



Helping animals to get well soon

► Carbon nanotube based textiles for tissue regeneration in animal patients

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The growth of the pet industry in the UK and advances in veterinary medicine mean that referral veterinary practices are now performing joint replacement operations on cats and dogs on a weekly basis. This IAA project has demonstrated a new technique for growing cartilage which could reduce the cost of surgery and speed up rehabilitation for animal patients.

The project focused on the creation of a new textile made by weaving together fibres of carbon nanotubes, and has demonstrated that it is possible to grow canine cartilage cells on this type of textile.

The technology has the potential to revolutionise joint replacement surgery (used when animals develop conditions such as arthritis). Since the carbon nanotube textile has a 3D structure rather than a flat structure, it can be wrapped around an animal's joint during surgery, enabling the cartilage to be repaired quickly and reducing discomfort for the animal.

While the research to date has focused on cartilage cells, the technique could also be used to grow other types of cells, potentially opening up applications such as bone repair after the removal of a tumour, and tissue and bone growth following amputation.

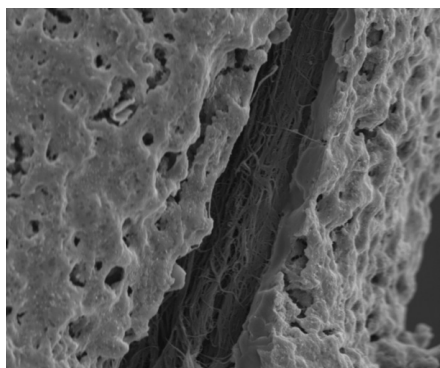
The project has drawn on expertise from both Surrey's Department of Physics and its School of Veterinary Medicine, and has been conducted in close collaboration with Fitzpatrick Referrals. Bringing together a

multidisciplinary team to develop innovative solutions to improve both animal and human healthcare, the project is strategically aligned with the One Health – One Medicine focus of the University.

Dr Rebecca Lewis explains: "We have demonstrated that carbon nanotube textiles provide an environment where cartilage can be grown. The next stage will be to experiment with manipulating the textile in order to get the cells to produce better cartilage. Cartilage grows best when you have healthy levels of joint movement, so it's about manipulating the textile to mimic this."

Dr Izabela Jurewicz says:

"Since textiles can be produced fairly cheaply, this technology could lead to less expensive treatments, as well as providing a better repair mechanism for animals."



CNT textile coated in cartilage

