

DENDRIGHT PTY LTD

RHEUMATOID ARTHRITIS THERAPY FIRST TO TARGET CAUSE

An innovative rheumatoid arthritis therapy, the first to target the underlying cause of the disease rather than treat its inflammatory symptoms, is being commercialised by Dendright. Dendright is a start-up company of UniQuest, Australia's leading university commercialising entity managing the intellectual property of The University of Queensland.

Dendright's tolerising immunotherapy re-educates the body's immune response to fight the debilitating disease that affects millions worldwide, destroying joints and causing cardiovascular complications that can reduce life-span by 10 years.

With the help of UniQuest, Dendright closed a research collaboration deal with US-based Janssen Biotech, Inc. in 2013, including an option-to-license agreement. In 2017, Janssen agreed to further the collaboration including the first-in-human safety and tolerability study. Patient support and advocacy group Arthritis Queensland also contributed funding to the clinical program.

INNOVATION

Only rheumatoid arthritis sufferers can appreciate the debilitating extent of this painful autoimmune disease. Autoimmune disease occurs when the body mistakes one of its own proteins (self-antigens) as foreign, resulting in an immune response.

With the commercialisation support of UniQuest, a research team from The University of Queensland Diamantina Institute is pioneering an innovative rheumatoid arthritis therapy that offers hope to the estimated 23 million sufferers worldwide.

The team, led by Professor Ranjeny Thomas, discovered the body's immune response could be 're-educated' to turn-off, rather than react to a self-antigen responsible for an autoimmune disease. By targeting the cause of autoimmune disease, rather than treating the symptoms, this type of immunotherapy offers the potential for long-lasting treatment by working with the body's own immune system to fight disease.

However, as any researcher will attest, making a ground-breaking discovery is just the beginning. The hard work lies in securing the resources to translate the research towards clinical trials and eventually commercialise as a medical treatment.

COMMERCIALISATION

The road to commercialising the discovery by Professor Ranjeny Thomas, Dr Brendan O'Sullivan and Dr Nigel Davies started with UniQuest, determining a commercialisation strategy and preparing a successful patent application for a cell-based therapy in 2002. After pitching the technology to market, the original therapy was re-formatted from cell-based to an injectable, liposome-based drug formulation. This became a separate patent application in 2006.



The development of the novel liposome-based treatment required a partner who could appreciate the potential of the Dendright technology.

UniQuest assisted the researchers to secure two competitive commercial grant applications and established Dendright Pty Limited in 2005 to receive the funds from the Queensland Government's Innovation Start-up Scheme and the Australian Government's Biotechnology Innovation Fund. Those small-to-medium-sized enterprise grants were critical to fund and prove the mechanism of action via the cell-based approach in patients.

The development of the novel liposome-based treatment required a partner who could appreciate the potential of the Dendright technology, at a time when monoclonal antibody therapies had captured the rheumatoid arthritis market. Most pharmaceutical companies were not prepared to commit funds to antigen-specific immune tolerising induction therapy, which they considered to still be at an early stage of development.



DENDRIGHT PTY LTD

A SUCCESSFUL PARTNERSHIP

The breakthrough came in 2011. UniQuest was pitching the technology to a senior director of new ventures from Johnson & Johnson Innovation, scouting for disruptive new therapies for rheumatoid arthritis. At around the same time, Professor Thomas had been actively communicating the discovery at scientific conferences and in journals. The Worldwide Chairman of Janssen Pharmaceutical Companies of Johnson & Johnson, Dr Paul Stoffels, accepted an invitation to a presentation by Dendright while visiting UniQuest in Australia. He recognised the technology's disruptive potential and UniQuest stepped up deal discussions with Janssen locally and globally.

UniQuest facilitated a strategic research collaboration agreement in 2012 - between Dendright and Janssen-Cilag Pty Ltd in Australia - to develop the promising rheumatoid arthritis treatment.

In 2013, Dendright signed a research and development collaboration and option-to-license agreement with US-based Janssen Biotech, Inc. for the exclusive worldwide right to develop and commercialise Dendright's rheumatoid arthritis immunotherapy. Under that agreement, Janssen provided funding to support the preclinical development as well as the development of companion biomarkers.

The partnership was strengthened in 2016 with Janssen providing additional funding to support preclinical development of the potential therapeutic as well as a first-in-human-safety and tolerability study. Arthritis Queensland is also contributing funding to the clinical program.

Under the terms of the option-to-license agreement, Dendright is eligible for an option payment as well as development and sales milestone payments and tiered royalties.

Phase one clinical trials began in Australia in late 2017.



PROFESSOR RANJENY THOMAS

UQ research strength:
Immunology and infectious diseases

UQ innovators:
Professor Ranjeny Thomas,
Dr Brendan O'Sullivan and
Dr Nigel Davies

UQ faculty or institute:
UQ Diamantina Institute in the
Faculty of Medicine

UQ research outcome:
Innovative rheumatoid arthritis
immunotherapy

UniQuest IP position:
Patent applications relating to the
platform technology for autoimmune
diseases including rheumatoid arthritis

UniQuest partnering:
Determine business case, package
commercial opportunity, pitch to
corporates and investors, attract funds

UniQuest commercialisation:
License to Dendright, business
development and Janssen agreement

THE DENDRIGHT JOURNEY SO FAR

- In 1992, Arthritis Queensland provided seed funding for the Arthritis Queensland Chair of Rheumatology at the University of Queensland and has continuously donated to the position since then. This assisted Professor Ranjeny Thomas to develop the science which led to the technology being commercialised by Dendright.
- Dendright is commercialising the UQ discovery that the body's immune response can be 're-educated' to turn-off, rather than react to, a self-antigen responsible for rheumatoid arthritis.
- In 2005, UniQuest assisted Dendright in its successful applications for competitive industry grant funding which supported the development of the early-stage technology.
- In 2006, UniQuest filed and funded a provisional patent application for an autoimmune immunotherapy technology in the format of an injectable liposome.
- In 2012, after pitching to nearly 50 biotechnology, pharmaceutical and venture capital firms over six years, Dendright closed a strategic research collaboration agreement with Janssen-Cilag Australia. Janssen has a strategic interest in the rheumatoid arthritis market.
- In 2013, Janssen Biotech Inc. entered into an R&D collaboration and option-to-license agreement with Dendright to develop and commercialise Dendright's rheumatoid arthritis immunotherapy.
- In 2016, Janssen Biotech Inc. extended its partnership with Dendright to provide funding for a first-in-human safety and tolerability study. Dendright entered into a separate agreement with not-for-profit Arthritis Queensland to also contribute funding to the clinical program.
- Phase one clinical trials began in Australia in late 2017.

PARTNER WITH UNIQUEST

UniQuest is Australia's leading university commercialising entity, managing the intellectual property of The University of Queensland. We benchmark in the top 10 percent globally for university-based technology transfer offices.

- We have created more than 80 companies from our intellectual property portfolio.
- Together with our start-ups, we have raised more than A\$600 million to take university technology to market.
- UQ technologies licensed by us – including UQ's cervical cancer vaccine technology and image technology in magnetic resonance imaging equipment – have resulted in more than \$US15.5 billion in gross product sales.
- We have 87 granted US patents.
- We have more than 200 active license agreements.

If you want to know more about the Dendright commercialisation story or other offerings from UniQuest, contact:

E: enquiries@uniquest.com.au

W: uniquest.com.au