

Rawiya Al Hosni

London, UK | rawiya.hosni.14@ucl.ac.uk, rawiya.alhosni@gmail.com | +447593593426 |
www.linkedin.com/in/rawiya-alhosni

EDUCATION

University College London (UCL)

November 2015 – 2020

PhD: Defining biochemical and biophysical cues that direct stem cell behaviour (2020)

Supervisors: Prof. Umber Cheema and Dr. Scott Roberts

- Developed technology that can be used to identify and optimise biochemical and mechanical factors in relation to skeletal stem cell characteristics. Using RNA Sequencing and bioinformatic analysis, soluble mediators of stem cell proliferation and potency were identified.
- To develop an in depth understanding of the cells highly specialised microenvironment to deduce the mechanotransductive signals and physiological cues associated with regulating the skeletal progenitor identity and potency from mesenchymal stromal cells.

University College London (UCL)

September 2014 – November 2015

MSc: Biomedical Science (Pass)

- **Dissertation (First Class):** Lab based project engineering a biomimetic periosteum scaffold for bone repair.

University of Kent

September 2011 – June 2014

BSc (Hons): Biomedical Science (Upper Second Class 2.1)

- **Dissertation (First Class):** Literature review exploring the untapped potential in the development of steroid resistant COPD and severe asthma therapies.

PUBLICATIONS AND AWARDS

Al Hosni R, Shah M, Cheema U, Roberts HC, Luyten FP, Roberts SJ. Mapping human serum-induced gene networks as a basis for the creation of biomimetic periosteum for bone repair [published online ahead of print, 2020 Jun 7]. *Cytotherapy*. 2020; S1465-3249(20)30513-2.

Vas WJ, Shah M, **Al Hosni R**, Owen HC, Roberts SJ. Biomimetic strategies for fracture repair: Engineering the cell microenvironment for directed tissue formation. *J Tissue Eng*. 2017;8:2041731417704791.

UCL Arena One Associate Fellow for Higher Education (June 2020)

ACADEMIC CONFERENCE AND COURSE ATTENDANCE (POSTER PRESENTATIONS)

Tissue and Cell Engineering Society (TCES) 2017 (London, UK): ‘Preserving Periosteal Stem Cell Characteristics through Human Serum Mimetics.’

European Molecular Biology Organization (EMBO) 2018 (Singapore): ‘Preserving Periosteal Stem Cell characteristics through Human Serum Mimetics.’ [Updated research]

Tissue and Cell Engineering Society (TCES) 2019 (Nottingham, UK): ‘Association of Environmental Cues with Mesenchymal Stem Cell Fate.’

Basic Course in Bone and Cartilage Biology and Disease 2019 (Bone Research Society, University of Sheffield, UK).

SKILLS

Laboratory Skills:

- Extensive mammalian cell culture experience with primary and immortalised mesenchymal stromal cells and an osteosarcoma cell line (MG63). Including generation of 3D cultures with collagen type 1 matrices (RAFT Protocol) and decellularized periosteum to improve stem cell potency.
- Conducted stem cell differentiation along the adipogenic, chondrogenic and osteogenic lineages. These assays were optimised for different stem cell populations and subsequently stained for positive differentiation using Oil Red O, Alcian Blue and Alizarin Red, respectively.
- Molecular Biology: Primer sequencing, DNA and RNA isolation and quantification optimised for 2D and 3D samples (using various methods and kits). cDNA synthesis and gene expression analysis using qPCR. Conducting sample preparation and analysis of microarrays.
- Analysed RNA Sequencing data (using Ingenuity Pathway Analysis) to examine signalling networks regulating periosteum derived cell (PDC) potency. This was used to develop a defined growth medium for PDC expansion, *in vitro*.
- Metabolic assays: LIVE/DEAD, Presto Blue Reagent.
- Flow cytometry to identify cell populations expressing differentially regulated surface markers.
- Utilised immunofluorescence microscopy and western blot techniques for detecting protein levels.
- Conducted histological analysis (sample processing, embedding and staining) and Immunohistochemistry.
- Tissue decellularizing: periosteum and cartilage tissue decellularization.
- Tissue digestion, primary cell extraction and human serum isolation.
- Conducted material stiffness measurements using Atomic Force Microscopy and Rheology.

Research presentations and collaborations:

- Presented my research at multiple national and international conferences as detailed above.
- Collaborated on a research project with UCB Pharma Ltd. Respective publication currently under review.
- First author on a published manuscript detailing my research, as previously mentioned.
- Currently drafting a second first author manuscript detailing my PhD research.
- Currently conducting a systematic review to assess the efficacy of existing preclinical models of stem cell therapy.

Teaching and supervising in higher education:

- Co-supervised and provided scientific support to 2 MSc students and a BSc student in experimental design, execution, analysis, data interpretation, support in statistical analysis and data presentation. Projects focused on developing *in vitro* osteosarcoma and colorectal cancer models and understanding regulators of mesenchymal stromal cell fate.
- Demonstrated the histology of bone and cartilage practicals for medical students under Prof. Tim Arnett's supervision at UCL.
- Associate Fellow of the Higher Education Academy, 2020. Post graduate teaching assistant-conducted extensive number of tutorial sessions and laboratory demonstrations over the course of my PhD to medical and biomedical students.

Computing skills:

- Prism 8 Software, GIMP (image manipulation), ImageJ, Flow-Jo.
- Microsoft office to generate reports and presentations.
- Mendeley and Endnote (reference manager).

Languages: English (fluent), Swahili (fluent spoken), French & Arabic (intermediate)

INTERESTS

Being active during my PhD has been a great way to relieve off the intense nature involved with academic research. My 5 am starts to weight lift and swim has taught me discipline, time management and commitment to seeing through goals be it large or small. During my spare time my sketch book gets pulled off the shelf. Drawing has always been a passion of mine which has allowed me to explore all forms of art. With limited ability to maintain a routine and expend my creativity during the lockdown, I have indeed developed a passion for gardening. Embarking on this new journey and learning all the tips and tricks it takes to keep my plants alive has been very rewarding and fulfilling.

REFERENCES

Prof. Umber Cheema
Division of Surgery and Interventional Sciences
University College London
Gower Street, London, WC1E 6BT, UK.
Email: u.cheema@ucl.ac.uk

Dr. Scott Roberts
Senior Lecturer in Translational Skeletal Research
Department of Comparative Biomedical Sciences
Royal Veterinary College
Royal College Street, London, NW1 0TU
Email: sjroberts@rvc.ac.uk