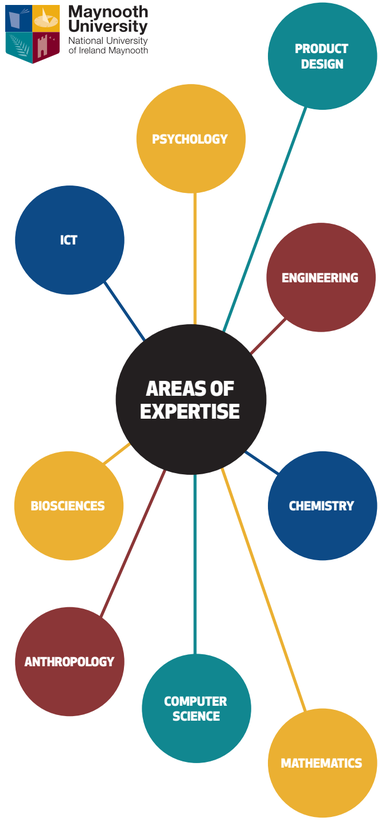
Maynooth University
National University of Ireland Maynooth



MAYNOOTH UNIVERSITY COMMERCIALISATION CREATING HIGH POTENTIAL START-UPS AND VALUE FOR INDUSTRY PARTNERS

EMERGING OPPORTUNITIES

1 Pathogen Responsive Biosensors
2 Crohn's Disease Diagnostic
3 Microbiome Discovery
4 Quantitative Fluorescently Labelled Protein Assay Detector
5 Novel Biomarkers for Head and Neck Squamous Cell Carcinoma
6 Improving Base Station Amplifier Performance
7 Small Molecule Therapies for Inflammatory Bowel Disease
8 Ocean Energy Technologies
9 Biomarker Sensors
10 Geophysical Mapping
11 Unidoodle

RECENT INDUSTRY COLLABORATIONS

Alcatel-Lucent, Arigna Fuels, Edwards, Lilly, Johnson & Johnson, intel, Lucent Technologies, Microsoft, Trinity Biotech, IBM, codeon, verifly

OUR SPINOUTS

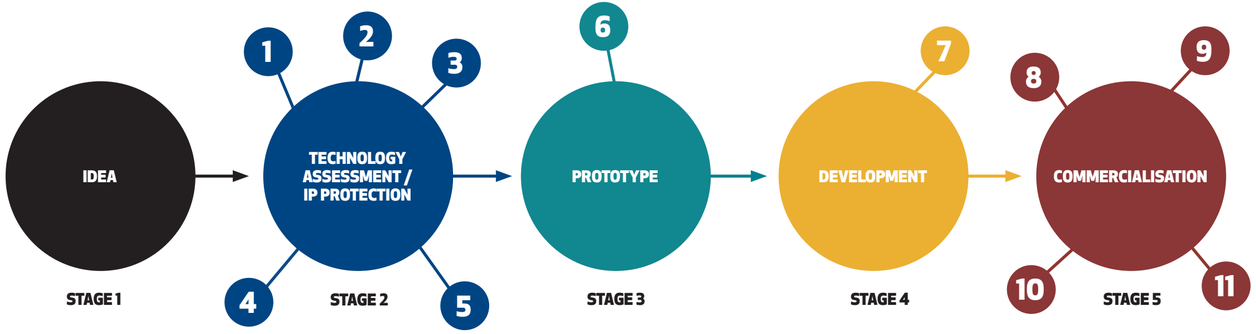
RaiseYourIQ, Beemune, Empathy Test, WaveVenture, trinsights, iGeotec, AVECTAS, Rosadex, NEUROMOD, ISAAT Technologies, IVI

AREAS OF EXPERTISE

BIOSCIENCES; CHEMISTRY; COMPUTER SCIENCE; ENGINEERING; ICT; PSYCHOLOGY; ANTHROPOLOGY; PRODUCT DESIGN; ARTS & HUMANITIES; BUSINESS; DESIGN THINKING; LANGUAGES; PHYSICS; MATHEMATICS.

