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| 1 | **Dated: 25/10/24** | **Principal Investigators: PI MedTrain+ List of PI for Call 3 V.2** | MedTrain+ | Ollscoil na Gaillimhe University of Galway | | **List of Principal Investigators** | | cúram | Taighde Éireann Research Ireland |
| 2 | **No** | **PI** | **University** | **Emails** | **Title** | **Abstract** | **Resarch Theme** | **Keywords** | **Profile links** |
| 3 | 1 | **Abhay Pandit** | University of Galway | abhay.pandit@universityofgalway.ie | Complete N-Glycomic Analysis of MS in Humans | We have recently mapped out the N-Glycome of MS in a stratified population of patients. This data needs to be analysed and mapped out to the stratified targets. Validation also needs to be conducted along with the analysis of the transcriptome. In addition; a preclinical study with a therapeutic moiety has been conducted and this data also need to be analysed. Completion of these two studies will lead to high impact papers as the novelty of data is very high. | Neural-musculoskeletal | MS, Glycomics, Informatics, Transcriptomics | https://www.universityofgalway.ie/curam/about-us/our-people/director/prof-abhay-pandit.html |
| 4 | 2 | **Abhay Pandit** | University of Galway | abhay.pandit@universityofgalway.ie | Immunoengineering the host-biomaterial interface | Lectins play crucial roles in metabolism, signalling, cell-structure, and material-host interactions, making their investigation in biomaterial response essential for understanding material delivery and integration. Key lectins, including galectins, C-type lectin-like receptors, and sialic acid-binding immunoglobulin-type lectins, are vital in various biological processes and inflammatory diseases. Despite this, there is a lack of understanding regarding lectin expression at the tissue-biomaterial interface and a need for tunable lectin-targeting biomaterial technologies. This project aims to design biomaterials that modulate lectin activation/inhibition to influence implant tissue response by integrating recent discoveries of the N-glycome in various diseases and ongoing lectin characterization research into material sciences using modified biomaterials, enabling cross-domain synergy between lectin and glycan characterization and materials science research. | Cardiovascular-renal-metabolic, Neural-musculoskeletal, Cancer and inflammatory disorders | Immunoengineering, drug delivery, biomaterials, regenerative medicine | https://www.universityofgalway.ie/curam/about-us/our-people/director/prof-abhay-pandit.html |
| 5 | 3 | **Aideen Ryan** | University of Galway | aideen.ryan@universityofgalway.ie | Immunoengineering approaches to target sialic acid mediated stromal cell mediated immunosuppression in cancer | This project aims to discover novel strategies, including immunoengineering approaches for nanoparticle/biomaterial delivery of sialic acid targeting moieties, to identify mechanisms of sialic acid dependent stromal cell induced immune suppression in tumours. We will assess the effects on restoring anti-tumour immune responses in colon cancer | Cancer and inflammatory disorders | Colorectal cancer, anti-tumour immune response, sialic acid, inflammation | https://universityofgalway.ie/remedi/research-groups/ryangroup/ |
| 6 | 4 | **Breandán Kennedy** | University College Dublin | brendan.kennedy@ucd.ie | Immunoengineering Innovative Therapeutics | Our proprietary medical device derives from a bespoke platform of ~1 billion engineered peptides modulating G-protein coupled receptors. These are investigated for anti-inflammatory and immune-modulating activity in clinically relevant models (e.g. cancer cell lines, zebrafish, patient tumour explants). The medical devices include engineered particles to express and deliver the bioactive peptides. | Cancer and inflammatory disorders | Peptide mimetics, immunomodulators, G protein-coupled receptors, inflammation, cancer | https://people.ucd.ie/brendan.kennedy |
| 7 | 5 | **Bruce Murphy** | Trinity College Dublin | murphb17@tcd.ie | Enhancing and understanding a new breed of novel compression anastomosis medical devices for use in bowel cancer resection patients | In bowel cancer patients, the current standard of care for joining two sections of bowel together are sutures and/or staples. These approaches lead to many inflammatory responses and subsequently poorer outcomes for patients. This project revolves around enhancing and understanding a new generation of magnet assisted compression anastomosis devices. | Cancer and inflammatory disorders | Bowel cancer, bowel resection, bowel anastomosis, medical device development | https://www.tcd.ie/research/profiles/?profile=murphb17 |
