



News Release

PlantForm and 3DBioFibR announce NGen funding to advance recombinant human collagen fiber manufacturing technology

Project leverages partners' strengths to develop world's first scalable dry spinning of recombinant human collagen for use in a broad range of sectors including regenerative medicine

TORONTO, Canada, January 18, 2024 – Canadian biopharmaceutical innovator **PlantForm Corporation** and Halifax-based **3DBioFibR Inc.**, a leader in developing biomaterials for tissue engineering, have been awarded \$1.3 million from Next Generation Manufacturing Canada (**NGen**) to support the development of the world's first scalable dry spinning of recombinant human collagen fibers that match or exceed the strength of collagen fibers in the human body.

Collagen makes up about 30 percent of the protein content in the human body, where it plays a crucial role providing structure and strength for skin, muscles, bones and connective tissue. It can be extracted from almost every living animal for use in biomaterials engineering and regenerative medicine, including therapies that promote wound healing and repair of orthopedic injuries. However, because most collagen is extracted from animal sources, it is broken down from its higher order fiber form into individual collagen proteins, which are then used in various applications throughout biomedical research.

3DBioFibR's Patented Dry Spinning platform is the first collagen fiber spinning platform to demonstrate an ability to spin these collagen molecules back into collagen fibers that closely match both the biochemical and biomechanical properties of natural collagen structures, at a scale that is 3600X faster than competing technologies. However, there are few commercially available sources of non-animal collagen for tissue engineering, despite an industry push to move away from animal sources of collagen.

The collaborative project will combine PlantForm's plant-made therapeutic protein manufacturing system with 3DBioFibR's patented, fully automated collagen fiber manufacturing technology to produce collagen fibers at commercial scale that closely resemble the biomechanical and biochemical properties of natural collagen. The work will focus on improving the scale of collagen expression and fiber manufacturing capacity and validating new methodologies for incorporating the recombinant collagen feedstock into the fiber manufacturing process.

"This is an exciting project that demonstrates once again the incredible versatility of PlantForm's *vivoXPRESS*® manufacturing platform," said Dr. Don Stewart, PlantForm's President and CEO. "With support from NGen, 3DBioFibR and PlantForm will develop a scalable, cost-effective, dry spinning system for manufacturing recombinant collagen fiber that will have broad application in medicine, research and other sectors."



NGen is the industry-led not-for-profit organization that leads Canada's Global Innovation Cluster for Advanced Manufacturing. The funding from NGen will cover a little over one-third of the project's \$3.6-million total cost, with PlantForm and 3DBioFibR contributing the balance.

The *vivoXPRESS*[®] platform — which uses *Nicotiana benthamiana* plants as bioreactors to grow proteins and antibodies for biosimilars used in cancer treatment, vaccines and other therapeutics — mitigates the risk of immunogenicity. 3DBioFibR's **automated and proprietary dry spinning process** is the only process that produces high quality, diameter-controlled collagen fibers at commercial scale.

“By scaling up each of these technologies and designing a process that enables their compatibility, we will create the first recombinant human collagen fiber manufacturing capability,” said Kevin Sullivan, CEO of 3DBioFibR. “This innovative production of collagen fibers will not only have applications in tissue engineering, such as creating muscles, tendons, and skin grafts for implantation, but also in creating more biologically relevant tissue and organ models to avoid animal studies.”

About 3DBioFibR Inc. (www.3DBioFibR.com)

3DBioFibR produces high value collagen fibers at commercial scales for a variety of tissue engineering and medical applications. The company's proprietary dry-spinning process produces fibers that are best- in-class from a strength, diameter, and quality perspective, recreating the natural appearance, structure, and function of collagen fibers. This manufacturing process is at least 3,600x faster than competing applications in the growing tissue engineering market. For more information, visit www.3DBioFibR.com.

About PlantForm Corporation (plantformcorp.com)

PlantForm Corporation is a biopharmaceutical company focused on the low-cost production of high-value antibody and protein drugs and vaccines using the proprietary *vivoXPRESS*[®] plant-based manufacturing platform. The *vivoXPRESS*[®] plant expression system produces biologic drugs at a significantly reduced cost compared to standard mammalian cell systems. The platform is fast (drug production in as little as six weeks), versatile and easily scalable. PlantForm's pipeline features an innovative antidote to ricin exposure, and biosimilar versions of the brand name biologic drugs Lucentis[®] and Keytruda[®]. [Learn more.](#)

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