Biotechnology and Life Sciences, with presentations from industry on their external collaborations, and how this has driven innovation and provided added value for their company.

Dr Iain Gillespie, previously Head of the Organisation for Economic Cooperation and Development's (OECD) Science and Technology Policy Division, will provide the keynote address and will be followed by speakers from GSK, PepsiCo and Stryker, along with a number of innovative Irish SMEs such as Brandon Products, Cybercolloids, and EirGen.

For more information about the Conference, please go to www.shannonabc.ie

BREAKING NEWS - Shannon ABC data to be presented at 10th New Ag International Conference and Exhibition by Brandon Products, one of our key industry partners

DIARY DATES

OPEN INNOVATION 2012
4th and 5th April

**MARIE CURIE INDUSTRY
ACADEMIC PARTNERSHIPS &
PATHWAYS SCHEME**
Calls Close 19th APRIL 2012

**IRCSET ENTERPRISE
PARTNERSHIP SCHEME**
Deadline 1st June 2012

FUNDING AWARDS TO SHANNON ABC RESEARCHERS

Shannon ABC have had quite a successful quarter 1 with funding awards from Science Foundation Ireland, the National Access Programme and Enterprise Ireland.



Dr Joanna Tierney, based in Shannon ABC at IT Tralee has been awarded TIDA feasibility funding for a project to develop an anti-parasitic feed ingredient. The TIDA awards are directed by Science Foundation Ireland (SFI) and Enterprise Ireland (EI).

The purpose of these awards is to facilitate a greater economic impact from state investment in basic research. TIDA awardees are expected to apply for more significant levels of commercialisation funding following the completion of the TIDA funded study.

This 12 month study seeks to assess the feasibility of developing an anti-parasitic immunomodulatory feed ingredient from marine bioactives. Shannon ABC have a long history with marine bioactives and Dr Tierney's project leverages from the Shannon ABC's unique extract repository bank. The commercial potential derives from escalating consumer concerns and the proposed EU ban on the use of in-feed prophylactic medication. This has placed the animal meat production industry, in particular, under pressure to pursue new feed ingredient solutions to maintain production. The project will evaluate novel immunomodulatory marine isolated bioactives (developed by ITT and LIT researchers) on protozoan parasite infection in the context of gastrointestinal immunity. The expected outcome is a bioactive agent which demonstrates anti-parasitic activity for commercialisation.

The study also expands Shannon ABC's network of collaborative groups through the involvement of scientists from the School of Veterinary Medicine, University College Dublin.

Shannon ABC Strand Leader at Limerick Institute of Technology, **Dr Patrick Murray**, was recently awarded funding under the National Access Programme to avail of the state-of-the-art facilities at the Tyndall National Institute. The National Access Programme provides the opportunity for researchers in all Irish Universities, Institutes of Technology and Research Institutes to be granted fully funded access to the Tyndall National Institutes' facilities and expertise, based on evaluation by an external evaluation committee.



The objectives of the work to be performed at Tyndall on Dr Murray's project are to investigate the morphology and surface chemistry of novel nanostructures generated using natural systems. Traditional synthetic methodologies involve multistep physical and chemical processes that use high temperature and high pressure, large amounts of energy and toxic substances that are harmful to humans and produce pollution to the environment. Instead, a greener, more environmentally benign natural alternative has been potentially developed, and will be investigated further using UV spectral analysis and photography. This will allow definition of the specific production parameters required for the controlled sustainable production of monodisperse nanoparticles of defined size and shape for commercial applications.

Synthetic versions of these nanostructures have found importance in many areas of science and technology, including biomedical science, imaging technology, sensor diagnostics, electronics, packaging, cosmetics, and biotechnology. Thus a natural source that would have similar applicability, and of sustainable production, would be of profound significance.

The project is due to start in the coming months and Shannon ABC looks forward to developing further the collaborative relationship with the Tyndall National Institute.

Funding was also received from Enterprise Ireland for the Innovation Partnership Feasibility and Fast Track Innovation Voucher Programs to provide proof of concept testing.



SHANNON ABC COLLABORATIONS



One of the advantages that clients often mention about working with Shannon ABC is our extensive research and industrial network. This can often provide opportunities for clients that may not have existed previously. In the first of a series of articles about Shannon ABC's scientific and industrial collaborators we discuss the relationship with two internal research groups – Controlled Environment Laboratory for Life Sciences (CELLS) at LIT and the Centre for Intelligent Mechatronics and Sensors (CIMSS) at ITT.

Controlled Environment Laboratory for Life Sciences (CELLS)

The Controlled Environment Laboratory for Life Sciences (CELLS) Research Group was established in 2010 as a dedicated research group within the Department of Applied Sciences at the Limerick Institute of Technology. CELLS builds upon a previously established link with the Space Life Science Laboratory at NASA's Kennedy Space Centre, Florida, with its research efforts focus on utilising state-of-the-art environmental growth chambers for plant growth and development with potential applications in the food and nutraceutical industries.

The Controlled Environment Laboratory for Life Sciences (CELLS) Research Group was established in 2010 by Principal Investigator Michelle McKeon-Bennett within Limerick Institute of Technology. Its establishment stems from a relationship developed by the Principal Investigator in 2002 with the Space Life Science Laboratory at NASA's Kennedy Space Center, Florida. Since then 2-3 LIT graduates from the Department of Applied Science are trained each year for a period of six months in the field of Advanced Life Support Systems and Hydroponics at the Space Life Science Laboratory. The graduates then return to CELLS to undertake postgraduate research programmes.

