



# New Cartilage Regeneration Technology

We are developing leading cartilage regeneration technology to grow cartilage tissues using the patient's own adult stem cells for replacement of damaged cartilage.

## THE NEED

Cartilage functions to protect the underlying bones in a joint from rubbing against each other. Cartilage injuries and the associated chronic pain are very common. They may be caused by osteoarthritis, degeneration, trauma and sports injuries.

About **40%** of adults over 65 years old have some form of **cartilage damage** and may require cartilage repairs. Cartilage cannot heal on its own once injured. In the worst case, total knee replacement by an artificial joint is required.

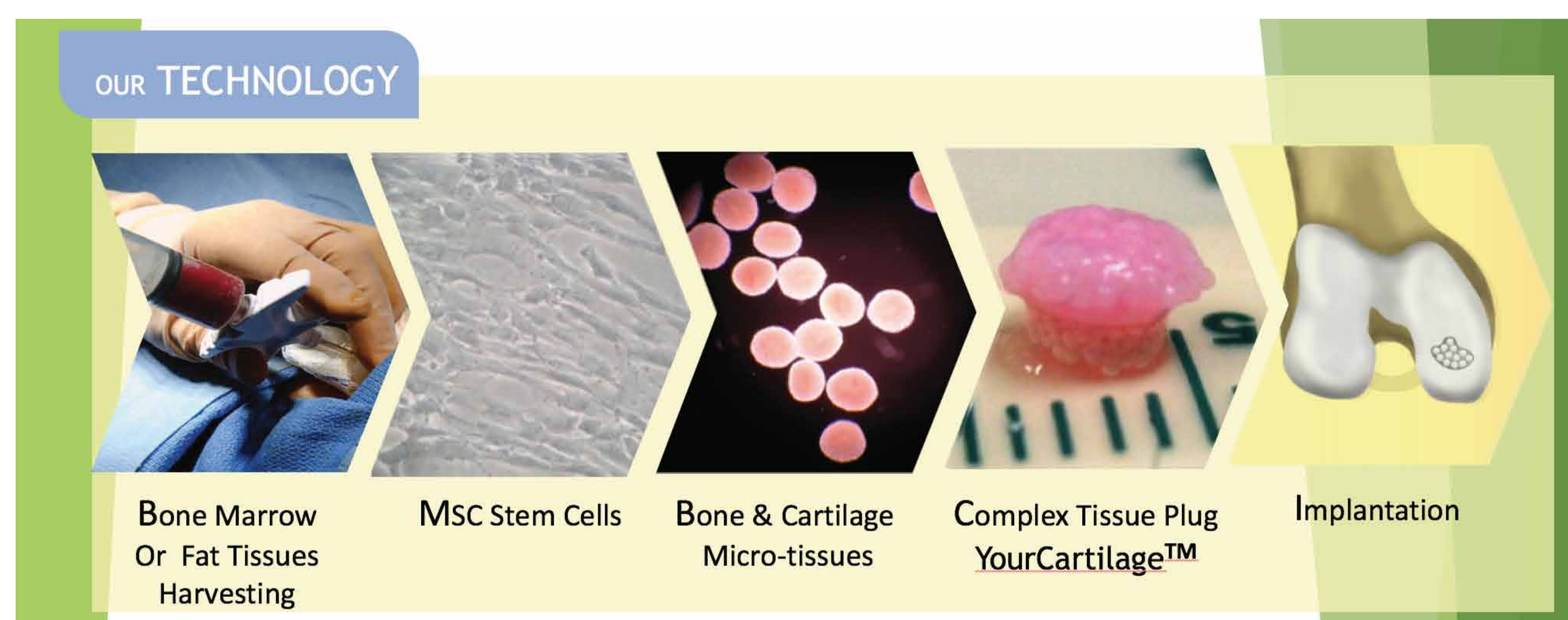


## OUR NEW TECHNOLOGY

A team of biomedical engineers at HKU led by **Professor Barbara P. Chan**, Associate Dean of the Faculty of Engineering, has developed a new cartilage regeneration technology to **grow cartilage tissues** out of cells taken from a patient's body. The cells, in particular stem cells extracted from a patient's bone marrow, can be grown into cartilage tissues of the shape and size fit for cartilage repairs and replacements.

This tissue-engineered cartilage-bone plug mimics the structural organisation of native cartilage bone tissues. The use of these regenerative complex tissue plugs will allow patients to have cartilage repairs without the need to transplant healthy cartilage from other parts of the joint.

The research team has established a start-up, **Living Tissues Company Limited**, at the Hong Kong Science Park to take this technology to its next stage of development and translate it into real applications. **YourCartilage™** is the 4th generation technology of Living Tissues, with 10 patents and 4 technology platforms.



## ADVANTAGES OVER EXISTING TECHNOLOGIES

At present, osteochondral autograft transplantation is recognised as the clinical gold standard for repairing cartilage. It involves harvesting a graft from a healthy part of the joint, and transplanting this autograft to replace the damaged cartilage. However, this procedure leaves the autograft donor sites injured that may lead to abnormalities including chronic pain and degeneration.

