Successful All-Ireland NCI Cancer Consortium awards listed by host Institution.

29 October 2024

Queen's University Belfast

3 awards total value: €495,533.58

1. Lead Applicant: Dr Damien Bennett

Project: All-Island Cancer Atlas - Development and Delivery between Cancer Registries in Ireland

Award Amount: €129,891.72

Lay summary:

The Northern Ireland Cancer Registry (NICR) and the National Cancer Registry of Ireland (NCRI) have a history of working together to produce valuable reports on cancer, such as the first All-Ireland Cancer Atlas. This collaboration has improved the understanding of cancer across the island and highlighted significant differences between the North and South. These findings led to more research funding and studies like the North/South PiCTure prostate cancer study.

However over recent years there have been many changes in demographics and social factors on the island, such as population growth, ageing, migration, urbanization and changes in education, and employment. Additionally, cancer screening, diagnosis, and treatment methods have developed and improved. These changes present an opportunity to compare new cancer cases across the island and uncover hidden patterns. This new, detailed AllIsland perspective aims to provide valuable insights for policy makers and researchers to enhance cancer policies and understanding.

The AICA project will look at cancers diagnosed across the island of Ireland for 15 years to 2020 (2006-2020) and use advanced statistical and mapping techniques to:

- Describe Cancer Distribution: Map out where cancer cases are located across Ireland, down to small areas, considering factors like socio-economic status and demographics.
- Research Resource: Create a valuable resource for studying cancer risk factors across the island. · Plan and Evaluate Services: Support all-island planning and evaluation of cancer services.
- Data Collaboration: Promote collaboration in harmonizing, analyzing, and reporting cancer data between North and South, and develop processes to support future data updates.

The project will also encourage the exchange of skills and knowledge and renew beneficial training, management, and leadership connections between the Cancer Registries in Northern Ireland and Ireland.

2. Lead Applicant: Dr Ethna McFerran

Project: Lung cancer Screening on the Island of Ireland: integrating Health economics and OuTcomes

Award Amount: €129,742.64

Lay summary:

Lung cancer is a major health concern in both Ireland and Northern Ireland, with many cases diagnosed at a late stage when treatment is less effective. This research aims to address this issue by developing and evidence based implementation plan for the delivery of effective lung cancer screening programmes. Early detection of lung cancer, through screening, can significantly decrease lung cancer mortality and improve quality of life for people at risk, but currently, no comprehensive screening programmes exist in either jurisdiction.

Our project will use advanced health economic models to determine the best ways to implement lung cancer screening programmes that are tailored to the unique needs of the populations in Ireland and Northern Ireland. These models will help us understand the resources needed, such as equipment, trained healthcare workers, and overall system capacity, to ensure that the programmes are robust, cost-effective and sustainable.

By working closely with advocates, policymakers, healthcare providers, and researchers from both regions, we will create evidence-based recommendations to guide the implementation of these screening programmes. This collaboration is essential to ensure that screening programmes are well-integrated into the existing healthcare systems and can effectively detect lung cancer at earlier stages.

The expected outcomes of our research include improved early detection rates of lung cancer, decreased lung cancer mortality, improved quality of life and more efficient use of healthcare resources. Our findings will also help reduce health inequalities by ensuring that high-risk populations have access to early detection services.

Overall, this project represents a significant opportunity to improve lung cancer outcomes in Ireland and Northern Ireland. By developing and implementing effective screening programmes, we aim to save lives, enhance patient care, and provide valuable insights that can influence healthcare policy and practice across the region.

3. Lead Applicant: Professor Nick Orr

Project: Empowering the high-throughput characterisation of non-coding genome mutations for cancer precision medicine

Award Amount: €235,899.22

Lay summary:

Cancer rates in Ireland are expected to rise by nearly 40% in the next 15 years.

To tackle this, there is a need for new, precise ways to prevent and treat cancer. Advances in understanding cancer genetics could help.

DNA is a molecule that contains the genetic 'code' that is unique to every individual. This code is like an instruction manual for making all the proteins that form our bodies and help them to thrive. The information coded in DNA is hereditary, meaning that it passes from parent to child, through our genes.

Only about 1% of DNA is made up of protein-coding genes; the other 99% is non-coding and does not provide instructions for making proteins.

