

Jellyfish collagen set to revolutionise *in vitro* cell culture and tissue engineering

- Jellagen® launches their first purified jellyfish collagen hydrogel: JellaGel™
- Jellyfish's unique physiology mean its collagen has distinct advantages over mammal-derived and synthetic materials
- Batch-to-batch consistency of jellyfish collagen can greatly improve lab management

JellaGel™, jellyfish collagen hydrogel, suitable for 3D cell culture and tissue engineering launches today to offer a solution to different challenges facing laboratory technicians. Jellyfish collagen constitutes an ancient chemical template of all collagens and is one of the main reasons JellaGel™ is a versatile hydrogel product. Jellagen has developed a unique manufacturing process, Jellatech™, that allows laboratory technicians to scale up the production of the material and also capitalise on the simple physiology of jellyfish to support batch-to-batch consistency.



Barrel jellyfish, *Rhizostoma pulmo*

Unlike mammalian collagens, JellaGel™ is free from carry-over contaminants (e.g. proteins, polysaccharides, disease vectors). It also contains significantly lower non-specific miRNA than mammalian collagens, reducing off-target effects. When compared with synthetic materials, many of which are based on β -structured fibrous materials, jellyfish collagen is bioresorbable and non-toxic to cells, from stem to lineage cells.

In a recent collaborative study with the National Physical Laboratory (NPL) as part of Innovate UK's Analysis for Innovators (A4I) programme, Jellagen sought to develop a robust protocol for the culturing of cell lines in three dimensions. The study performed an in-depth analysis of jellyfish collagen materials and showed that these are able to effectively encapsulate cells, while retaining their viability.

Nilofar Faruqui, a research scientist from the National Physical Laboratory who led the project, said: “3D tissue scaffolds such as hydrogels hold great promise for biomedicine including applications in cell therapies and regenerative medicine. One of the challenges for the commercialisation of these materials requires establishing reproducible interdependencies between their physicochemical and biological properties. This has been an exciting collaboration that has provided us with new insights into how solving this challenge can help develop high value materials into high performance products.”

The founder of Jellagen®, Professor Andrew Mearns Spragg, a Scottish marine biotechnology pioneer, is excited to launch the non-mammalian and entirely natural collagen hydrogel: “The A4I collaboration with NPL’s Biometrology team has provided us with crucial information that we are implementing right away to develop the next generation of our products. We are launching this new product pipeline under a collective name of JellaGel™ that we believe will significantly improve the development and use of 3D cell cultures, from research lab to clinic.”

For more information on NPL’s work on biometrology: <https://www.npl.co.uk/biometrology>.

For more information on the Analysis for Innovators programme: <https://www.npl.co.uk/analysis-for-innovators>.

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About JellaGel™

Jellagen next generation jellyfish collagen is a significant innovation in the fields of cell culture and regenerative medicine. With a concentration of 4.0-4.5mg/ml it is sold in either 20ml or 100ml formats. JellaGel™ can be stored for up to 6 weeks from date of manufacture.

The reasons to adopt jellyfish collagen compared with mammalian collagens include:

- Prion & disease-vector free material.
- Inert & cleaner at the miRNA level.
- Biocompatible offering a low immunogenicity profile.
- Consistent from one batch to another because of the simplistic physiology of jellyfish.
- Similar to mammalian and human type I, II, III, V collagens because of the ancient chemical lineage.
- Compatible with all existing cell culture methodologies (self-coating, imaging, etc).
- ISO13485:2016 certified manufacturing.

About Jellagen®

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

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