YourCartilage™ does not require sacrifice of a patient's healthy cartilage. The tissue-engineered cartilage-bone plug is grown outside the patient's body. The replacement parts generated by our new technology are fully biocompatible, so patients could be benefited from **faster healing**.

Clinical trials to apply this new technology in treating sports injuries and trauma will start soon. The ultimate goal is to develop this technology into the dominant method for cartilage repair and an **early intervention procedure** for osteoarthritis, which may prevent degeneration of the joint.



## FIND OUT MORE

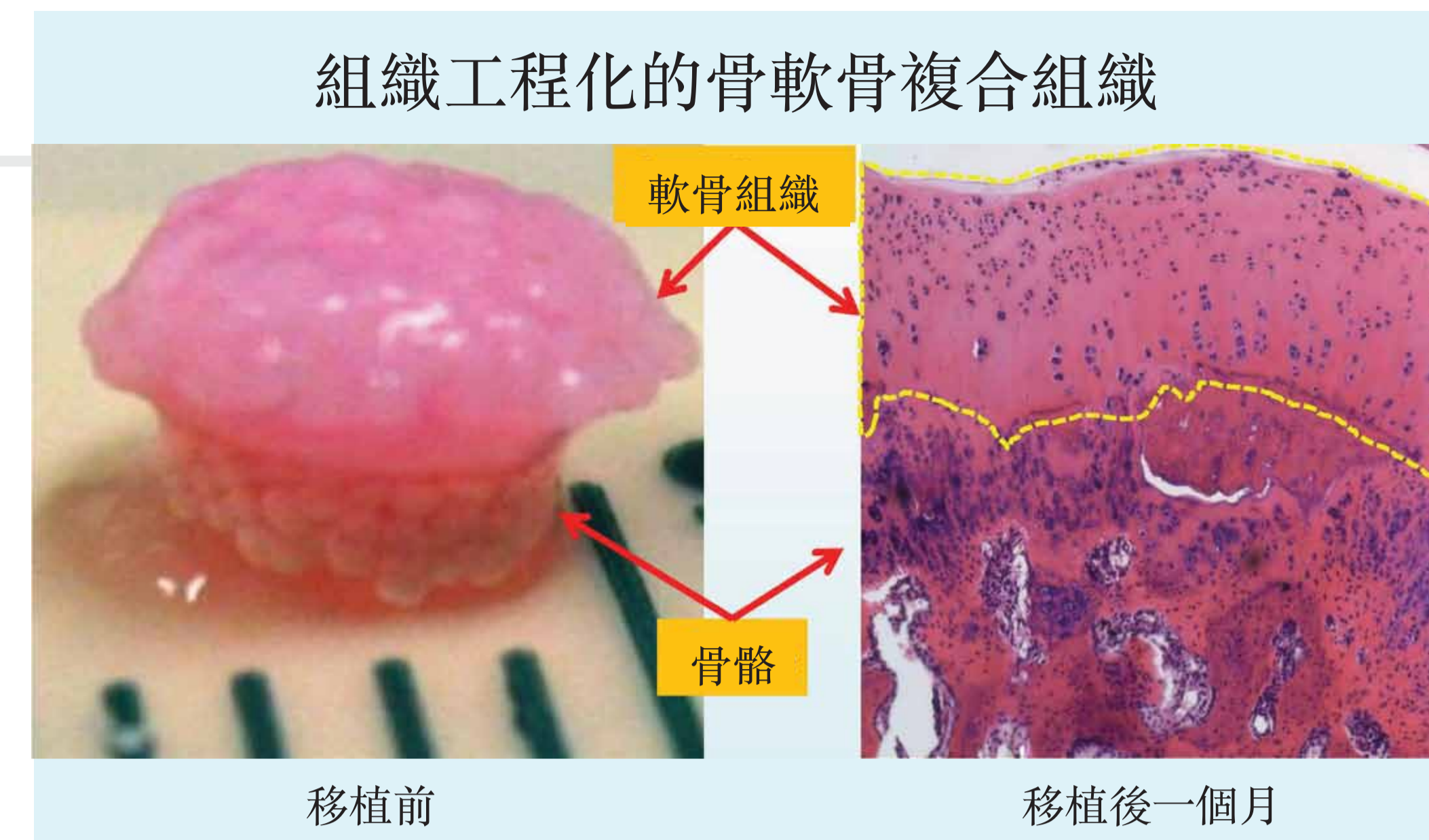
Living Tissues Company Limited: [www.livtis.com](http://www.livtis.com)





# 全新軟骨組織再生技術

我們研發尖端的軟骨組織再生技術，利用病人自身的幹細胞培植成軟骨組織，用作修補受損的軟骨組織。



## 當前需要

軟骨的功能是保護關節中的下層骨骼免受摩擦。軟骨組織損傷和相關的長期痛症在當今社會非常常見，骨關節炎、退化、創傷和運動損傷都可引致軟骨組織損傷。

據統計，65歲以上人士，有大約**40%**受到**軟骨組織損傷**的困擾，可能需要修補受損組織。軟骨組織無法進行自身組織修復，情況嚴重時，唯一的治療方法是全膝關節置換術，以人工關節取代人體關節組織。



