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Fontainea picrosperma fruit, found in the Queensland ecosystem, is the source of tigilanol tiglate

UNLOCKING THE POWER OF NATURE FOR DRUG DEVELOPMENT

CONTENT PROVIDED BY QBIOTICS GROUP

AUSTRALIAN CLINICAL-STAGE LIFE sciences company QBiotics Group Limited (QBiotics) is currently celebrating its 25th year of operation. With a vision of becoming a global leader in biodiscovery by unlocking the potential of novel small cell signalling molecules from nature, QBiotics is striving to redefine health care by safely and effectively treating complex medical conditions for patients with unmet needs. QBiotics is currently focusing on treatments for cancer and wound healing, with two assets in human clinical development, and a registered oncology pharmaceutical for dogs.

Doctors Gordon and Reddell explored the diversity of nature, and how plants interact with their environment. Their pioneering research strove to understand whether these natural interactions and pathways could be adapted to create innovative medicines for human use

Co-founded in 2000 by former CSIRO scientists microbiologist Dr Victoria Gordon and forest ecologist Dr Paul Reddell, QBiotics originated from a modest basement home laboratory in Yungaburra, Queensland.

Doctors Gordon and Reddell explored the diversity of nature, and how plants interact with their environment. Their pioneering research strove to understand whether these natural

interactions and pathways could be adapted to create innovative medicines for human use. They created a unique discovery platform for small molecules with specific biological activity, which they trademarked EcoLogic™.

Queensland's natural environment provides a rich and abundant source of biologically active small molecules. EcoLogic enables QBiotics to generate search strategies for specific types of bioactivity (e.g., anticancer, anti-inflammatory or antibiotics), informed by observations of plant–animal interactions in



QBiotics Group CEO, Stephen Doyle



megadiverse environments, to discover novel, small molecules with potential as pharmaceuticals.

According to Non-executive Director, former CEO and Managing Director Dr Gordon, the natural environment is a rich source of novel, highly biologically active small molecules.

‘Discovering more effective treatment options with less severe and fewer side-effects for human health has always been our motivation at QBiotics,’ says Dr Gordon.

‘By researching the way plants defend themselves in their environment, we’ve been able to identify molecules with specific disease-targeting abilities. Plants have developed these extraordinary, elegant systems in order to protect themselves. This is mostly through chemical defence, but these pathways can be researched and used to solve medical problems.

‘In addition to our unique discovery platform EcoLogic, another one of QBiotics’s distinguishing factors is our ability to use extensive, real-world data from our animal programs to



The Unseen Worlds exhibition at the World Science Festival, Brisbane

inform and minimise the potential risks in future human disease management,' Dr Gordon says.

'We are currently focusing on a broad range of solid tumours and chronic wounds, both representing areas of significant unmet need in the patient population.^{1,2,3} We have also started expanding into additional, early programs in antibiotics and anti-inflammatories,' says Dr Gordon.

Approved and marketed for the treatment of mast cell tumours in dogs in Australia, the United States, Europe and the United Kingdom, tigilanol tiglate is undergoing human Phase II clinical trials in head and neck cancer, and soft tissue sarcoma

Part of the overall drug discovery and development approach taken by QBiotics is phenotypic screening, which offers the advantage of identifying potential drug candidates based on their effects on disease-related biological processes, rather than relying solely on predefined molecular targets, thus allowing for the discovery of novel mechanisms and unexpected therapeutic pathways.^{4,5}

In addition to phenotypic screening, QBiotics uses data from treatment of real-world veterinary diseases to contribute to the QBiotics drug development process. These robust disease models inform human clinical development and thus reduce the risk of the initial move into humans.⁵

QBiotics' lead anticancer small molecule, tigilanol tiglate, was discovered through the EcoLogic platform. Originating from the Queensland native tree *Fontaine picosperma* (blushwood), tigilanol tiglate demonstrated tumour-killing properties at an early stage in development.⁶ Approved and marketed for the treatment of mast cell tumours in dogs in Australia, the United States, Europe and the United Kingdom,^{7,8} tigilanol tiglate is undergoing human Phase II clinical trials in head and neck cancer, and soft tissue sarcoma.^{3,9,10}

Tigilanol tiglate is an intratumoural treatment, injected directly into the tumour, and has a unique mode of action. The drug rapidly destroys the tumour through multifactorial effects, including: (i) disruption of tumour vasculature (including via activation of Protein Kinase β I and β II), resulting in hypoxia and capillary damage; (ii) induction of pyroptosis (via ER stress) in tumour and tumour stroma, leading to immunogenic cell



QBiotics celebrates
25 years

death; the release of DAMPs; antigen uptake and specific T cell responses; and (iii) promotion of immune cell recruitment into tumour through PKC-induced inflammatory response and cytokine release. Tigilanol tiglate also stimulates wound re-epithelialisation and wound closure of the site post tumour destruction through the promotion of expression of pro-wound resolution genes and proteins in immune cells, fibroblasts, and keratinocytes.^{5,9,10}

Tigilanol tiglate has been awarded orphan drug designation by the U.S. Food and Drug Administration for the treatment of soft tissue sarcomas.¹¹

QBiotics is exploring additional small molecules derived from the *Fontainea picrosperma* seed for their medicinal properties. The semi-synthetic small molecule EBC-1013 is being investigated for the treatment of acute and chronic wounds and burns. A clinical Phase I safety trial for EBC-1013 in patients with venous leg ulcers is also currently underway.¹² QBiotics has further programs in antibiotics and anti-inflammatories.

To commemorate QBiotics' success to date, and 25 years of operation, the life-sciences company recently sponsored the Unseen Worlds exhibition at the World Science Festival, Brisbane, which took place from 21–30 March 2025. Science

enthusiasts of all ages viewed images and microscopic slides of the QBiotics EcoLogic approach to discovery of new medicines from nature.

Reflecting on 25 years of QBiotics, Dr Gordon says she is honoured to have collaborated with extraordinary people during her tenure and is proud of the company's achievements to date.

'QBiotics is no ordinary company. Over the past 25 years, we have learnt much, refined our approach, and created a unique path to drug discovery and development that is truly transformative.

'We are developing potentially life-changing drugs, and we are excited about the future of the company,' says Dr Gordon.

'Collaboration plays a crucial role in drug development. Over the past 25 years, we have built lasting partnerships, collaborating with a range of world-class institutes, universities, hospitals, and companies within Australia, and globally in the United Kingdom, Europe and the United States.

'At QBiotics, we're building a company for the future. Our discovery platform EcoLogic is an extraordinary source of innovation – but we can't do everything ourselves,'

QBiotics Non-executive Director,
former CEO and Managing
Director, Dr Victoria Gordon



Dr Gordon says. ‘We see QBiotics as the centre hub of a group of collaborative partners, all working together to provide better treatment options for those living with complex medical conditions.’

QBiotics Group CEO Stephen Doyle says it’s only the beginning for the Australian biotechnology company.

‘It’s been a successful 25 years. During this period, we have connected scientific discovery, development and commercialisation, leveraging the power of nature to identify small molecules with the greatest potential for pharmaceutical development.

‘Our EcoLogic platform holds the power for future drug discoveries to ultimately improve lives for those in need,’ says Doyle. 🌱

To learn more about QBiotics and its oncology, wound healing, anti-inflammatory and antibiotics programs, visit qbiotics.com. Watch Dr Victoria Gordon reflecting on QBiotics’s 25 years of operation here: vimeo.com/1065696513/b2782541b1?share=copy.

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QBiotics Co-founders
with board members