Objective

Breast cancer is the most common female malignancy, and a leading cause of death. Although molecular technologies have led to new therapeutic targets for breast cancer, much remains to be done to reduce its societal and economic impact. This project focuses on an emerging cancer drug target – Junctional Adhesion Molecule-A (JAM-A), an adhesion protein that Dr Hopkins (Supervisor; RCSI) and others have implicated in breast cancer. This proposal centres around recent data suggesting that JAM-A controls the expression of HER2 and HER3, key tyrosine kinases associated with aggressive breast cancer. I will test the novel hypothesis that combining a JAM-A antagonist and an anti-HER2/HER3 drug (Pertuzumab) exerts synergistic anti-tumour effects in breast cancer settings. This will be accomplished by: Testing the combination of a JAM-A antagonist and an anti-HER2/HER3 antibody
for anti-tumor efficacy in 2D and 3D models of breast cancer in vitro; Using chick embryo xenograft assays (cell line-based and patient-derived xenograft-based) to test the combination of a JAM-A antagonist and an anti-HER2/HER3 antibody in vivo; Identifying new JAM-A antagonists and test them for synergism with an anti-HER2/HER3 antibody in breast cancer settings; Validating a possible JAM-A-HER2/HER3 signalling axis in breast cancer patient datasets and samples.

Combining an innovative, multi-faceted approach, and offering an academic multidisciplinary environment which will both complement my industrial skills and enable me to transfer valuable industry-centred knowledge, this project presents a wealth of opportunities to enhance by career prospects and enable a transition back to academia. As there are currently no anti-JAM-A drugs on the market or in clinical trials, this is a timely and important project which will give valuable new translatable knowledge into the treatment of certain aggressive breast cancer phenotypes.

**Fields of science**

*natural sciences*  >  *biological sciences*  >  *biochemistry*  >  *biomolecules*  >  *proteins*

*medical and health sciences*  >  *clinical medicine*  >  *oncology*  >  *breast cancer*

*medical and health sciences*  >  *clinical medicine*  >  *embryology*

**Keywords**

Breast cancer  
tight junction  
junctional adhesion molecule-A  
JAM-A  
HER2  
HER3  
antagonist  
Pertuzumab  
peptide synthesis  
Perjeta  
3-dimensional cell culture  
organoids  
chick embryo xenograft

**Programme(s)**

[HORIZON.1.2 - Marie Skłodowska-Curie Actions (MSCA)](#)  [MAIN PROGRAMME]

**Topic(s)**

[HORIZON-MSCA-2022-PF-01-01 - MSCA Postdoctoral Fellowships 2022](#)

**Call for proposal**
HORIZON-MSCA-2022-PF-01

See other projects for this call

Funding Scheme

HORIZON-TMA-MSCA-PF-EF - HORIZON TMA MSCA Postdoctoral Fellowships - European Fellowships

Coordinator

ROYAL COLLEGE OF SURGEONS IN IRELAND

Net EU contribution

€ 215 534,40

Address

St stephen’s green 123
2 Dublin

Region

Ireland > Northern and Western > Border

Links

Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network

Other funding

€ 0,00

EC signature date 21 March 2023
Last update: 25 July 2023

Permalink: https://cordis.europa.eu/project/id/101110380

European Union, 2023