

Polskie Towarzystwo Biofizyczne Oddział w Łodzi

oraz

***Katedra Biologii Nowotworów i Epigenetyki, Instytut Biofizyki
Wydział Biologii i Ochrony Środowiska, Uniwersytet Łódzki***

zapraszają wszystkich pracowników, doktorantów i studentów na wykład:

***„Convergence of Embryonic and Mesenchymal Stem Cell Science As New
Paradigms for One Regenerative Health”***

który wygłosi

Dr Paul De Sousa

**Centre for Clinical Brain Sciences, University of Edinburgh,
Stroma Therapeutics Ltd
Edinburgh, United Kingdom**

**w dniu 15 marca 2023 r. (środa) o godz. 10:00
na Wydziale Biologii i Ochrony Środowiska Uniwersytetu Łódzkiego
ul. Banacha 12/16, Budynek A, Aula A (niski parter)**

Dr Paul De Sousa zajmuje się biologią rozwoju i biologią komórek macierzystych. Prace Jego obejmują zarówno badania podstawowe, jak również badania translacyjne i wdrożeniowe. Od 2021 roku współtworzy firmę biotechnologiczną Stroma Therapeutics skupiając się na opracowaniu innowacyjnej technologii wytwarzania mezenchymalnych komórek macierzystych (MSC) z pluripotencjalnych komórek macierzystych (iPSCs) oraz ich wykorzystania w leczeniu degeneracji tkanek indukowanych procesami starzenia się organizmu. Pełni także honorową funkcję w Centrum Badań Klinicznych Mózgu (<https://www.ed.ac.uk/profile/dr-paul-de-sousa>). Jest autorem ponad 100 publikacji naukowych oraz nagrodzonych patentów z dziedziny technologii zarodków i komórek macierzystych. Bottom of Form

Over the last 25 years, cross-species advances in developmental and stem cell science and ancillary technologies to cultivate, characterise and genetically modify cells has yielded tangible accomplishments in capabilities to manufacture and utilise differentiated cell products and tissues which replicate those formed naturally. These have been used to advance discovery informing the understanding of disease, and to innovate new therapeutic interventions for conditions not otherwise treatable by the state of the art medical practices that are now entering or currently under clinical evaluation. Collectively, these advances enable a next generation of opportunities for One Regenerative Health that balance and sustainably benefit the health of all living systems – humans, animals and the environment. One such opportunity lies at the convergence of embryonic and mesenchymal stem cell science. Here, embryonic and induced pluripotent stem cells can serve as scalable sources of developmental mesenchymal cells and derivatives such as muscle. These can serve to both treat and model muscle wasting in humans and animals, thereby improving health span in ageing, and in the manufacture of cultivated

animal meat, as an alternative to conventional livestock whose associated carbon emissions have significant environmental impact. In this presentation we discuss the science, achievements and challenges to realise these opportunities.



Curriculum Vitae

Paul Alexandre De Sousa

Portuguese, British, Canadian National

*Co-Founder, CEO, CSO, Stroma Therapeutics, Blue Square Offices,
272 Bath Street, Glasgow, Scotland, UK, G2 4JR*

*Honorary Reader, Centre for Clinical Brain Sciences, University of
Edinburgh, Chancellors Building, 49 Little France Crescent,
Edinburgh, EH16 4SB, UK.*

Education

1982-1986 Bachelors of Science (Hons), Human Biology & Zoology, University of Toronto

1986-1988 Master of Science, Developmental Biology, University of Toronto

1989-1993 PhD, Developmental Biology, University of Western Ontario

Post-Doctoral Training

1993 Samuel Lunenfeld Institute, University of Toronto

1994-1995 Department of Biology, University of Pennsylvania

1995-1998 Departs of Physiology, Obstetrics & Gynaecology, Univ of Western Ontario

Professional Appointments

1998-2005 Group Leader, Roslin-Geron Biomed, Roslin Institute, Scotland, UK.

2005- Senior Lecturer – Reader – Honorary Reader, Centres for Regenerative Medicine and Clinical Brain Sciences, University of Edinburgh, Scotland, UK.

2005-2021 Co-founder, Chief Scientific Officer, Executive Director, Roslin Cells Ltd, Scotland, UK.

2006-2016 Co-founder, Chief Scientific Advisor, Non-Executive Director, Roslin Cellab Ltd, Scotland, UK.

2016-2019 Co-founder, Chief Scientific Advisor, Non-Executive Director, Censo Biotechnologies, Ltd, Scotland, UK.