| 8 | 6 | **Caroline McGregor** | University of Galway | caroline.mcgregor@universityofgalway.ie | Science Advocacy Evaluation of Impact Through Inter-disciplinary Methods | This research will evaluate the impact of science advocacy activity carried out by CÚRAM FIs across life and health sciences in Ireland. This will be an interdisciplinary study leading to the development of a science advocacy learning programme for ear-ly stage researchers and the creation of networks between third level and policy stakeholders. | Science Advocacy | Science advocacy, impact assessment, life and health sciences, learning programme | Caroline McGregor |
| 9 | 7 | **Claire Brougham** | TU Dublin | claire.brougham@TUDublin.ie | Growvalve- functional biomaterial heart valves for paediatric patients, the macrophage response | GROWVALVE is an SFI-funded research programme focussed on design and translation of a functional biomaterial prosthesis for congenital heart defects in paediatric patients. This project will enhance understanding of the macrophage response to the device, and leverage this to target remodelling and growth of the valve in vivo. | Cardiovascular-renal-metabolic | Heart valve, immune response, macrophages, in vivo model, biomaterials | https://researchprofiles.tudublin.ie/en/persons/claire-brougham-2 |
| 10 | 8 | **Claire Riordan** | University of Galway | claire.riordan@universityofgalway.ie | Evaluating STEAM Approaches to Engaging Young Audiences | This research will evaluate the impact of CÚRAM's STEAM projects, which use an investigative and creative approach to increase students' awareness of the relevance of science in their lives, to identify ways this engagement model can be applied in other contexts to spark student interest in science. | Science Advocacy | STEAM, public engagement | https://curamdevicesengage.ie/education-and-public-engagement-research/ |
| 11 | 9 | **Claire Riordan** | University of Galway | claire.riordan@universityofgalway.ie | Science Exhibits as STEM Engagement Tools | This research will evaluate 'SUPERHUMAN', CÚRAM's public exhibit at Galway City Museum. The research focus will examine the exhibit as a STEM engagement tool to help stakeholders engage with and understand the impact of medical device research. Stakeholders include; patients, medical device companies, teachers, students and community groups. | Science Advocacy | STEAM, science exhibits, public engagement | https://curamdevicesengage.ie/education-and-public-engagement-research/ |
| 12 | 10 | **Cliona O'Farrelly** | Trinity College Dublin | OFARRECL@tcd.ie | Point of need biosensor in endometriosis | Develop a novel Point-of-Need biosensor (analyse inflammatory biomarkers of Endometriosis within cervical mucous). Endometriosis is a debilitating inflammatory disorder, impacting 5-10% of reproductive-age women, up to 50% of women with infertility and treatment requires invasive surgery. Our device will facilitate faster diagnosis and long-term immunoengineering treatment strategies, improving pregnancy outcomes. | Cancer and inflammatory disorders | Endometriosis, inflammation, biosensor, diagnosis, infertility | https://www.tcd.ie/Biochemistry/people/ofarrecl/ |
| 13 | 11 | **Daniel O' Toole** | University of Galway | daniel.otoole@universityofgalway.ie | Disease state control of lung and blood carbon dioxide and pH during sepsis. | Specific ventilation regimes elevate lung CO2 which is anti-inflammatory and beneficial in acute respiratory distress syndrome patients. We seek to develop a continuous blood CO2 monitoring device actuating a gas mixer to deliver the most appropriate CO2 levels throughout ventilation, improving patient outcome and generating sales in novel ICU equipment. | Cardiovascular-renal-metabolic, Cancer and inflammatory disorders | Carbon dioxide, Sepsis, Ventilation, Inflammation. | https://www.universityofgalway.ie/our-research/people/danielotoole/ |
| 14 | 12 | **David Loane** | Trinity College Dublin | LOANEDJ@tcd.ie | Use of 3D microgel platforms to enhance the immunotherapeutic potential of mesenchymal stem cells and improve neurological outcomes following experimental traumatic brain injury (TBI) in mice. | Mesenchymal stromal cell (MSC)-based therapy shows promise for TBI by releasing soluble factors with profound immunomodulation properties. MSCs improve motor and cognitive outcomes in preclinical TBI models, and MSC efficacy is greatest when cells are embedded in matrices implanted directly into the lesion cavity. Using a novel 3D guided extracellular matrix microgel developed by the Pandit lab (PMID:32709748) we will investigate how MSCs alter critical neuroimmune mechanisms (microglial function) in the injured brain and determine whether 3D microgel embedded MSCs confer superior neuroprotection when compared with cell-therapy alone. | Neural-musculoskeletal | 3D microgel platform; mesenchymal stromal cells (MSC); traumatic brain injury (TBI); immunomodulation; neurological recovery | https://www.tcd.ie/Biochemistry/research/loane/ |
