DR. JULIETTE DELHOVE

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EDUCATION / QUALIFICATIONS

2016 PhD. Molecular Medicine and Haematology, University of the Witwatersrand/SGUL/UCL.
- *"Evaluation of Transcription Factor Activity Using In Vitro and In Vivo Models of Chronic Cholestatic Liver Disease."*

2011 MSc. Human Molecular Genetics (Distinction), Imperial College London.
- "*Development of Disease-specific Lentiviral Vectors for Use in Somatotransgenic Bioluminescent Imaging."*

2009 BSc. (Med) (Hons) Human Genetics (First Class), University of Cape Town.
- *"A Case-Control Study Investigating SNPs from DGKH and FKBP5 and Their Association to Bipolar Disorder and Lithium Response in Bipolar Type I Patients."*

2008 BSc. Biochemistry, genetics and development, University of Cape Town.

EMPLOYMENT HISTORY AND SUMMARY OF RESEARCH PROJECTS

2017 - current Postdoctoral Research Scientist: Cystic Fibrosis Airway Research Group, University of Adelaide.

- Responsible for all vector development requirements of the group to drive innovative projects forward.
- Have delivered on producing a clinically-relevant and trackable vector for CF gene therapy.
- Central point of contact for molecular assessments of gene therapy experiments and consult on future project directions based on measured outcomes.
- Responsible for proactively and independently maintaining and developing new collaborations between CF and multi-disciplinary groups to capitalise on the most state-of-the art technologies that can be used for assessment of CF gene therapy efficacy.

2016 Research Assistant: Gene Therapy Group, University College London (UCL), London, UK.

- Vector development specialist for the Biotechnology and Biological Sciences Research Council Industrial Biotechnology Catalyst (BBSRC IBC) multi-institutional consortium.
- Delivered presentations and monthly research updates to consortium and industry stakeholders.
- Developed retroviral vectors to produce a lentiviral packaging cell line gene therapy.
- Optimised vectors for CAR-T immunotherapy and informed on future development strategies.

2013 - 2015 Research Assistant: Stem Cell Group, St. George's, University of London (SGUL), London, UK.

- Led viral vector development, production and validation on a 5-year European Research Council grant.
- Generated high-quality data and disseminated key findings to my line-manager, wider audiences within my department and conferences within the UK and abroad.
- Strategized and implemented experiments designed to achieve predetermined project objectives within the allotted timeframes.
- Collaborated between University College London and St. George's University of London which required excellent communication skills and proved my ability to work effectively in a team.

2011 - 2012 Research Assistant: Stem Cell Group, Queen Mary's, University of London (QMUL), London, UK.

- As above – was hired to continue in the role at St. George's University London.

PUBLICATION SUMMARY:

7 peer-reviewed research papers, 2 reviews, 1 systematic review, 2 book chapters, 195 citations, h-index 5, i10-index 4, CNCI of 1.5, 4 publications in Q1 and 1 in a Q2 journal per journal impact factor quartile.

BOOK CHAPTERS

1. **Delhove, J.M.,** Karda, R., FitzPatrick, L.M., Buckley, S.M.K., Waddington, S.N., McKay, T.R.: Non-invasive somatotransgenic bioimaging in living animals. **F1000 Research, NC3Rs Gateway Methods** (2019) (submitted)
2. **Delhove, J.M.,** Hawkins, K.E., Waddington, S.N., McKay, T.R.: Bioluminescence Monitoring of Promoter Activity *In Vitro* and *In Vivo*. **Methods in Molecular Biology** (2016)
3. **J Delhove**, AA Rahim, TR McKay, SN Waddington, SMK Buckley: Choice of Surrogate and Physiological Markers for Prenatal Gene Therapy. **Methods in Molecular Biology** (2012) vol. 891

PUBLICATIONS

1. A McCarron, P Cmielewski, N Reyne, C McIntyre, J Finnie, F Craig, N Rout-Pitt, J **Delhove**, et al. Phenotype characterisation and comparison of Phe508del and CFTR knockout rat models generated using CRISPR-Cas9 gene editing. J Clin Invest. (Submitted)

