



The University of Hong Kong
Technology Transfer Office



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RECLAIMING THE BODY RECLAIMING LIFE



SUCCESSFUL STORY

The Enormous Power of Soft

Dr. Sloan Kulper, CEO and Co-founder of Lifespans, and his team stumbled upon a novel use for biocompatible rubber while they were experimenting on elderly bone tissue. A piece of biocompatible rubber accidentally fell into a drill hole in bone and that very rubber turned out to work surprisingly well as a cushion. Dr. Sloan Kulper and his team viewed their inadvertent discovery as a significant opportunity to explore how 'soft implants' could support patients with osteoporosis.

Life before

Each year, there are approximately 10 million new osteoporosis-related fragility fractures worldwide. Elderly osteoporotic bone is highly susceptible to complications from migration and implant loosening of orthopaedic medical devices including fracture fixation screws, pedicle screws, and bone anchors. Weak implant anchorage in osteoporotic bone has a predisposition to fixation failure, leading to a gloomy prognosis for the patients and making the body pay. They come to grips with a lengthy hospital stay, a desperate decline in mobility, a reduced quality of life or simply greater psychological distress. The failure rates of conventional implants, which entirely consist of stiff metallic and polymeric materials, are as high as 25 per cent.

The clinical need for safe and effective osteoporotic implants is long overdue. Kulper started Lifespans with Dr. Erica Ueda Boles (HKU scientist) and three

faculty members, Dr. Christian Fang, Prof. Frankie Leung, and Prof. William Lu from the Department of Orthopaedics and Traumatology at HKU. The start-up aims to expand on the initial discovery, using biocompatible polymeric material as its core ingredient to develop products that create a cushion between a rigid implant and bones.

Life after

Lifespans develops proprietary technologies that make orthopaedic implants less costly, less risky and less painful when treating osteoporotic fractures in elderly patients. Its innovative technological solutions include Lifespans Bone Simulator, Lifespans Soft Tip, and Lifespans Soft Thread. Lifespans Bone Simulator is the first system which is capable of accurate implant migration and cut-out testing in computer-simulated cadaveric bone and polyurethane foam. This technology is the first of its kind in orthopaedics, developed in collaboration with Prof. Alfonso Ngan and K.Y. Sze of the HKU Faculty of Engineering, Prof. Xiaodan Ren of Tongji University, and Dr. Tak Man Wong and Dr. Grace Teng Zhang of the HKU Department of Orthopaedics.

The other two complimentary technologies, Lifespans Soft Tip (used in Lifespans Soft Hip Implant with the Lifespans Dynamic Tip Stabilisation System [DTSS]) and Lifespans Soft Thread (used in Lifespans Soft Shoulder Implant), help reduce stress on soft

bone tissue and improve the resistance to implant migration under axial, lateral, and torsional loading conditions. The Soft Thread was co-invented by surgeon-engineer Dr. Feng Xiaoreng during his Ph.D. thesis in the HKU Department of Orthopaedics.

Next Steps

Kulper views Lifespans' technologies as a true platform, reaching far beyond just that initial biocompatible rubber in the drill hole. Lifespans is leveraging its technologies to the breadth of application through technology transfer (TT) and strategic partnerships. In the process of TT, Technology Transfer Office has rendered utmost assistance to providing insightful consultation as well as services of timely patent applications. As of today, Lifespans has had a number of pending patents filed in the US, EU, and China. The company aims to bring its DTSS Hip Implant to the US and ASEAN markets by this year. It will be a first-of-its-kind device featuring the Lifespans Soft Tip technology and be the first in its portfolio of products with this unique technology.

As Lifespans is preparing for the commercial launch of its patent-pending technologies, it is poised to tackle some of the most intractable obstacles facing the complex conventional implants and make the world's first soft, elastic implant tip technology more accessible to all.



Call for Application



TSSSU@HKU is an award scheme for promoting entrepreneurship at HKU. Technology start-up companies formed by HKU members would be awarded up to HK\$1.5M in funding over the next three years at most to reshape the technology landscape locally and globally. The fundamental expertise and resources that TTO will bring to the new and/or recent HKU start-ups is expected to help accelerate commercialisation.

TSSSU@HKU 2021-22 is now open for application. For those who are interested in the award scheme, make sure you join us at the information session and the sharing session with TSSSU@HKU founders.

Application Deadline

25 Nov 2020 (Wed), 5:00pm (HKT)

Information Session

29 Oct 2020 (Thu), 1 - 2pm (HKT)

Sharing Session with TSSSU@HKU Founders

23 Sept 2020 (Wed), 1 - 2pm (HKT)

REGISTER NOW!

Remarkable Efforts

In August, TTO's efforts in helping HKU researchers convey results stemming from scientific and technological research to the market and to the wider society continue unhindered.

Our business development team has worked on 91 TT cases in total, of which 64 of them were related to technology commercialization and industry engagement, 6 were related to entrepreneurship and incubation support and the remaining 21 were related to TT marketing and outreaching activities. Our legal team has managed 36 cases for our HKU research community while our intellectual property team has worked on 11 IDFs, handled 79 office action matters, discussed 14 cases about Conversion/National Phase /National Validation, as well as filed 10 PCT/national applications.




It is always our pleasure to be your sounding board. At any stage of your research, you are welcome to consult with us the commercial potential of your work.


About TTO


The Technology Transfer Office (TTO) is committed to maximising the impact of research through technology transfer at both the institutional and industrial levels. TTO works closely with researchers at HKU to commercialise their inventions through professional consultation on business development, legal advice and assistance, as well as patent application filings. Your inventions would not benefit the society until they are mass produced. Contact us for such a transformation.


About Versitech


Versitech Limited is the commercial arm of HKU. Versitech negotiates, executes and manages commercial business contracts and agreements on behalf of the University.

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ACT NOW!

Transferring Your New Technologies into Business Opportunities

Policy Stipulation

The latest policy stipulates that the net receipts arising from the exploitation of an Invention are shared among the University, the relevant faculty/department and the inventor(s) in the ratio of 1/3 : 1/3 : 1/3. It aims to encourage the researchers at HKU not only to excel in academic performance but also to apply their technology for the benefits of mankind with an impressive reward.



How to Apply: 4 Phrases for Research Projects

Phase 1: Initial project negotiation

1. PI will negotiate with their collaborator(s) and confirm a project proposal which includes the scope, budget and duration of the project.
2. PI will negotiate with their collaborator(s) and prepare a draft agreement (Agreement templates are available at the website of the Research Services (RS): <http://www.rss.hku.hk/contracts/contractresearch/templates.>)

Phase 2: Endorsement from department/faculty

3. PI will submit the project proposal, the draft agreement, and the information form/grant application form to their department/faculty to seek an approval (The information form for research/consultancy agreements is available at: <http://intraweb.hku.hk/local/rss/tto/researchor-consultancy-agreements-form.doc>).

4. After obtaining the approval, PI will submit the project proposal, the draft agreement, and the information form/grant application form to the Research Service (RS).

Phase 3: Financial legal/IP review

5. The RS will distribute the project proposal and the draft agreement to the Finance and Enterprises Office (FEO) for financial review and to the Technology Transfer Office (TTO) for legal review.
6. If there is any financial/legal issue, the FEO/TTO will inform PI through the RS. PI will negotiate with their collaborator(s) on the financial/legal issue until it is settled.

Phase 4: Signature and document archiving

7. After consolidating the settled project proposal and the agreement, the RS will proceed to the signature process.
8. After duly performing the signature process, the RS will assign the RCGAS number(s) for opening the project account(s) and archiving all the documents.

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