| 15 | 13 | **Davood Roshan** | University of Galway | davood.roshan@universityofgalway.ie | AI-Driven Algorithms for Personalised Monitoring of Cancer and Inflammatory Diseases | This project focuses on developing innovative AI-driven algorithms designed for continuous monitoring of clinical biomarkers or outcomes obtained from medical devices. These algorithms can detect anomalies and generate alerts within the medical device data, serving as an early warning system, prompting further examination and review. | Cancer and inflammatory disorders | Longitudinal Monitoring, Biomarker, Anomaly detection, Cancer Diagnosis, Clinical Diagnosis, | https://www.universityofgalway.ie/science-engineering/school-of-maths/staff-profiles/academic/davoodroshan/ |
| 16 | 14 | **Eduardo Ruiz-Hernandez** | Trinity College Dublin | RUIZHERE@tcd.ie | Injectable hydrogels for the chemoimmunotherapy of brain tumors | Glioblastoma multiforme is the most aggressive brain tumor, leading to death within 2 years. Chemoimmunogel will enable a sustained release of immunotherapy and chemotherapeutic drugs, with tunable profiles depending on the polymer composition and the targeted nanoparticles able to provide a triggered release after reaching residual or recurrent tumor cells. | Cancer and inflammatory disorders | Immunotherapy; hydrogel; theranostic; brain tumor; biomaterials engineering | https://pharmacy.tcd.ie/staff/ruiz-hernandez-cv.php |

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| 17 | 15 | **Eoin O'Cearbhaill** | University College Dublin | eoin.ocearbhaill@ucd.ie | Smart-Buc, a self-administered therapeutic delivery system for chronic disease management | There is a pressing healthcare system need for efficient therapeutic self-administration (e.g. GLP-1 receptor antagonists in chronic disease management). Users prefer oral administration over subcutaneous injection, but often struggle with record keeping. Here, we propose the development of Smart-Buc, a first-in-class self-administered therapeutic delivery reusable applicator that ensure the device the device and dosage has been correctly administered and is electronically recorded | Cancer and inflammatory disorders | Microneedles; smart-patch; therapeutic delivery; self-administration; impedance analysis | https://people.ucd.ie/eoin.ocearbhaill |
| 18 | 16 | **Fiona Freeman** | University College Dublin | fiona.freeman@ucd.ie | Exploring the Therapeutic Potential of a Nanoparticle-Mediated Combination miRNA-Based Therapy for treating Osteosarcoma and Secondary Lung Metastasis | Osteosarcoma, a highly aggressive bone cancer affecting children, often leads to lethal lung metastasis in 70% of cases within 3 years. Despite treatment stagnation since chemotherapy's 1970s introduction, our research targets this gap with miRNA-based therapies. Our nanoparticle system, delivering miR-29b locally, reduces tumour burden and enhances bone regeneration but lacks impact on lung metastases. Our next step involves developing a nanoparticle-mediated miRNA combination treatment, aiming to suppress primary tumour growth with miR-29b while systemically targeting lung metastases with miR-7d, miR-143b, or miR-34a. | Cancer and inflammatory disorders | Osteosarcoma; Nanoparticles; microRNA; Lung Metastases; Bone Regeneration | https://www.ucd.ie/freemanlab/ |
| 19 | 17 | **Garry Duffy** | University of Galway | garry.duffy@universityofgalway.ie | Engineering immune modulating biomaterials to support stem cell-derived Beta Cell transplants | Type 1 Diabetes is characterized by autoimmune destruction of β-cells resulting in insulin deficiency. Stem cell derived insulin-producing cells overcomes insufficient donor supply. Reliance on immune suppression to avoid graft rejection is an obstacle for wide-spread clinical use. This project aims to develop immunomodulating biomaterials to promote long-term graft function. | Cardiovascular-renal-metabolic (Type 1 Diabetes) | Cell Transplant<br>Encapsulation<br>Immune Modulation<br>Type 1 Diabetes | https://www.universityofgalway.ie/remedi/who-we-are/principalinvestigators/profgarryduffy/ |
