

## **Jellyfish collagen 3D systems support ovarian cancer cell line proliferation, confirming its suitability for advanced cell culturing applications and provides an excellent alternative to mammalian collagen sources for the culture of human cells.**

- Jellyfish collagen sustains and supports ovarian cancer (OvCa) cell attachment, proliferation, morphology and epithelial to mesenchymal transition markers.
- Jellyfish collagen is tuneable and non-cytotoxic to (OvCa) cells and can be functionalized to mimic the cancer microenvironment.
- Adopting jellyfish as a collagen source is sustainable and cheaper than the golden standard material sources derived from mammals (rat tail and bovine).

The recent publication in the journal *Frontiers in Bioengineering and biotechnology* titled 'Marine Collagen Substrates for 2D and 3D Ovarian Cancer Cell Systems' has demonstrated that jellyfish collagen provides a reliable *in vitro* micro-environment for the proliferation and migration of Ovarian cancer cells. (OvCa.3 & SKOV3).

Cancer biology remains one of the biggest challenges of this century. There were 7,470 new cases of ovarian cancer in the UK (2014 -2016) and 4,116 deaths in 2017, and the need to continue research with the support of innovative new biomaterials will help develop new treatments and find a cure sooner.

The collaborative study with Swansea University, National University of Ireland, Galway (NUIG) and Jellagen Ltd funded through the Celtic Advanced Life Science Innovation Network (CALIN) was started to understand if jellyfish collagen from *R.Pulmo* (Jellagen®) could be used as a sustainable alternative to mammalian/vertebrate sources. Advancements in the scientific community are driving the desire to reduce its reliance on mammalian species through the risk of disease vector transfer, irregular reproducibility and ethical practice.

With bodies such as the FDA (The Food and Drug Administration) & EPA (Environmental Protection Agency) aiming to reduce and eliminate animal testing by 2035 the need to find alternatives to mammalian derived products is greater now, than ever before. Jellyfish collagen has been shown to be biocompatible to living tissue, tuneable and easily functionalised to support many different applications and is sustainably sourced with a simplistic supply chain.

Dr Andrew Mearns Spragg Founder & Chief Scientific Officer of Jellagen Ltd stated "I am really proud of this collaboration and the achievements made through collaboration with both the REMEDI Group (Professor Frank Barry) in Ireland and the Reproductive Biology and Gynaecological Oncology Research Group (Dr Lewis Francis) at the Institute of Life Sciences at Swansea University. The data generated is the culmination of everyone's hard work and clearly demonstrates the applicability and application of our Jellagen® collagen for the culturing of human cells. I would like to thank CALIN for providing the project with the financing and to enable this project and collaboration to happen."

Dr Lewis Francis Associate Professor of Swansea University added “I am really pleased with the collaboration with Jellagen and also very proud of the PhD student’s hard work in generating this data. This is a great first milestone that will enable us to add further data to ultimately validate this collagen model as a potential alternative for integration into our regenerative medicine platforms and cancer drug discovery/screening tools.”

Toby Williams, Project Manager at CALIN further added “this project has been a great success and showcases the real-world benefits of cross-border collaboration. It’s facilitated opportunities for two universities to support development on new applications for their novel biomaterial. For ourselves, it’s been superb to see the success Jellagen has achieved following this joint funded support.”

### **About Jellagen Ltd**

Jellagen Ltd is a marine biotechnology company manufacturing high value collagen derived from jellyfish. Founded in 2015, Jellagen’s strategic mission is to exploit sustainable marine species and natural resources in order to develop technical and scientific high value research and medical device products, meeting state of the art specifications. Jellagen’s DNA is founded on marine systems and ensures best practices are maintained to respect the sea environment. In the future, the company’s intent is to develop new medical solutions derived from sustainable marine chemistry (circular bioeconomy).

Based in Cardiff, Wales, Jellagen Ltd is a world leader in the development of jellyfish-based collagen (Jellagen®). Since its foundation in 2015 they have been a primary source of innovation in the field of collagen. Jellagen Ltd has secured considerable investment from both private investors and public sources to develop its business. In 2019, Jellagen Ltd commercialised its jellyfish collagen cell culture products for research.

### **About CALIN**

The Celtic Advanced Life Science Innovation Network (CALIN) brings together six leading higher education institutions from Ireland and Wales. Swansea, Cardiff and Bangor Universities in Wales and University College Dublin, Tyndall National Institute and National University of Ireland, Galway in Ireland to provide an innovation network for the region. CALIN unites life science sector centres of excellence to support cross-border, industry focused research and development and help business to grow their research capacity.

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