2. N Farrow, P Cmielewski, **J Delhove**, N Rout-Pitt, L Vaughan, T Kuchel, C Christou, J Finnie, M Smith, M Donnelley, and D Parsons (2019): Lentiviral airway gene addition for cystic fibrosis: A non-human primate study. (In preparation)

3. **J Delhove**, I Osenk, I Prichard, M Donnelley (2019): Public acceptability of gene therapy and gene editing for human use: a systematic review. **Human Gene Therapy**. (Accepted)

4. LM FitzPatrick, KE Hawkins, **JMKM Delhove**, E Fernandez, C Soldati, LF Bullen, A Nohturfft, SN Waddington, DL Medina, JP Bolaños, TR McKay. (2018): NF-κB Activity Initiates Human ESC-Derived Neural Progenitor Cell Differentiation by Inducing a Metabolic Maturation Program. **Stem Cell Reports**.

5. R Karda, DP Perocheau, N Suff, J Ng, **JMKM Delhove**, SMK Buckley, S Richards, JR Counsell, H Hagberg, MR Johnson, TR McKay, SN Waddington (2017): Continual conscious bioluminescent imaging in freely moving somatotransgenic mice, **Scientific Reports**.
   ** novel methodology for detecting lentiviral / adenoviral expression in living animals using biosensing reporters and in vivo bioluminescence imaging on conscious animals. Can be used to determine the longevity of lentiviral vectors used in gene therapy applications.*

6. **JMKM Delhove**, SMK Buckley, DP Perocheau, R Karda, P Arbuthnot, N Henderson, SN Waddington, TR McKay (2016): Longitudinal *in vivo* bioimaging of hepatocyte transcription factor activity following cholestatic liver injury in mice, **Scientific Reports**.
   ** important paper analysing the temporal signalling profiles responsible for the development and resolution of liver fibrosis in live animals over time without the need for culling. Important for understanding the underlying signalling involved in the fibrotic response.*

7. **JMKM Delhove**, W Qasim (2017): Genome editing in T-cell therapies, **Current Stem Cell Therapies**.

8. U Abramowski-Mock, **JMKM Delhove**, W Qasim (2017): Gene Modified T Cell Therapies for Hematological Malignancies, **Clinics Review Articles**.

9. M Munye, A Schoemark, R Hirst, **JMKM Delhove,** T Sharp, T McKay, C O'Callaghan, DL Baines, SJ Howe, SL Hart (2016): BMI-1 extends proliferative potential of human bronchial epithelial cells whilst retaining their mucociliary differentiation capacity, **Am J Physiol Lung Cell Mol Physiol.**
   ** description of a novel cell line with broad-use applicability for respiratory disease, including cystic fibrosis, by interrogation of therapeutic responses.*

10. K Hawkins, S Joy, **JMKM Delhove**, VN Kotiadis, E Fernandez, L Fitzpatrick, J Whiteford, P King, JP Bolanos, MR Duchen, SN Waddington, TR McKay (2015): NRF2 orchestrates the metabolic shift during induced pluripotent stem cell reprogramming, **Cell Reports**.
    ** highly cited and important paper describing the required shift in metabolic profiles for the transition of fibroblasts undergoing induced pluripotent reprogramming for regenerative therapy purposes. Vector development was a critical aspect of defining this process.*

11. SMK Buckley, **JMKM Delhove**, DP Perocheau, R Karda, AA Rahim, SJ Howe, NJ Ward, MA Birrell, MG Belvisi, P Arbuthnot, MR Johnson, SN Waddington, & TR McKay (2015): *In vivo* bioimaging with tissue-specific transcription factor activated luciferase reporters, **Scientific Reports**.
    ** seminal paper describing the use of an extensive array of biosensing lentiviral reporter constructs for cell signalling analysis. Importantly, this can now be done in a way that dramatically improves animal welfare and decreases the numbers of animals required for experimentation.*

12. G Trivellin, H Butz, **J Delhove**, E Garcia, S Igreja, HS Chahal, V Zivkovic, TR McKay, A Patócs, M Korbonits (2012): MicroRNA miR-107 is overexpressed in pituitary adenomas and *in vitro* inhibits the expression of aryl hydrocarbon receptor-interacting protein (AIP), **American Journal of Physiology**.