| 20 | 18 | **Helen Blanchard** | University of Galway | helen.blanchard@universityofgalway.ie | Immunoengineering approach to enhancing the effectiveness of drug delivery | The Blanchard group and collaborators will design and synthesise novel glycomimetics that will be used to decorate nanoparticles for targeting and modulating proteins involved in immune regulation and progression of serious disease including cancer and inflammatory disorders, thus using immunoengineering to generate optimised medical devices and provide selective drug-delivery strategies. | Cancer and inflammatory disorders | Glycomimetics, Nanoparticles, drug-design, cancer therapeutics | https://www.universityofgalway.ie/our-research/people/biological-chemical-sciences/helenblanchard/ |
| 21 | 19 | **Isma Liza Mohd Isa** | University of Galway | ismaliza.mohd@universityofgalway.ie | Modulation of Mechanical Nociception in a Disc-on-a-chip Model | Mechanical stress plays a pivotal role in the pathogenesis of intervertebral disc (IVD) degeneration. This project will focus on the modulation of mechanical nociception on a human disc-on-a-chip, a disease model-oriented microfluidic gradient device by manipulating mechanical stress-induced nociception through mechanosensitive PIEZO and TRP, which will be validated by channel blockers. | Neural-musculoskeletal | Intervertebral disc degeneration; mechanical stress; nociception; organ-on-a-chip | https://www.linkedin.com/in/isma-liza-mohd-isa-27ab5089/?originalSubdomain=ie |
| 22 | 20 | **James Curtin** | TU Dublin | james.curtin@TUDublin.ie | Developing a CCL21-loaded 3D hydrogel artificial lymph node surgical implant | The project aims to develop biocompatible artificial lymph node surgical implant using CCL21 loaded composite 3D hydrogels, ensuring functional absorbant polymer (PAA) alongside structural favourable polymer (PVA). Structural, chemical, mechanical and immune properties will be determined. This MD will support in vivo tailored antigen-specific immune response against cancer and infection. | Cancer and inflammatory disorders | Composite Hydrogel, CCL21, Immunoengineering, Artificial lymph node | https://orcid.org/0000-0002-9320-9254 |
| 23 | 21 | **John Gleeson** | Dublin City University | john.p.gleeson@dcu.ie | Impact of design decisions on regulatory pathways for wearable IVDs | The EU in-vitro-diagnostic (IVD) regulatory system is complicated, and translation of wearable devices (IVDs) to the clinic requires careful consideration of regulatory codes during early design phases. This project would use an existing network of IVD representative bodies, including a Notified Body, to create pathways for early stage IVD entrepreneurs. | Regulatory | IVD, Regulatory Affairs, Wearable devices, EU MDR, entrepreneur | https://scholar.google.com/citations?user=FJRTd78AAAAJ&hl=en |
| 24 | 22 | **John Laffey** | University of Galway | jlaffey@universityofgalway.ie | Aerosolized immunomodulating nanoparticle therapies for Sepsis | Sepsis has 40% mortality, is implicated in 50% of all in-hospital deaths globally, and has no treatment. Pneumosepsis is the most common form of sepsis.<br>Sepsis is caused by a disordered inflammatory response to infection, and has 'hyper-inflammatory' and 'hypo-inflammatory' sub-phenotypes.<br>Our novel immunomodulatory nanotherapies, delivered to the infected lung via nebulizers, will treat pneumosepsis. | Cancer and inflammatory disorders | Nanotherapy, Immune | https://www.universityofgalway.ie/remedi/who-we-are/principalinvestigators/profjohnlaffey/ |
| 25 | 23 | **Karen Doyle** | University of Galway | karen.doyle@universityofgalway.ie | Biomarker technology development for secondary stroke prevention | Ischemic strokes are caused by blood clots in cerebral arteries. If causes of stroke clot development could be reliably anticipated using medical technology this could enable stratification of therapeutic approach to prevent strokes. This project will focus on possible protein and microRNA biomarkers in a registry of stroke clot tissue. | Neural-musculoskeletal, Cancer and inflammatory disorders | Stoke, clot, inflammation, proteomics, microRNA | https://curamdevices.ie/curam/about-us/our-people/co-directors/karen-doyle.html |