2020- Co-founder, Chief Executive Officer, Chief Scientific Officer, Stroma Therapeutics Ltd, Scotland, UK

Major Advisory Roles

2012-2013 Safety of Treatments for Mitochondrial Disease, Human Fertilisation and Embryology Authority, UK

2013-2021 Safety of Blood, Tissues and Organs, Department of Health, UK

Peer Reviewed Publication Metrics

| | |
|----------------------|----------|
| Original Research | 78 |
| Review & Opinions | 26 |
| <u>Book chapters</u> | <u>9</u> |
| Total | 113 |

Grant Metrics (2005-Present)

| GRANTS | # | Est. Total (£~€) |
|--------------------|----------|-------------------|
| Lead | 8 | 4,500,000 |
| <u>Contributor</u> | <u>7</u> | <u>51,000,000</u> |
| Total | 15 | 55,500,000 |

Publications (Selected)

Stegg R, Mueller SC, Mah N, Jolst B, Cabrera-Socorro A, Stacey GN, De Sousa PA, Courtney A, Zimmerman H. (2021) EBiSC best practice: How to ensure optimal generation, qualification and distribution of iPSC lines. *Stem Cell Reports* 16 (8): 1853-67.

De Sousa P.A.*, Ritchie D., Green A., Chandran S., Knight R., Head M.W. (2019) Renewed assessment of the risk of emergent advanced cell therapies to transmit neuroproteinopathies. *Acta Neuropathologica* 137 (3): 363-377. DOI 10.1007/s00401-018-1941-9

Koutsouraki E., Pells S., De Sousa, P.A. (2019) *Sufficiency of hypoxia inducible 2-Oxoglutarate dioxygenases to block chemical oxidative stress induced differentiation of human embryonic stem cells.* *Stem Cell Research* 34, 101358. <https://doi.org/10.1016/j.scr.2018.11.019>

De Sousa PA*, Steeg R., and EBiSC consortium (2017) Rapid establishment of the European Bank for Induced Pluripotent Stem Cells (EBiSC) – the hot start experience. *Stem Cell Research* 20: 105-114.

Willoughby N.A., Bock H., Hoeve M.A., Pells S., Williams C., McPhee G., Freile P., Choudhury D., De Sousa P.A.* (2016) A scalable label-free approach to separate human pluripotent stem cells from differentiated derivatives. *Biomicrofluidics* 14;10(1):014107. doi: 10.1063/1.4939946.

De Sousa PA, Downie JM, Tye BJ, Bruce K, Dand P, Dhanjal S, Serhal P, Harper J, Turner M, Bateman M. (2016) Development and production of good manufacturing practice grade human embryonic stem cell lines as source material for clinical application. *Stem Cell Research* 17:379-390.

Pells S.C., Koutsouraki E., Morfopoulou S., Valencia-Cadavid S., Malinowski A.R., Riddoch R. Tomlinson S.R., Kalathur R., Futschik M.E., De Sousa P.A. (2015) Identification of novel epigenetically-conserved biomarkers of human embryonic stem cells critical for maintenance of an undifferentiated state. *PLOS ONE* Jul 7;10(7):e0131102. doi: 10.1371/journal.pone.0131102.

Ermakov A, Pells S, Freile P, Ganeva V, Wildenhain J, Bradley M, Pawson A, Millar R, De Sousa PA (2012) A role for intracellular calcium downstream of G-protein signaling in maintenance of undifferentiated human embryonic stem cells. *Stem Cell Research* 9(3):171-184.

Corradetti B, Freile P, Pells S, Fahmy T, De Sousa PA (2012) Embryonic stem cell renewal mediated by affinity targeted paracrine stimulation. *Biomaterials*, Oct, 33 (28): 6634-43. Epub 2012 June 30.

Gasparrini B., Gao S., Ainslie A., Fletcher J., McGarry M., Ritchie W.A., Springbett A., Overstrom E., Wilmut I., De Sousa P.A.* (2003) Cloned mice derived from embryonic stem cell karyoplasts and activated cytoplasts prepared by induced enucleation. *Biol Reprod* 68: 1259-66.

De Sousa P.A.*, Dobrinsky J.R., Zhu, J., Archibald A., Ainslie A., Bosma W., Bowering J., Bracken J., Ferrier P., Fletcher J., Gasparrini B., Harkness L., Johnston P., Ritchie M., Ritchie W.A., Travers A., Albertini D., King T.J., Wilmut I. (2002) Somatic cell nuclear transfer in the pig: control of pronuclear formation and integration with improved methods for activation and maintenance of pregnancy. *Biol Reprod* 66: 642-650.

De Sousa P.A.*, Walker S., King T.J., Harkness L., Wilmut I. (2001) Evaluation of gestational deficiencies in cloned sheep. *Biol Reprod* 65: 23-30.