

Plant Nanopatch™ – sowing and growing success for plants

Benefits

- Precision application of novel and classic plant chemistries
- Improved environmental and human safety profiles when applying plant chemistries
- Produced from sustainable, biodegradable and petrochemical-free sources.

Background

Plant chemistries provide benefits by enabling the control and/or enhancement of plant growth processes such as:

- Seed germination
- Stem, leaf and root elongation
- Flower and fruit formation and/or ripening
- Abiotic stress resilience and disease suppression

The plant chemistry market for PGR's was valued at USD 2 Billion in 2016. There is a recognised worldwide growing demand for tailored, homogenous crop outcomes which is driving increased demand for innovative technologies using precision application of plant chemistries.

The Technology

The Plant Nanopatch™ represents an innovative approach for micro-dosing plants with chemistries essential to broadacre agriculture, horticulture, nursery production, revegetation following bushfires etc.

The ability to fine-tune and ensure slow release profiles for both classic and novel chemistries are key benefits of the technology. This attribute enables users to significantly limit user exposure and decrease costs 100-1000 fold per plant. Hence incorporating chemistries into the Plant Nanopatch™ promises enhanced regulatory certainty because delivery is well below strict new toxicity thresholds.

The platform addresses sector-specific needs:

- 1. Seed Nanopatch™ Max Vigour** (TRL 6-7). Protects seed vigour; commercial nursery demonstration in soybean, lettuce, broccoli, tomato and capsicum. This tech can rapidly be adapted to established fruit trees as well.
- 2. Seed Nanopatch™ Dryland** (TRL 5-6). Dryland applications, e.g. revegetation, broadacre (corn, soybean, canola etc). Proof-of-concept in commercial demonstration.
- 3. The Versatile Nanopatch™ - Seed delivery** in commercial demonstration with two crops (TRL 5-6). Delivery to **cuttings & plants** in glasshouses (TRL 4-5).

Intellectual Property

A patent application describing the Seed Nanopatch™ Dryland technology was filed under PCT/AU2018/050579 and relates to a method for forming dendritic mesoporous nanoparticles.

Technology Development & Commercialisation Options

- UQ can act as a development partner for chemical owners, leveraging their capabilities in characterisation and field trials. A short proof of concept study conducted by UQ is often the first step to evaluate the benefits of the technology with new actives.
- A battery of selected varieties of commercial interest could be evaluated in dosage response trials using formulations of interest to evaluate the benefits.
- Thirdly, a new entity could be established to develop and evaluate the technology with intentions of securing a broader and registered intellectual property position.

Research leader



Dr Jitka Kochanek is an innovator within the field of agricultural bioengineering. In 2019 her team won CSIRO ON-Prime and she has received seven R&D grants over the last decade (Advance QLD, HIA and others). She trained as a seed biologist at The Royal Botanic Gardens, Kew, UK.

About UniQuest

UniQuest is Australia's leading technology transfer company and manages the intellectual property of The University of Queensland (UQ). Established in 1984, our innovation portfolio has seen the creation of more than 100 start-up companies, and includes Australia's first blockbuster vaccine Gardasil®, the internationally acclaimed Triple P-Positive Parenting Program and superconductor technology used in most of the world's MRI machines. In 2015, our spinout company Spinifex Pharmaceuticals secured Australia's largest ever biotechnology acquisition.

Contact

Dr Deon Goosen, Director, Commercialisation - Life Sciences (Agriculture and Food Sciences)

UniQuest Pty Limited

P: +61 (0) 407 733 619

E: d.goosen@uniquet.com.au