| 26 | 24 | **Lorraine O'Driscoll** | Trinity College Dublin | lodrisc@tcd.ie | Extracellular Vesicles as Implant-Coated Therapy for Cancer (EVICT-Cancer) | Advancing on novel research by the O'Driscoll team and with cancer metastasis to bone and brain as models, EVICT-Cancer will deliver a platform for technology-disrupting, immunomodulating-extracellular vesicles delivery in biocompatible coatings of constructs for use as implants, with potential to revolutionise treatment of serious unmet needs in cancer. | Cancer and inflammatory disorders | Cancer, Extracellular Vesicles, Immunomodulating, Implant | Lorraine O'Driscoll'Trinity Research - Trinity College Dublin (tcd.ie) |
| 27 | 25 | **Matthew Griffin** | University of Galway | matthew.griffin@universityofgalway.ie | An implantable device for controlled augmentation of regulatory T cells in vivo | Inflammation associated with diabetes can be ameliorated experimentally by adoptive transfer or acute expansion of regulatory T cells (Treg). This project will combine expertise in immunology and biomedical engineering to develop and optimise an implantable, controlled-release device that achieves a prolonged, tunable augmentation of Treg in the setting of diabetes. | Cardiovascular-renal-metabolic, Cancer and inflammatory disorders | Inflammation, Immune Cell Therapy, Regulatory T cells, Implantable Devices, Diabetes | https://www.universityofgalway.ie/remedi/who-we-are/principalinvestigators/profmatthewgriffin/ |
| 28 | 26 | **Niamh Hynes** | University of Galway | niamh.hynes@universityofgalway.ie | AORTIC: **A**ortic bi**O**mimc**R**y **T**esting and des**I**gn of devi**C**es | Current inert devices to treat aortic disease have high rates of failure, requiring reintervention and causing heart failure. We are developing active biomimetic compliant devices for aortic disease and heart failure. After characterising aortic disease in detail, using gene expression, single cell sequencing, biomechanical testing, and computational analysis we plan to develop aortic device materials coatings that actively enhance aortic remodelling by altering cell responses and preventing adverse immune response or thrombosis. | Cardiovascular-renal-metabolic | Aorta; Tissue Characterisation; Imaging; Computational Modelling; Digital Twins | https://www.linkedin.com/in/niamh-hynes-aa538951/ |
| 29 | 27 | **Padraic Fallon** | Trinity College Dublin | pfallon@tcd.ie | i**N**nate and **A**dap**T**ive imm**U**ne **R**esponses to biom**A**terial**L**s (NATURAL) | The Fellow will research the type 2 immune response to biomaterials. The relative roles of the innate and adaptive type 2 responses to biomaterials will be analysed in different tissue sites. The Fellow will use cutting-edge immunology techniques to discover the immune reactivity of biomaterials developed by CÚRAM scientists. | Cardiovascular-renal-metabolic, Neural-musculoskeletal, Cancer and inflammatory disorders | Innate, Adaptive, Immunity, Biomaterials, tissue | https://www.tcd.ie/research/profiles/?profile=pfallon |
| 30 | 28 | **Pádraig Cantillon-Murphy** | University College Cork | p.cantillonmurphy@ucc.ie | Surgical navigation using on-chip electromagnetic sensing for cardiovascular and cancer interventions | Electromagnetic navigation is the gold-standard for non-ionising navigation. Discrete sensors are expensive and large. On-chip sensing reduces cost and size, enabling innovation in cancer and cardiovascular interventions. The project will demonstrate integration of on-chip sensing in GI cancer treatment and cardiovascular mapping with secondment to Irish start-up company Quadrant Scientific. | Cardiovascular-renal-metabolic, Cancer and inflammatory disorders | surgery, cancer, wireless, navigation, cardiovascular | http://research.ucc.ie/profiles/D013/P.CantillonMurphy@ucc.ie |
| 31 | 29 | **Adnan Elahi / Patricia Scully** | University of Galway | patricia.scully@universityofgalway.ie | Cardiovascular Disease Diagnostics: Early warning optical fibre biosensor for N-Terminal Pro-Brain Natriuretic Peptide biomarker detection | Cardiovascular diseases cause 32% of global deaths, requiring early detection of symptoms. NT-proBNP biomarkers are crucial for diagnosis/prediction of heart failure outcomes. Current methods are slow, so we'll design, test/prototype a low-cost, bedside sensing device using polymer optical fibre technology to continuously monitor BNP levels, with placement in spin-out company. | Cardiovascular-renal-metabolic | Cardiovascular diseases, Heart failure, NT ProBNP, Nanomaterials, Biomarkers | https://www.universityofgalway.ie/our-research/people/natural-sciences/patriciascully/ |