FUNDING AWARDS

- Women's and Children's Hospital Foundation Grant (2018) – Chief Investigator - $75,000. "Designing immune-stealth, antiphagocytic targeting vectors for cystic fibrosis lentiviral gene therapy".

- Women's and Children's Hospital Foundation Grant (2018) – Co-investigator C - $75,000. "Cell plasticity of the airways: Understanding the stem cell niche to optimise gene therapy and stem cell targeting."

- Channel 7 Children's Research Foundation Grant (2018) – Co-Investigator C - $34,625. "Can neonatal exposure improve the effectiveness of cystic fibrosis gene therapy re-dosing?"

AWARDS

- Robinson Research Institute Research Symposium – Early and Mid-Career Researcher Poster Prize Winner (2019)
- Robinson Research Institute Travel Award for best poster presentation (2019) - $700
- Asian Pacific Society of Respirology Travel Grant (2019) - $1000
- Robinson Research Institute Travel Award (2019) - $1200
- Fairbairn Award Oral Presentation, British Society for Gene and Cell Therapy conference (2013) runner-up
- Poster prize at British Society for Gene and Cell Therapy Conference (2012), first place
- University of Cape Town Golden Key International Honour Society – top 15% of university (2009)
- Deans' Merit List, University of Cape Town (2008)

ORAL PRESENTATIONS

- Invited Speaker (2019): Korean Association of Tuberculosis and Respiratory Diseases
  - Title: "*Cystic fibrosis gene therapy: novel strategies for improving long-term therapeutic efficacy.*"
- Oral presentation (2013): British Society of Gene and Cell Therapy conference.
  - Title: "*Somatotransgenic bioimaging: A novel biosensing platform for in vivo bioimaging.*"

RESEARCH PRESENTATIONS AS LEAD AUTHOR

- Departmental research update – University College London, Gene Therapy. "*Developing a Lentiviral packaging cell line for cell and gene therapies*."
- St. George's University of London Research Day – St. George's University of London - St George's University research day, "*Hepatic inflammatory and fibrotic modelling in living animals*."
- St. George's University of London Departmental research update – "*Monitoring of hepatic fibrotic responses in vivo using somatotransgenic bioimaging technology*."
- British Society of Gene Therapy conference, "*Development of a bicistronic biosensing lentiviral vector for continual in vivo analysis of inflammation*."
- American Society of Gene and Cell Therapy conference, "*Real-time monitoring of transcription factor activity using in vitro and in vivo models of cholestasis*."

SCIENTIFIC SKILLS

I have substantial experience in cloning using conventional and ligation-free cloning strategies. I am highly skilled at genetic engineering strategies, designing novel lentiviral constructs and generating high-titre lentivirus. I can perform various virus titering methods and am able to generate and fully validate stable cell lines. I have experience in cell culture (primary and immortal cell lines), transfection, electroporation, various forms of PCR, immunocytochemistry, immunohistochemistry, Western blotting, flow cytometry, RNA analysis and CRISPR/Cas genome editing.

KEY TRANSFERABLE SKILLS

- organised
- dependable
- adaptable
- goal orientated
- self-motivated
- resourceful
- creative
- honest
- enthusiastic

TEACHING AND OTHER LEADERSHIP ROLES

- I have reviewed articles for *Scientific Reports* and Cellular Physiology and Biochemistry journals.
- My mentoring and training have spanned cancer and stem cell biology, hepatology, reproductive physiology and medical bioimaging areas. I have contributed to the development and enthusiasm of the next generation of scientists through informal supervision including 1 intercalated medical B.Sc., 7 Masters, and 3 PhD students. I am currently an informal supervisor to 2 PhD students. I have taken part in educational lab outreaches for high-achieving A-level students to give immersive, hands-on experience prior to university application. Six students have subsequently pursued medicine, PhDs, or industry jobs.
- Led laboratory demonstrations for groups of over 100 biomedical science undergraduate students and have facilitated Problem Based Learning (PBL) sessions and essay writing mentorship for medical students.
- I have seized opportunities for leadership and service by nominating myself for election as student representative at the University of Cape Town and Imperial College London. In both instances, I was elected by my fellow classmates and retained responsibilities for 3 years.