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**EXCLUSIVE**

**Breakthrough stem cell therapy gives hope to thousands**

# MIRACLE JOINT FIX

Picture: ALEX COPPEL

A STEM cell breakthrough pioneered in Melbourne has seen cartilage regrown, giving new hope to those suffering battered knees, hips, and other faulty joints.

In world-first human stem cell trials, cartilage in damaged knees has been regrown, halting and even reversing decades of damage wrought by degenerative conditions.

For patients such as surfer Ollie Thursfield (pictured) the success of the

Melbourne Stem Cell Centre's experimental therapy is fuelling dreams of doing without joint replacement surgery.

Early results show significant drops in pain and vastly improved function. Lead researcher Dr Julien Freitag said the potential of the treatment was exciting.

"This is not just promise — we are actually seeing the reality of stem-cell therapy now, which is exciting," he said.

**REPORTS, PAGES 6-7**



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## Melbourne medical researchers show new therapy may make joint replacements a thing of the past

# AUSSIES' STEM CELL MARVEL

STEM cells are being used to regrow damaged knee cartilage in world-first Melbourne trials it is hoped will make many joint replacements and other surgery unnecessary.

Doctors have halted damage caused by degenerative conditions, and even reversed it, in one of the first studies to use stem cells to rebuild cartilage in humans.

In initial results, half of those treated at Melbourne Stem Cell Centre saw a three-quarters reduction in pain and vastly improved knee function.

Two separate trials involving 70 patients have now shown stunning results.

Chief clinical investigator Dr Julien Freitag (inset) said the focus was on preventing, or at least delaying, the need for knee, hip and other joint replacements.

"The ability to see that the arthritis is not progressing is exciting — but to see reversal and regrowth in cartilage in some patients is incredibly exciting," Dr Freitag said.

"There are many avenues, not just within musculoskele-

### GRANT MCARTHUR HEALTH EDITOR

tal, where stem cell therapy may revolutionise medicine. This is not just promise — we are actually seeing the reality of stem cell therapy now, which is exciting."

The studies, done in partnership with Magellan Stem Cells and overseen by Monash and La Trobe universities, are the first Australian trials in which patients' own isolated and expanded mesenchymal stem cells have been injected into their own knee joints.

In one study, 30 osteoarthritis patients were given either stem cell treatment or a placebo, to see whether the cells halted damage or even rebuilt the knee.

A second study, on 40 patients with isolated cartilage lesions, tried to determine whether cells could stop normal joint deterioration

and a progression to arthritis.

The full results of the trials are yet to be published.

However, interim results out today show two-thirds of patients have experienced at least a halving of knee pain and movement restriction — improvements that were maintained beyond a year.

But the regrowth of cartilage in some patients was what astounded Dr Freitag — especially when an MRI image showed new cartilage filling a decade-long gap in 26-year-old Ollie Thursfield's knee.

"When you can visually see a structural change it is incredibly exciting, and that is the case for Ollie — which was a watershed moment," Dr Freitag said.

"It was one of those moments where all of the time and effort that has gone into this process has enormous reward, with one image."

Initial results have mirrored the

success of previous international trials, showing a much greater reduction in pain and an improvement in movement for those receiving the stem-cell treatment — to the extent that those in the placebo groups are now being offered the treatment.

But Dr Freitag said Melbourne Stem Cell Centre's data had shown the greatest improvements in patients with the most severe joint damage, where all cartilage was gone and there was bare bone.

This allowed a refinement of the technique.

"We are thrilled to be running some of the best research internationally, and achieving some world-first results," Dr Freitag said.

"We have also seen improvement in structure.

"Some patients have regrown a component of cartilage volume. In a progressive condition, to see a reversal is very exciting.

"We are also broadly seeing a minimal or lack of progression of their osteoarthritis." [grant.mcarthur@news.com.au](mailto:grant.mcarthur@news.com.au)





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## HOW IT WORKS

- Using liposuction, the team remove 40g of fat from each patient, which contains between one per cent and seven per cent of mesenchymal stem cells.
- The cells are then isolated from the fat over four weeks and expanded so that they multiply into between 20 million and 100 million stem cells.
- A sample of the stem cells are then sent to Monash University to check to ensure they reach international standards to be regarded as stem cells, as well as a second test to ensure they are sterile and safe for a human patient.
- The mesenchymal stem cells are injected into the patient's knee.
- Initial results show half of patients receiving the treatment reported 75 per cent improvement in pain, and two-thirds of patients reported at least 50 per cent pain relief.
- Melbourne Stem Cell Centre's data indicates the greatest results occur in patients with the most severe joint damage where stem cells can build cartilage on bare bone.



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Ollie Thursfield, a keen surfer until a degenerative knee condition made that impossible, celebrates the effects of revolutionary stem cell therapy.

Picture: ALEX COPPEL