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| 32 | 30 | **Pau Farras Costa** | University of Galway | pau.farras@universityofgalway.ie | Biomaterial Platforms for the detection of Cardiovascular Biomarkers for early detection | Cardiovascular diseases are currently one of the leading causes of death, accounting for about one-third of all deaths worldwide. Therefore, accurate, fast, and early detection of biomarkers is critical for diagnosing the condition and making clinical decisions more efficiently. This project aims to further develop an innovative biomaterial platform, developed for the detection of cardiovascular biomarkers. | Cardiovascular-renal-metabolic | Biosensor, electromagnetic wave, magnetic nanoparticles, cardiovascular, biomaterials | https://www.universityofgalway.ie/researchcentres/collegeofscience/www.chemlight.ie/ |
| 33 | 31 | **Ruairí Brannigan** | Dublin City University | ruairi.brannigan@dcu.ie | Fabrication of novel muco-penetrating nanocarriers for nose-to-brain delivery of mRNA therapeutics for the treatment of glioblastomas | Glioblastoma accounts for 48% of all primary malignant brain tumours, exhibiting a five-year survival rate of only 6.8%. The development of novel polymeric nanomaterials which exhibit mucus-penetrating properties are of particular interest due to their ability to enhance transmucosal delivery of immunotherapies directly to the brain. | Neural-musculoskeletal | Transmucosal therapeutic delivery, nanomaterials, synthetic polypeptide, glioblastomas | https://www.dcu.ie/chemistry/people/ruairi-brannigan |
| 34 | 32 | **Sharon Glynn** | University of Galway | sharon.glynn@universityofgalway.ie | Dual Delivery of NO and Sialidase Targeted Therapies to Stromal Rich Tumours | Stromal rich triple negative breast cancer (TNBC) demonstrate poor prognosis and are medically underserved for treatment options. Currently immune checkpoint inhibitor based therapies demonstrate limited efficacy. The reasons for this may include lack of immune cell infiltration, termed immune exclusion and also immunosuppression. Hypersialylation of stromal cells and the release of Nitric oxide (NO) has recently been shown to contribute to tumour growth and these features of immunosuppression and immune exclusion in TNBC.<br>The proposed project aims to address these limitations by delivering novel targeted therapeutics locally in stromal rich TNBC using a hydrogel based or nanoparticle delivery system. | Cancer and inflammatory disorders | Nano drug delivery system, Breast Cancer, Immunoregulation, Therapeutics | https://www.universityofgalway.ie/our-research/people/sharonglynn/ |
| 35 | 33 | **Thomas Ritter** | University of Galway | thomas.ritter@universityofgalway.ie | Development of a biodegradable device (implant) for sustained release of therapeutic immunomodulatory MSC-EVs for treatment of ocular inflammation | Our preliminary results show significant therapeutic immunomodulatory potential of extracellular vesicles isolated from mesenchymal stromal cells (MSC-EVs) for ocular surface disease and injury, however results could be further improved by prolonged MSC-EV exposure following topical application. This proposal aims to develop a biodegradable device (implant) for sustained release of therapeutic immunomodulatory MSC-EVs for treatment of ocular inflammation. | Cancer and inflammatory disorders | Extracellular vesicles, mesenchymal stromal cells, device, implant, immunomodulation, ocular surface, ocular disease | https://www.universityofgalway.ie/our-research/people/thomasritter/ |
| 36 | 34 | **Una FitzGerald** | University of Galway | una.fitzgerald@universityofgalway.ie | Embedding environmental impact validation into the medical device design process: use of quantification methods, advocacy and engagement | In the race to zero emissions, certification of all labs within the Medtech sector, by My Green Lab, is the single action recommended by the UNFCCC. Personnel in Cúram are quantifying the environmental impact of their research, so that 'green-by-design' approaches are embedded at each stage of medical device innovation. | Sustainability | Lab Sustainability, Life Cycle Assessment, Public Engagement, Psychology of Climate Change, Climate Change and Biodiversity Communication. | https://www.universityofgalway.ie/our-research/people/engineering/unafitzgerald/ |
| 37 | 35 | **Una FitzGerald** | University of Galway | una.fitzgerald@universityofgalway.ie | Development of novel medical devices that harness the immune system to mitigate the effects of ectopic lymphoid-like follicles in the human brain | Using immuno-engineering approaches that exploit MS-on-a-chip, ex vivo & point-of-care platform technologies, the host lab is developing multi-modal, disease-modifying, tuneable and biomaterials-based devices. Ectopic lymphoid follicles, whose presence in multiple sclerosis brain reportedly correlates with a more severe and progressive disease course, are a target of particular interest. | Neural-musculoskeletal | B cells, ectopic lymphoid-like follicle, drug release from biomaterials, medical device, multiple sclerosis. | https://www.universityofgalway.ie/our-research/people/engineering/unafitzgerald/ |
