UWA and Orthocell lead regenerative-medicine breakthroughs

University’s ‘enabling’ approach to research translation and commercialisation drives success.

An important partnership between the University of Western Australia (UWA) and Orthocell Ltd has put Perth – and Australia – at the forefront of regenerative-medicine technologies that treat soft-tissue injuries and musculoskeletal disorders.

Orthocell was formed in 2006 to commercialise technology developed by Professor Ming-Hao Zheng, Associate Dean (International), Faculty of Medicine, Dentistry and Health Sciences and Director of the Centre for Translational Orthopaedic Research at UWA.

Professor Zheng is a leading researcher in treatments for osteoporosis, osteoarthritis and tendon injuries using cutting-edge cellular and molecular biology technologies. He invented Orthocell’s flagship products Ortho-ATI™ and CelGro™.

Ortho-ATI™ is thought to be the first autologous cell therapy for tendon and ligament repair and regeneration that has been approved by a regulatory authority in Australia, New Zealand, the United States, Europe and Asia. Ortho-ATI™ uses a patient’s tendon stem cells to help regenerate and repair damaged tendons and ligaments.

A small needle biopsy of tendon is extracted, usually from the patient’s patella tendon in the knee, through a non-surgical procedure under local anaesthetic. Stem cells harvested from the tissue are cultured and expanded in a laboratory before an expanded volume of tendon stem cells is injected into the target tendon or ligament area using an ultrasound-guided method.

Studies have shown that Ortho-ATI™ has significant benefits in treating tendon or ligament problems for the Achilles, patella, lateral epicondylitis (tennis elbow), rotator cuff and gluteal (hip) tendons. More than 225 patients in Australia, Europe and Asia have been successfully treated with Ortho-ATI™ since its approval.

Orthocell is also developing a range of collagen scaffolds known as CelGro™, which are naturally derived products used to stabilise orthopaedic surgical interventions, such as tendon tears and detachments, and reconstruct missing or damaged tissues. Orthocell believes that its collagen scaffolds are more effective than commercially available scaffolds.

These products are targeting a global market. Regenerative medicine is one of the fastest-growing fields of medicine and is expected to play a significant role in the future of health care as the population ages. Musculoskeletal conditions have the fourth-greatest impact on the health of the world’s population, according to a 2010 Global Burden of Disease Study.

Paul Anderson, Orthocell CEO

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Orthocell CEO Paul Anderson saw the potential of Professor Zheng’s work while running a previous company, Verigen Australia.

Impressed by Professor Zheng’s research into cell therapies for tendon repair, Anderson formed Orthocell. Professor Zheng became its Chief Scientific Officer and produced outstanding pre-clinical and clinical academic works that drove the technology from proof of concept to clinical application. Anderson raised venture and private capital to support the commercialisation.

He says that UWA’s progressive approach to technology licensing was a key factor in Orthocell’s success. ‘Right from the start, UWA was focused on the end goal for Orthocell, rather than trying to retain as much as they could up-front and potentially kill any deal. It was a very enabling relationship, and provided Orthocell with an option to license the technology after it had been validated through further research. Upon validation, we were able to approach venture capital companies, raise funds, and accelerate the commercialisation of Ortho-ATI™.’

Anderson says the relationship, now more than a decade in the making, has provided a range of benefits. Orthocell has accessed UWA’s technology in this area, as well as its outstanding researchers and facilities, and UWA has retained equity in Orthocell and will receive royalties.

Orthocell has funded academic positions with UWA, collaborated with the university in Australian Research Council grants, and eight of its 15 staff members were educated at UWA. ‘It’s incredibly rewarding to recruit UWA PhD students and science graduates and give them a terrific career path, new skills and more responsibility as Orthocell grows,’ says Anderson.

Significant value has been created through the collaboration. Orthocell listed on the ASX through an initial public offering in August 2014, raising $8 million. Its 40-cent issued shares peaked at 99 cents in July 2015, making it one of the best-performed IPOs from 2014–15. Orthocell was capitalised at $37 million in January 2016.

Anderson says Orthocell is just beginning to realise its potential. ‘We have world-class technology in a global market for regenerative medicine that is a reality today – not something that will happen in the next decade or two. None of this would be possible without our relationship with UWA and its skills in working with start-up companies.’

Anderson says UWA’s focus on translational medicine differentiates it from many other universities. ‘UWA has long recognised the need to translate laboratory discoveries into products that benefit the community and create value, and Professor Zheng has been instrumental in this vision. With innovation and science now at the core of the policy agenda in Australia, I hope that there will be more universities like UWA that are able to demonstrate a capacity and attitude for collaboration and sharing with industries on the commercialisation of their discoveries.’

To learn more about Orthocell, visit orthocell.com.au.

Visit research.uwa.edu.au/ri to learn more about research impact at UWA.