While we have learned a lot about mutations in the parts of our DNA that code for proteins, much less is known about mutations in the non-coding parts, which also play a role in the development of cancer.

This project aims to fill that gap, by developing methods to find and study these non-coding mutations that influence cancer risk. Working with experts from the National Cancer Institute, USA, the project will develop capacity on the island of Ireland to study how these non-coding regions regulate genes.

Ultimately, it will help to identify genes affected by cancer-related changes. Eventually, the goal is to use this knowledge to create precise prevention strategies for those at risk of cancer, and new treatments for those with cancer.

Trinity College Dublin

1 award total value: €427,969.21

1. Lead Applicant: Dr Kathy Gately

Project: TransAtlantic Cancer Alliance for Liquid Biopsy Research and Training

Award Amount: €427,969.21

Lay summary:

Blood samples known as "liquid biopsies" are increasingly used across the cancer treatment pathway and are easier/cheaper to collect than a tissue sample from patients. Tumor specific particles are "shed" into the blood as the tumor grows including tumor cells, tumor DNA and small particles called extracellular vesicles. All of these circulating pieces of the tumor are called "biomarkers" and can be used to identify tumor specific genetic mutations/changes, guide treatment selection, and monitor the emergence of resistance mechanisms to cancer therapy. As more patients undergo liquid biopsies a better understanding of the benefits and limitations of these tests is required. Therefore, this project, cocreated by patients and clinical researchers, will investigate the ability of circulating tumor DNA (ctDNA) profiles to (i) identify those patients whose tumors might return after their surgery and who may benefit from additional therapy at the time of surgery and (ii) monitor patients more regularly after treatment for early identification of new disease. 100 patients, with respectable lung cancer, will be consented to this study as part of the biobanks at St. James's Hospital, Dublin and the Royal Victoria Hospital, Belfast. Blood samples and matched clinical data will be collected prior to surgery, 2/3-days after surgery, at 6-week/1-year follow-up appointments

and at disease relapse. Changes in ctDNA profiles between timepoints and compared to matched non-tumor cells will be linked to matched clinical data to identify specific profiles that predict treatment outcomes. A TransAtlantic alliance will be established combining the strengths of All-Ireland researchers and international liquid biopsy researchers at a National Cancer Institute laboratory in the US. This new network will educate patients, train the next generation of research scientists, healthcare workers and doctors on new technology advances and deliver novel liquid biopsy tests in the clinic as a new standard of care for patients.

University College Cork

1 award total value: €428,748.59

1. Lead Applicant: Professor Josephine Hegarty

Project: Genomics Enabled Oncology Education Programme and Network supporting the education of current and future oncology healthcare providers

Award Amount: €428,748.59

Lay summary:

Genomics describes the study of a person's genes (the genome), including how genes interact with each other and with the person's environment offering new possibilities for treatments and more individualised treatment options. More and more genomics is being incorporated into routine cancer care. Yet there is substantial evidence that health care professionals lack the level of knowledge and literacy in genomics to be confident in their ability to effectively incorporate these new genomic innovations into clinical practice. The World Health Organisation and others have advocated for the importance of incorporating more genomics content into both undergraduate and continuing education programmes for healthcare professionals.

The aim of the GENomics Enabled ONCology (GENE-ONC) Education programme and Network is to support the genomic education of current and future health-care providers who work with patients on the cancer journey.

This can be done by:

- Co-designing cancer genomics units that can be integrated into undergraduate educational programmes for nursing, pharmacy and medical students.
- Exploring innovative and effective ways of teaching genomic concepts and making them interesting to students.
- Supporting the upskilling of lecturers and healthcare professionals so that they are confident to support student learning in cancer genomics.
- Once the programme is developed and tested, make it available freely to other educators.

As a baseline, in year one we will find out what universities and colleges are doing in terms of teaching genomics and the genomic literacy levels of educators and clinical staff. In year two, we will co-create a cancer genomics educational programme with all stakeholders. We will pilot test the programme for educators and clinical staff in one site. Taking the lessons learnt, the programme will be further refined. In year three we will do a before and after evaluation of the programme across six higher education institutions in Southern and Northern Ireland.

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