| 38 | 36 | **Yury Rochev** | University of Galway | yury.rochev@universityofgalway.ie | Engineering the Mucus Barrier | Our research aims to develop an in vitro model for engineering the mucus by mimicking its protective properties and incorporating immune-engineering materials to suppress inflammation in IBD. Either approach can be utilized: integrating proteomic data for protein interactions, bioinformatics for pathway analysis, and supercomputer simulations for molecular dynamics and structural predictions to identify and optimize immunocompatible materials for effective therapeutic delivery in IBD treatment, or fabricating these immunocompatible materials into medical devices through nano-fabrication, microfluidics, and bioprinting to enhance therapeutic delivery and treat IBD. | Cancer and inflammatory disorders | microfluidics, 3D printing, drug delivery, mucus, multiscale modeling | https://cs.universityofgalway.ie/science-engineering/engineering/our-school/staffprofiles/yuryrochev/ |
| 39 | 37 | **Susan Kelleher** | Dublin City University | susan.kelleher@dcu.ie | PressureMat | Using electrospinning, we are looking to create nano- and microstructured polymer mats which will enhance mechano-based responses from mammalian cells. We are interested to understand the effect of these interactions on cell behaviour, including on the differentiation of cells. | Cancer and inflammatory disorders | Electrospinning, differentiation, polymers, mechanosensing | https://www.dcu.ie/chemistry/people/susan-kelleher |
| 40 | 38 | **Afshin Samali** | University of Galway | afshin.samali@universityofgalway.ie | Overcoming barriers for refugees and IPAs to access higher education | In Ireland, refugees and international protection applicants (IPAs) face an array of challenges in accessing third level education, including financial, know-how, recognition of prior learning etc. This has long-lasting socioeconomic impacts. We will investigate the barriers and propose strategies for this cohort to more easily access higher education in Ireland. (50 words max) | Education and Public Engagement | Education and Public Engagement; Higher education in Ireland; International protection applicants; Minorities; Refugees, Science Advocacy | https://www.youtube.com/watch?v=WbFrGUyMDPw<br>https://www.unhcr.org/ie/news/stories/i-want-change-perceptions-what-refugee-and-can-be<br>https://www.galwaydaily.com/news/group-of-afghan-refugees-visit-nui-galway/<br>https://www.irishexaminer.com/news/arid-41293186.html<br>https://www.rte.ie/radio/radio1/clips/22335339/<br>https://www.rte.ie/news/connacht/2023/1218/1422676-rosscahill-fire/ |
| 41 | 39 | **Andrew Daly** | University of Galway | andrew.daly@universityofgalway.ie | Bioprinting bioprosthetic heart valves with enhanced mechanical durability and immune compatibility using decellularized pericardial tissues | Current bioprosthetic heart valves face limitations in mechanical durability and immune compatibility, leading to frequent complications for patients. This project, in collaboration with Viscus Biologics, will focus on bioprinting functional heart valves using novel decellularized tissue sources. This promises to create more durable, biocompatible valves for improved long-term patient outcomes. | Cardiovascular-renal-metabolic | Heart Valves, bioprinting, decellularized tissue, immune compatibility, long term durability | http://www.biofabrication.ie |
| 42 | 40 | **Manus Biggs** | University of Galway | manus.biggs@universityofgalway.ie | Biomaterials approaches to Mechanomodulation at the electrode tissue interface. | Physicochemical modification of neuroelectrode devices to ensure bi-directional electrode communication and eliminate peri-electrode gliosis is an unmet clinical challenge. A recent study has implicated mechanosensitive ion channels in astrocyte populations as key mediators of peri-electrode inflammation. This project will focus on the development of biomaterials solutions to promote electrode integration through modulation of ion channel activation in astrocyte populations. | Neural-musculoskeletal | Neuroelectrodes; biomaterials; mechanosensitive ion channels | https://www.biggslab.com |