

Stratified bioprocesses for the manufacture of acellular scaffolds

Our aim

Our aim is to develop bioprocesses for the manufacture and production of acellular biological scaffolds for bone and cartilage repair. These scaffolds will have a range of different properties and will, through our stratified design and simulation processes, be better matched to patient and surgical needs.

The **academic partner** leading this project is the University of Leeds (Ingham, Fisher, Wilcox). **Collaborators** will be NHS Blood & Transplant and Tissue Regenix PLC.

This project has two **research challenges**: (1) To determine and control the variation in the manufacturing bioprocess for acellular bone and cartilage scaffolds, producing a product range which can be matched to surgical and patient needs. (2) Applying stratified design and simulation methods to match the properties of the acellular scaffold to the patient, based on functional performance.

Our approach

This project will **focus** on the manufacturing challenges of the next generation of products for bone and cartilage repair.

We will **determine**:

- > The effect of different source materials (animal or human tissue and different body sites) on the properties of the scaffold;
- > The effect of variation in process conditions on the scaffold's properties;
- > The effect of different terminal sterilisation methods on the scaffold.

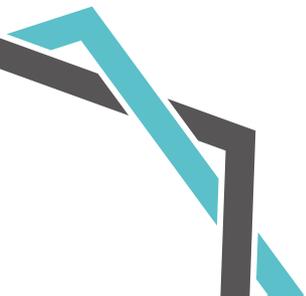
We will **define**:

- > A portfolio of manufacturing processes that produce a stratified product range for bone and cartilage scaffolds;
- > The repeatability of the defined processes for each product.

We will **apply** stratified design and simulation methods to provide guidance on the matching of scaffold properties to the surgical procedure and the patient, to ensure enhanced performance and reliability.

What we want to achieve

1. Quantification of the effect of variation in source materials on scaffold properties.
2. Quantification of the effect of changes in process conditions on the scaffold's properties.
3. A suite of different bio-manufacturing processes to produce a product range.
4. Quantification of the process's reliability and variation in product properties.
5. A stratified approach for enhanced reliability, matching patient needs.



Join our community

The MeDe Innovation Network exists to provide support to the medical device sector, including academic, industry and clinical members. As a member of the Network, you will benefit from:

- > access to information about manufacturing research, from our Centre's research outputs, international partnerships, and clinical centres in medical device innovation throughout the UK
- > access to Technology Roadmapping techniques to help shape and inform future research needs
- > updates on sector news and events, through e-newsletters, network events and an annual conference
- > access to commercial opportunities arising from our work with the Medical Technologies Innovation and Knowledge Centre
- > being part of an influential contributor to the UK medical device landscape
- > marketing opportunities to highlight your organisation's news and events on the MeDe Innovation website

Dissemination of research and moving it along to adoption and commercialisation is central to our mission and we value input from those working across the medical device sector in the UK. The network aims to not only inform, but also to connect, enabling businesses, policy makers, academics and clinicians to share information, knowledge and ideas and debate the challenges and issues facing the community.

Membership is free and it's easy to join – contact us now.

Contact us

MeDe Innovation The EPSRC Centre for Innovative Manufacturing in Medical Devices

c/o Institute for Medical & Biological Engineering,
University of Leeds, LS2 9JT

+44 (0)113 343 0923
mede-innovation.ac.uk
info@mede-innovation.ac.uk
🐦 @MeDe_Innovation