DEVELOPMENT STAGES

of Emerging Opportunities



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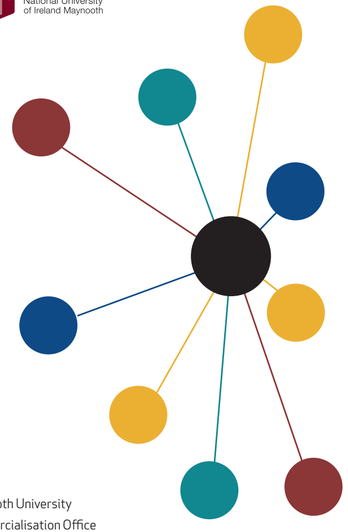

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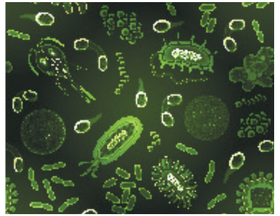


1

Pathogen Responsive Biosensors

The Responsive Systems research group at Maynooth University led by Dr. Rob Elmes are currently developing a highly sensitive and selective approach to the quantitative visual detection of E coli using a responsive fluorescent biosensor platform. The team is currently evaluating a range of lead compounds that will potentially allow real-time, in situ determination of E Coli contamination without the need for expensive equipment or highly trained personnel.

DEVELOPMENT STAGE 2:
Technology Assessment/IP Protection

2

Crohn's Disease Diagnostic

We have assessed the levels of expression of Pellino3 protein in colonic biopsy samples from healthy, CD and UC patients. The data demonstrates that the levels of Pellino3 protein are strongly reduced in colonic tissue from CD subjects relative to control or UC subjects. These data suggest that the protein expression levels of Pellino3 may be a strong diagnostic indicator of subjects with Crohn's disease and we propose a Pellino3-based test as the basis for a diagnostic.

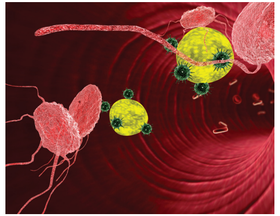
DEVELOPMENT STAGE 2:
Technology Assessment/IP Protection

6

Improving Base Station Amplifier Performance

Rapid changes in phase causes bandwidth expansion (BER). MU researchers have modified a signal phase in the amplifiers non-linear region at lower amplitudes to create a more gradual rate of change of phase. The bandwidth reduction that occurs due to phase modification reduces the requirements for frequency-flat high-precision components in the dual path transmitter required for outphasing. Reducing the requirement for dynamic range of the amplifier has the potential to allow for a reduction in the manufacturing tolerances required for an implemented system. For example in an outphasing amplifier, the requirement to balance each path of the amplification stage exactly can be reduced, leaving a more flexible design which could allow a wider bandwidth or more frequency flexible amplifier to be designed.

DEVELOPMENT STAGE 3:
Prototype (bench demonstrator)



7

Small Molecule Therapies for Inflammatory Bowel Disease

We have developed small molecules with strong anti-inflammatory effects in cell based models, with potential for treating IBD. We propose to further define their therapeutic potential by evaluating their efficacies in preclinical models of inflammatory diseases and in ex vivo clinical samples.

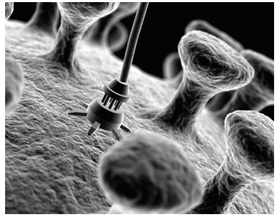
DEVELOPMENT STAGE 4:
Development

8

Ocean Energy Technologies

The Centre for Ocean Energy Research (COER) at Maynooth University has core strengths in mathematical modelling, control systems, prognostics and optimization – all focused on ocean energy research. The Centre collaborates with several major players in ocean energy and makes available modelling and control technology to these partners under licence.

DEVELOPMENT STAGE 5:
Commercialisation



9

Biomarker Sensors

We have developed novel biosensors to selectively monitor neurochemicals in the living brain on a timescale from milliseconds to days. The sensors are used to understand the complex functioning of the brain in terms of behaviour and disease. One of the major hurdles to the discovery of new medicines to treat psychiatric and neurological disorders is the paucity of suitable animal models capable of predicting clinical benefit. This is particularly true of disorders associated with cognitive disturbance such as schizophrenia and Alzheimer's disease. The sensor monitoring concept provides a solution to this deficit in pre-clinical drug discovery in that it enables the recording of continuous signals, in freely-moving behaving animals, of the haemodynamic and metabolic consequences of neuronal activation that form the basis of functional brain magnetic resonance imaging in man. The work also has significant potential clinical applications.

DEVELOPMENT STAGE 5:
Commercialisation