CELLS aims to utilise the skills the graduates developed to establish a Centre of Excellence for the enhancement of bioactive compounds in plants using controlled environments, with outcome pertinent to both terrestrial and extra-terrestrial applications.

The group focuses primarily on the generation of high-end bioactive molecules from plant sources through forced evolution or adaptation under controlled environmental conditions with applications to nutraceutical and functional food industries, and herbal supplement development. However, research within the group also makes use of hydroponic techniques, originating from previous space research, for investigation into areas such as agricultural crop growth, bio-fuel enhancement, and bioflavonoid enhancement, all through

non-genetic manipulation, for added nutraceutical value in every day salad crops.

The potential for collaboration with Shannon ABC is self-evident, with products developed at CELLS being channelled straight in to Shannon ABC's extraction, purification, identification and up-scaling capabilities.

CELLS utilises four custom-built environmental growth chambers that allow for tightly controlled environmental growth conditions for the plant-based studies, with funding for these chambers being provided by Enterprise Ireland. These chambers, and the facility in which they reside are quite unique within Ireland and provide a significant resource for LIT, Shannon ABC and industry. The CELLS Research Group also secured funding under the Marie Curie FP7 fund to allow the relocation of Dr. Gary W. Stutte, of Kennedy Space Center, to join CELLS as a Senior Research Fellow in September, 2011. The postgraduates are funded by IRCSET (Irish Research Council for Science, Engineering and Technology), Dynamac Corporation, and Limerick Institute of Technology Graduate Research Office (GRO) Seed Funding.

Centre for Intelligent Mechatronics and Sensors (CIMSS)

The Centre for Intelligent Mechatronics and Sensor Systems (CIMSS) was established in 2008 and is based in the School of Engineering, Institute of Technology, Tralee, Co Kerry, Ireland.

CIMSS is an engineering and science discipline platform for research convergence between industry and academia. The aim is to interact with regional/national industry to generate long term sustainable and flexible solutions. One of the major focuses of the group is to work together towards obtaining funding from both national and european research funding organisations.

There are currently 10 members including, lecturers, post docs, research assistants and post graduate students. The centre focuses on research in areas such as the integration of electro-mechanical systems, embedded systems and intelligent sensors for industrial applications in agriculture and energy.

While the link between Shannon ABC areas of expertise (generating added value from natural sources) and CIMSS would not be immediately obvious, it is the divergences in their respective areas of expertise that provides the value to the clients. Interaction, communication and collaboration between these two Centres has resulted in one innovation Partnership being delivered for Dairymaster (a world leader in milking equipment manufacturing, based in Tralee, Co Kerry) and a second Innovation Partnership underway, with the same client.

Industry Partners



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Case Studies

Use of Laboratory Facilities

THE COMPANY

Stryker Corporation was founded in 1941 by Dr. Homer Stryker. Today, Stryker Corporation, has grown to be a global leader in the medical technology industry with a market capitalization of >\$20 billion and over 16,000 employees worldwide. Currently there are nine divisions within the corporation namely: Orthopaedics, Neurovascular, Craniomaxillofacial (CMF), Endoscopy, Imaging, Instruments, Medical/ Surgical, Osteosynthesis, Spine. In Ireland, Stryker currently employs almost 2000 people across four sites in Cork and Limerick.

THE QUESTION

Stryker, like many technology companies, is increasingly engaging in outsourcing in order to gain access to various capabilities to boost innovation and reduce financial outlay, particularly in the early stages of technology development. In order to investigate "proof of concept" during development of novel technologies, Stryker wished to use specific pieces of analytical equipment based at the Shannon ABC laboratories.

SOLUTION THROUGH SHANNON ABC

The attraction for Stryker of the Shannon ABC facility was the availability of a broad range of analytical equipment and experienced staff and the proximity to the Stryker Limerick facility. In order to maintain best practice in terms of confidentiality, it was requested that one of Stryker's scientific technicians be based in the Shannon ABC laboratories in order to perform the analysis on the specified pieces of equipment. This is a relatively standard request from an industry where technical progress is key to maintenance of competitiveness and product superiority. Shannon ABC provided laboratory space and a supportive environment where Stryker could be confident that samples being analysed were done so in a confidential and scientifically valid manner. As part of the service offering, Shannon ABC staff were available to provide method development support where necessary. The provision of analytical services, together with Shannon ABC's on-hand technical expertise, enabled Stryker to complete all sample analysis in a timely and cost effective manner.

TESTIMONIAL

"During the development phase of any novel technologies, the start-up costs for high-tech equipment can be quite prohibitive. The range of top end analytical equipment available at Shannon ABC and it's proximity to the Stryker Limerick facility, made this the ideal solution. We have been able to carry out the necessary "proof of concept" work to enable development of a new platform technology which will deliver results for the company. In the past we have had to travel abroad for such services and it is a real benefit to the mid-west region & Ireland to have this facility on our doorstep. In addition, the staff of Shannon ABC have been extremely accommodating and strong links have been formed with the facility that will ensure that Stryker will continue to utilise the services again in the future."

Dr. Hilda Mulvihill, Project Manager
 Advanced Operations