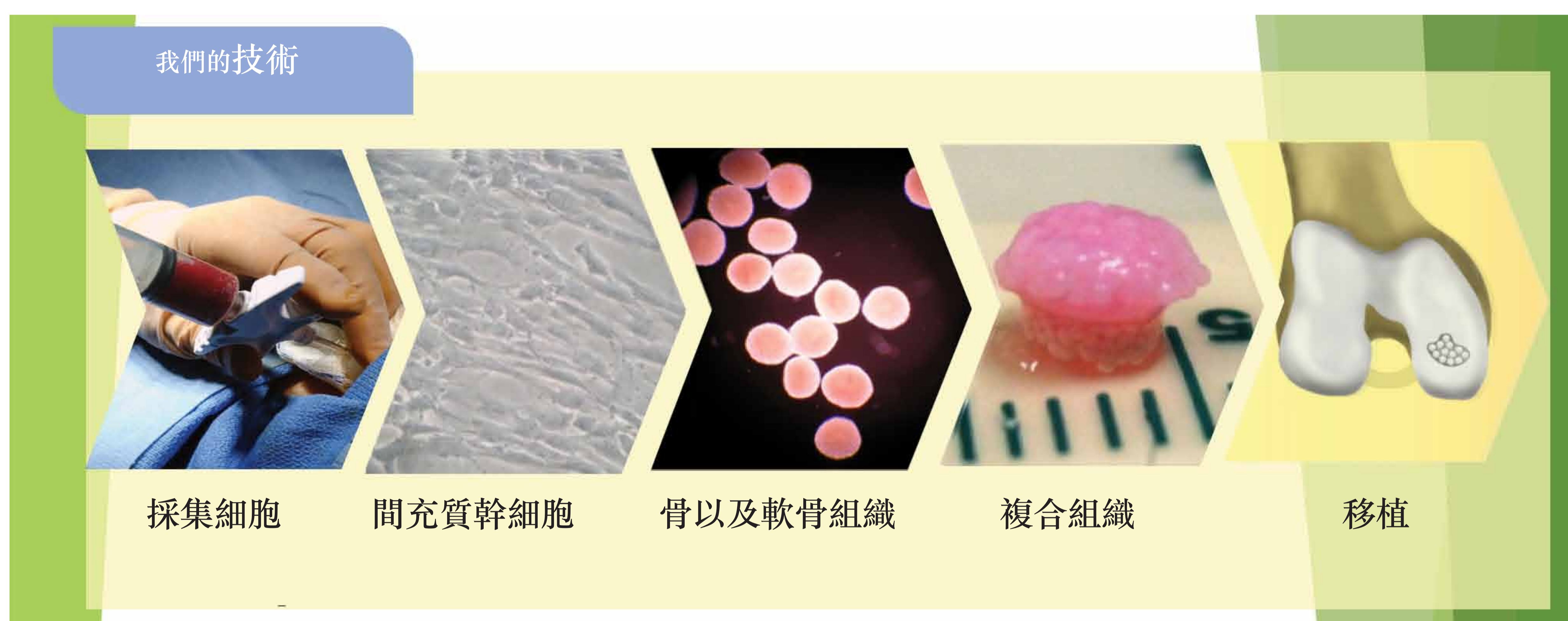
## 港大研發的新技術

由香港大學工程學院副院長**陳佩教授**領導的研究團隊，成功開發一套軟骨組織再生技術，利用自身的細胞，主要是骨髓中的幹細胞，培植全新的一套關節軟骨組織，並構建至適當的形狀大小，作為軟骨組織修復移植之用。

這種組織工程化的骨軟骨複合組織是模擬天然骨軟骨組織的結構，使用這些再生複合組織在病人自己身上，不需要從關節的其他部分摘取健康的軟骨組織作移植用途。



研究小組在香港科學園成立了**生命組織科技有限公司**(Living Tissues Company Limited)，致力將該技術進一步發展，並將其轉化為實際應用。**YourCartilage™**是生命組織科技有限公司的第四代技術，並擁有十項專利和四項技術平台。



## 相對優勢

目前臨床治療的金標準，是將整個受損組織用健康的軟骨移植體替代。這種「骨軟骨」自體移植療法，需要從病人關節的其他部位，摘取部分健康軟骨組織（供區組織）移植到受損的軟骨處。然而，這種療法會導致供區受損，並可能出現併發症，例如供區慢性疼痛以及組織退化。

YourCartilage™不需損傷到病人健康的軟骨組織。組織工程化的骨軟骨複合組織是利用病人自己的細胞在體外培植全新的軟骨組織，病人在手術後有望**更快康復**，而且沒有併發症。

這項新技術即將進入臨床測試階段，應用於與運動損傷和創傷的治療。研究團隊的目標，是希望發展這技術成為軟骨修復的主要療法，以及骨關節炎的**早期介入治療**，防止情況惡化。



## 了解更多

生命組織科技有限公司: [www.livtis.com](http://www.livtis.com)

