BRITISH COUNCIL

RESEARCHER LINKS

Newton Fund

Research Profile

Name: **Dr Chao Li**
Position: **Research Associate**
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SUMMARY OF MY RELEVANT RESEARCH AREAS:

Brief summary of your research areas, in English *just a short paragraph please*

High-Throughput Chondrogenesis Screening of Small Molecules in Human Mesenchymal Stem Cells (HMSCs)

Brief summary of your research areas, in Chinese *we will translate this for non-Chinese speaking UK participants*

在间充质干细胞中高通量筛选成软骨发生小分子化合物

Primary Research interests: *A fuller description of your main research areas.*

Dr Chao Li obtained his PhD in Cell Biology from the Sun Yat-sen University, also known as Zhong shan University (Guang Zhou, China). He began working with stem cells and gene targeting as a post-doctoral associate at the University of Edinburgh and then joined Anthony Hollander's group to develop assays for high-throughput chondrogenesis screening of small molecules in human mesenchymal stem cells (HMSCs) at the University of Liverpool.

Human mesenchymal stem cells (HMSCs) hold great promise in the regeneration of cartilage lesions. However, despite the fact that HMSCs have been used to generate chondrocytes *in vitro* and for the tissue engineering of cartilage, they have only rarely been used clinically in regenerative medicine. This is because scaled up procedures for the routine production of implantable cartilage of consistently high quality remains a significant challenge, in part because of the lack of standardised markers for isolation of a functional cell population optimised for chondrogenesis. Our group recently identified ROR2 (receptor tyrosine kinase like orphan receptor 2) as a cell surface marker that is upregulated on those bone marrow-derived HMSCs most able to undergo chondrogenic differentiation. I am studying the biology of these unique stem cells and seeking to develop a high throughput screening method using upregulation of ROR2 gene expression to identify novel chondrogenic molecules.

Topics in which you would like to develop collaborative research:

Please indicate here research areas for which you would like to find partners to undertake joint research.

Treatments of OA developed primarily by researchers from biological or clinical sciences, who prefer the cell-based treatments. Input from colleagues trained in engineering has been modest. This situation must change, if I am to take full advantage of the power of modern engineering technology to design the biomaterials of the future. I study the fundamental biology of stem cells and tissue engineering. But I am also interested in cell-free product that supports the regeneration of articular cartilage and bone tissue.

Science Bridges China
www.sciencebridgeschina.com
中英科技桥

MeDe Innovation
EPSRC Centre for Innovative Manufacturing in Medical Devices

Relevant existing collaborations (academic/clinical/commercial) inside or outside China.
Include here any relevant collaborations you have

The UK Regenerative Medicine Platform (UKRMP) Niche Hub
It is composed of 8 partner institutions with 21 principal investigators (PIs) and 10 Post-Doctoral Research Assistants (PDRAs) from University of Edinburgh (MRC Centre for Regenerative Medicine), University of Cambridge, Imperial College London, Keele University, Kings College London, University of Manchester and University of Strathclyde

Relevant graphics, figures, pictures:
Use this area to show pictures or scientific figures which illustrate your research

Fig 1. Generation of ROR2 reporter human mesenchymal stem cells (HMSCs) for high –through chondrogenesis screening

Fig 2. Multiplex qRT-PCR assay for high-throughput chondrogenesis screening small molecules in human mesenchymal stem cells (HMSCs)

Fig 1.

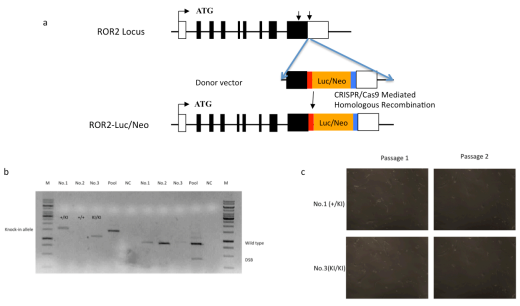
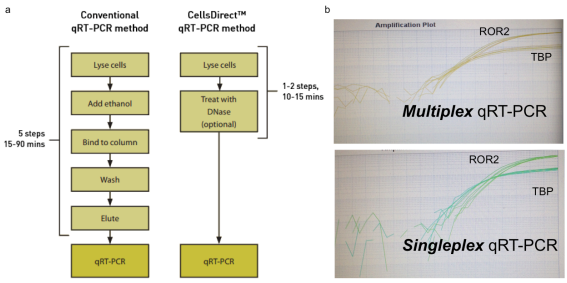


Fig 2.



Publications and other outputs relevant to your interest in this programme (up to 5)
Please give references to your key recent research publications

1. Liu L, Bailey SM, Okuka M, Muñoz P, **Li C**, Zhou L, Wu C, Czerwiec E, Sandler L, Seyfang A, Blasco MA, Keefe DL. (2007). "Telomere lengthening early in development." Nat Cell Biol **9**(12): 1436-1441.
2. Liu L, Okuka M, **Li C**, Zhou L, Wu C, Keefe D L, Yang X. (2008) . "Telomere reprogramming early in development and cloning." Cell Research **18**:s18. doi: 10.1038/cr.2008.108
3. **Li C**, Chen Z, Liu Z, Huang J, Zhang W, Zhou L, Keefe DL, Liu L. (2009). "Correlation of expression and methylation of imprinted genes with pluripotency of parthenogenetic embryonic stem cells." Hum Mol Genet **18**(12): 2177-2187.
4. Myant K, Termanis A, Sundaram AY, Boe T**, Li C**, Merusi C, Burrage J, de Las Heras JI, Stancheva I. (2011). "LSH and G9a/GLP complex are required for developmentally programmed DNA methylation." Genome Res **21**(1): 83-94.
5. **Li C**, Katopodi T, Brady K, Salerno A, Hollander A. (2016). "Validation of One-step Reverse Transcription RT-qPCR for High–Throughput Screening of Small molecules in Human Mesenchymal Stem Cells." Cartilage (Accepted)