Elliot Johnson-Hall

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Personal Statement

As an anatomist by training, I believe I bring a particular structured way of thinking about how tissues assemble to the field of tissue engineering. Through my dissection-based experience, I have observed the complex architecture of the musculoskeletal system first-hand which has resulted in my keen interest in working within this emerging area. I am a particularly keen to work with osteochondral tissues, both in health for *in vitro* models and in osteoarthritic diseased with a view to producing personalised, tissue-engineered constructs for implantation.

I am also fascinated by the possibilities of additive manufacturing and am a keen 3D printing enthusiast. I used my experience with this technology to produce constructs with a dynamic rigid-compliant interface for seeding with osteoblasts in the lab for my undergraduate project. By being able to design and produce prototypes rapidly, and iteratively I was able to achieve tensile properties similar to human tendons found *in vivo*. These skills, combined with my anatomy and developmental biology experience leads me to believe I can offer a fresh perspective to the field of musculoskeletal tissue engineering.

Additionally, I am a keen advocate for science outreach and communication to increase the inclusivity of science. During my time in Edinburgh I participated in anatomical outreach events at the National Museum of Scotland with the university. Moreover, I was heavily involved in a leadership role with the founding of a student STEM outreach society called Hands-On. I oversaw the growth of the society to 60 members and delivering multiple outreach events in local schools. I am also a STEM ambassador actively looking for volunteering roles in my area.

Education

Sep 2023 - Aug 2024 **University of Bristol - MRes Health Sciences Research**

Sep 2020 - May 2023 **University of Edinburgh - BSc (Hons.) First Class in Anatomy & Development**

Dissertation: *Multi-material additive manufacturing to recapitulate the osteotendinous enthesis: an exploration of tensile properties and cytocompatibility.*
    Supervisor: Dr Jennifer Z Paxton

Short Courses

University College London - Introduction to Statistics & Research Methods

University of Edinburgh - Developing Your Data Skills

Awards & Prizes

- Most distinguished scholar in Clinical Biochemistry & Endocrinology 3

Confrences

- Anatomical Society Summer Meeting 2023, Bangor. Invited oral presentation on undergraduate research project.

Research Interests

Musculoskeletal & osteochondral tissue engineering; 3D cell culture; additive manufacturing; bioinks & bioprinting; cell-instructive biomaterials; bioreactors for mechanical cellular stimulation; interfacial tissue engineering.

Research Experience

- Currently working on a manuscript for publication about the effects of Covid-19 restrictions on contraceptive prescribing in Scottish general practices.

- 12 week undergraduate research project involving mammalian 2D cell culture, additive manufacturing, fluorescence microscopy, cytotoxicity assays, and tensile strength testing.

Skills

Cell culture: Primary mammalian cell culture; cytotoxicity, cell adhesion, and cell viability assays; phase-contrast & epi-fluorescence microscopy.

Data analysis: Proficient in R, including the tidyverse, for large (10s of millions of rows) data analysis.

Programming: Familiar with Python, Arduino IDE, LaTeX.

Figure compilation: Adobe Illustrator & Photoshop; BioRender; ImageJ & FIJI.

Additive manufacturing: skilled in multi-material FDM; Ultimaker Cura, Prusa Slicer; Autodesk Fusion 360 CAD.

Anatomical skills: cadaveric dissection.

Learned Society Memberships

Early Career Member of the Anatomical Society; Member of TERMIS; Member of the UK Society for Biomaterials; Member Tissue and Cell Engineering Society.