



Dr Angela Sherry
Northumbria University



Dr Jane Scott
Newcastle University
POC202015 – a joint cross-disciplinary
collaborative project of £100k



Fibre Highways: Translocation of the microbiome for pollutant bioremediation

'The support the EBNet PoC Award provided really was very useful to both mine and Jane's research profiles as ECRs forging independent careers in new roles at new institutions at the time of the award. We've successfully navigated the challenges of not really speaking each other's languages in the beginning to producing interdisciplinary research outputs, which we're both very proud of and we continue to work closely together. The Award continues to act as a springboard. It has led to further discussions between academia and industry, and enabled us to secure more funding and employ researchers to explore new avenues around the original PoC research ideas'. Dr Angela Sherry

PROJECT

The research combined expertise in environmental molecular microbiology and material and textile science to demonstrate translocation of the microbiome along 'fungal or fibre highways' to facilitate pollutant biodegradation.

Demonstrating the directional movement and dispersal of microbes enabled a deeper understanding of the interactive dynamics of motility in hydrocarbon-degrading multispecies microbiomes along fungal mycelium and natural/synthetic fibres, with multiple potential areas of application such as the bioremediation of environmental pollutants.

It is hoped the study will ultimately lead to development of environmentally responsive textile systems, composed of natural and sustainable materials, that could be used to increase the contact time of microbes with the pollutant for more efficient bioremediation, or to 'seed' polluted sites with microbes.

IMPACT

The Fibres Highways design collection was exhibited at the prestigious 12th International Design Biennale Saint-Étienne, France. Dr Jane Scott was Lead Co-ordinator and organiser of the 3-day hybrid ARCINTEX Symposium. After the project finished, Jane and Angela continued to evolve the research together and secured funding for joint supervision of a researcher in microbial: textile interactions at Northumbria University.



OTHER FUNDING

1. Enzymatic upcycling of textile waste into biodegradable mycelium leather. PI Dr Paul James, Co-I Dr Jane Scott. Northumbria University. £303,297. Feb 2023 - 2025. BBSRC. BB/X01133X/1
2. Fibre Fusion: Circular Manufacturing of Water Repelling Bacterial Cellulose Through a Biological Approach. PI Dr Meng Zhang, Co-I Dr Jane Scott. Northumbria University. £302,929. Feb 2023 - 2025. BBSRC. BB/X011402/1

PUBLICATIONS:

Biohybrids: Textile fibres provide scaffolds and highways for microbial translocation By: Angela Sherry, et al.

In: *Front. Bioeng. Biotechnol.*, 13 June 2023 Sec. *Biomaterials* Volume 11 – 2023

BioKnit: development of mycelium paste for use with permanent textile formwork By: Romy Kaiser et al.

In: *Front. Bioeng. Biotechnol.*, 14 July 2023 Sec. *Biomaterials* Volume 11 – 2023

[YouTube: Fibre Highways 2021 - Microbial Textiles for Remediation](#)

