

## **Smashing the time it takes to repair our bones**

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New research by Queensland University of Technology is helping scientists better understand how bone cells work and may one day lead to the development of technology that can speed up the time it takes to heal fractured and broken bones.

QUT recent graduate Dr Gwynne Hannay has built a gadget capable of promoting bone cell formation in the laboratory.

Dr Hannay said his device replicated the mechanical and electrical stimulants which occurred naturally in the body to repair fractured and broken bones.

"This device is about trying to grow bone tissue in the same environment our body grows bones. I have taken bone cells and put them in the physical environment they would experience in the body, and then varied the stimulants to extract a beneficial environment for tissue growth," he said.

Dr Hannay's research has advanced the understanding of how bone cells can be stimulated to heal factures and has for the first time combined the artificial reproduction of both mechanical and electrical stimulants.

"Previous research has looked at both of these stimulants individually, but not together, neglecting the fact that both are occurring in normal healthy bone during fracture healing"



He said by combining the two stimulants, a synergistic effect was produced.

"That means when you apply both the mechanical and electrical stimulants together a result greater than the sum of the two stimulants applied individually is achieved. It creates a greater output," he said.

Dr Hannay said that unfortunately when bones fractured or broke, especially in older people, the healing process could stall.

"We find bones can get half way through the healing process but won't heal properly and with an aging population this is a growing problem for orthopaedic surgeons to accommodate and one that is not easily solved with current methodologies," he said.

"In the future we might be able to make a device utilising these combined stimulants that could be attached to the body and help heal the bone."

Additionally, normal fractures that would otherwise heal successfully could be accelerated with the use of these stimulants.

Dr Hannay said normal fractures in young, healthy people took approximately six to eight weeks to heal.

"It might be possible to significantly reduce the healing time. That would be the goal."

Dr Hannay graduated from QUT with a PhD from the Faculty of Built Environment and Engineering.

Source: Queensland University of Technology



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