AMGC
ADVANCED MANUFACTURING GROWTH CENTRE LTD

CYTOMATRIX

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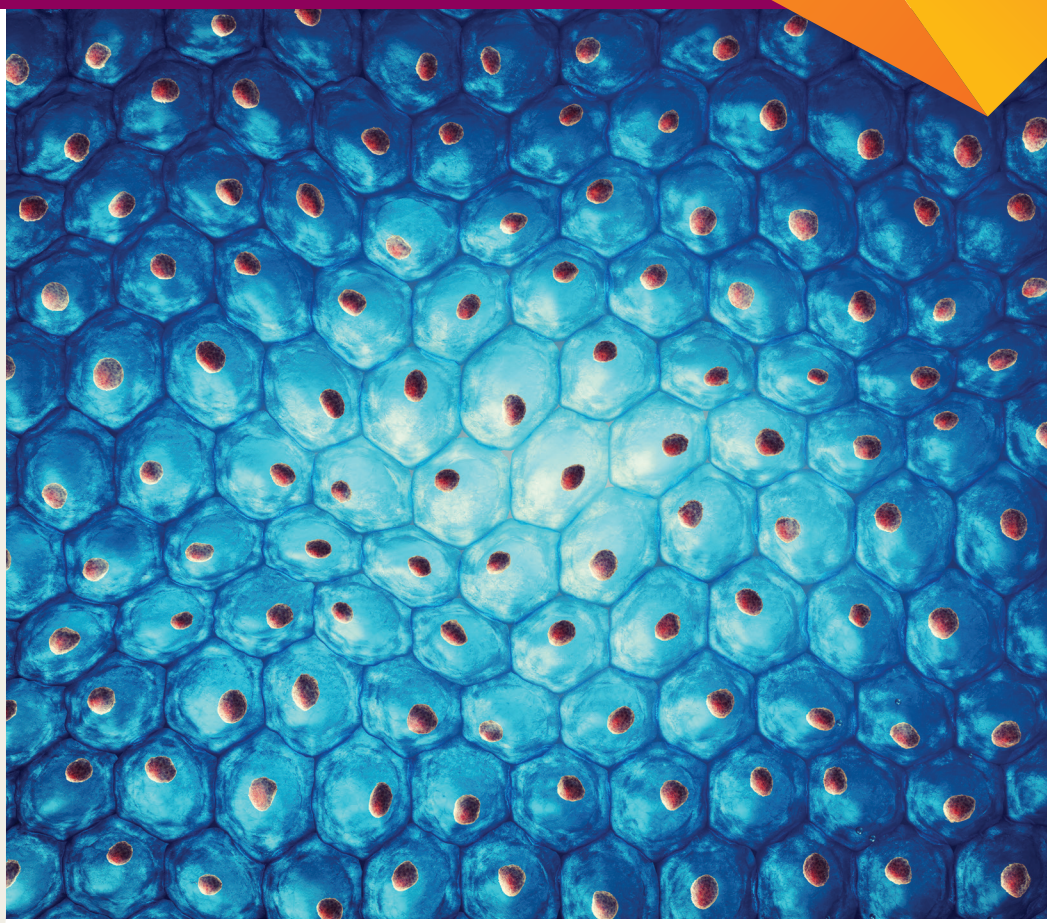

Cytomatrix is a micro business with a novel method for producing short polymer fibres (SPF). Developed in collaboration with Deakin University, this specific project continues the company's important links with the university, which is providing two part time researchers to develop treatments for chronic wounds using biodegradable SPF and immune stimulating materials. The finished product may provide an alternative to antibiotic treatment of such wounds.

How the Growth Centre helped

The Advanced Manufacturing Growth Centre has contributed $50,000 in co-funding to the project. As a tiny, knowledge-intensive company, Cytomatrix often relies on public sector assistance to help catalyse R&D efforts.

What's changed?

Cytomatrix and Deakin will develop a promising solution to the wound care market, which is estimated to be worth over $US42 billion by 2024. This will provide an alternative treatment to antibiotics for chronic wounds. This is a non-trivial issue, with the World Health Organization identifying overuse of and resistance to antibiotics as a serious global problem.

Success story overview

Cytomatrix was established in 2008, and is a company developing uses for its short polymer fibre production method.

The company was spun out of Deakin University. Cytomatrix's platform technology has potential uses in fields including healthcare, waste management, and air filtration. Recently, part of Cytomatrix broke away to join Nohla, a Seattle-based cell therapy company that has raised over $US 100 million to commercialise intellectual property developed at Fred Hutchinson Clinical Research Centre.

"This particular field is a new area for us: applications for biomedical delivery of drugs and molecules," explains Andrew Parratt, the company's chairman.

"Previous to this we worked with polymers in terms of scaffolds of stem cells and also for potential use in the textile area. We can functionalise the surface of those polymers to be carriers for molecules; whether they are proteins or synthetic molecules."

Their production technology allows for highly customisable fibres, with a high surface area to volume ratio possible. About fifteen different polymers inputs have been used so far.

Cytomatrix is currently focussing on treatment of chronic wounds, a problem affecting between one and two per cent of all people. This wound care solution will address the overuse of and resistance to antibiotics, a problem the World Health Organization has called "one of the biggest threats to global health, food security, and development today[1]".

The chronic wound care market is rising steadily as the population ages. According to estimates by Research and Markets, the wound care market will be worth $US 42.07 billion by 2024[2].

This project will see Cytomatrix and Deakin University collaborate on materials using SPFs, treating wounds with immune stimulating materials in biodegradable bandages rather than antibiotics. This incorporates controlled release, wound-healing "Granulocyte-macrophage colony-stimulating factor" (GM-CSF) in biodegradable bandages. Deakin is contributing the in-kind support of its staff and laboratories.

The polylactic-co-glycolic acid (PLGA) material to be made into functionalised wound care products is already approved by the FDA. GM-CSF is currently in use and has yielded positive results treating burns and chronic ulcers. The project will investigate and optimise the production and optimisation of chitosan and gelatin versions of SPFs, as well as the release profiles of the biologic molecules using these matrix materials.

It is expected that future development work could incorporate different medicines, such as vaccines, within the nanofibres for absorption by the body.

"This project is really the first stages of working down that pathway towards developing a novel wound healing approach," says Parratt.

Cytomatrix's team is small after its demerger, with three full-time staff. Its technology's potential for loaded polymer delivery of treatment is vast, but the team and its resources are limited. This collaborative project will increase Cytomatrix's knowledge base around SPF production methods and is expected to lead to several new patents.

Parratt says continuing collaboration with Deakin and organisations such as AMGC is vital to bring cutting-edge medical products to market. The AMGC has contributed $50,000 in co-funding to the project.

"The great thing about an organisation like AMGC is the ability for small start up companies to access additional Commonwealth-supported funds in targeted areas," he explains.

"We think this is a key role for AMGC to play. And they are doing it very well. We are very pleased to have their support."

1 https://www.who.int/news-room/fact-sheets/detail/antibiotic-resistance

2 https://www.prnewswire.com/news-releases/global-wound-care-market-report-2018-2024-300734501.html