

ERIN M TRANFIELD

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CURRENT POSITIONS

06.13 – present	Head of the Electron Microscopy Facility , Instituto Gulbenkian de Ciência, Oeiras Portugal.
02.11 – present	Adjunct Faculty , International Space University, Strasbourg France.
10.11 – present	Committee Member , European Space Agency's Topical Team for the Toxicity of Lunar Dust.
12.13 – present	Committee Member , European Space Agency's Science Advisory Team for the Next Lunar Lander

PROFESSIONAL EXPERIENCE AND RESEARCH

10.09 – 04.13	Postdoctoral Fellow , Antony Team, Cell Biology and Biophysics Unit, European Molecular Biology Laboratory Heidelberg, Germany. <i>Three-dimensional reconstruction of the Xenopus laevis spindle using electron tomography.</i>
10.07 – 09.09	Postdoctoral Fellow , Lunar Dust Biological Effects Laboratory (Dr. D.J. Loftus) NASA Ames Research Center, Moffett Field CA, USA. <i>The assessment of the pulmonary toxicity and the skin abrasion effects of lunar dust.</i>
01.03 – 11.07	Doctoral Student Thesis Advisers: Dr. D. C. Walker / Dr. J. C. Hogg, The James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research / University of British Columbia, Vancouver, Canada. <i>The effects of air pollution on atherosclerotic plaque architecture in Watanabe Heritable Hyperlipidemic Rabbits.</i>
01.01 – 07.01	Internship Adviser: Dr. B. McManus / Dr. D. C. Walker, McDonald Research Laboratory. <i>Endothelial alterations in rejecting cardiac allografts.</i>

ACADEMIC DEGREES AND EDUCATION

01.01.03 – 15.11.07	PhD in Pathology and Laboratory Medicine, University of British Columbia, Vancouver, BC, Canada.
09.97 – 05.02	Undergraduate studies in Biology, University of Victoria, Victoria, BC, Canada.

GRANTS

03.14 – 04.15	Two funded 12 month intern positions by the Portuguese Government – Award Value ~15,000 euros.
07.06 – 08.06	Scholarship from the Canadian Institutes of Health Research to attend the International Space University, Strasbourg France. Award value \$26,000 CAD.
09.04 – 09.06	Paetzold Fellowship, 24 months stipend support for a pre-doctoral student.
03.03	Graduate Tuition Bursary; University of British Columbia.
09.01	University of Victoria Bursary; University of Victoria.
09.99	The Eric Ashby Memorial Prize; University of Victoria.
09.99 – 04.98	University of Victoria Presidents Entrance Scholarship; University of Victoria.

CONTINUED EDUCATION

01.14	Basic course: cryo-sectioning and immuno-gold labeling of thawed frozen sections (Tokuyasu technique), Utrecht NL – 4 days
03.13	Effective Team Leader 1 – 2 days
05.12	Train-the-Trainer Course – 2 days
02.12	Confocal Microscopy Workshop – 3 days
02.12	One-to-One Presentation Skills Workshop – 90 minutes with dedicated instructor
01.12	Light Microscopy workshop – 3 days
05.11	BSAC Instructor Foundation Course (for scuba diving) – 2 days
10.10	Conflict Management Course – 2 days

CONTINUED EDUCATION CONTINUED

03.09	Effective Presentation Skills – 1 day
06.08	Animal Handling Certification at NASA Ames Research Center – 4 courses, physical exam and practical introduction
11.07	Training on rat intratracheal instillations of dust particles at the National Institute for Occupational Safety and Health – Morgantown, West Virginia, USA – 4 days
07.06 – 08.06	International Space University Summer Session Program, Strasbourg France
06.06	International Cryo-Electron Microscopy Course – University of British Columbia, Vancouver, BC, Canada – 1 week

SELECTED TEACHING ACTIVITIES & MENTORSHIP

05.15	Lecturer at the International Space University, Space Studies Program, Ohio, USA.
01.15	Lecturer in the PhD Course at ITQB, Oeiras, Portugal; Methods in Biosciences I - Introduction to Electron Microscopy
03.14 – present	Supervisor of André Barros and Sara Bonucci interns in the EM Facility
01.14	Lecturer in the PhD Course at ITQB, Oeiras, Portugal; Methods in Biosciences I - Introduction to Electron Microscopy
09.13 – present	Supervisor of Ana Laura Sousa and Ana Catarina Correia technicians in the EM Facility
02.11 – 04.13	Mentor of Ina Peristere, Intern at EMBL.
10.11	Teacher in EMBO Practical Course: Current Methods in Cell Biology
09.11 – 10.11	Mentor of Sarah Koehler, Intern at EMBL.
07.11 – 08.11	Chair of the Space Life Science Department at the Space Studies Program in Graz Austria. Delivered 2 core lectures and organized 12 three hour-long department activities.
02.11	Lecturer in the EMBL Learning Laboratory: Cell Cycle and Disease.
02.11	Lecturer at the International Space University for the Masters of Space Studies Program, Strasbourg France.
07.10 – 08-10	Emerging Chair International Space University Space Studies Program, Strasbourg France.
05.10	Lecturer in the EMBO Learning Laboratory: From Cells to Tissues to Organisms – Biology in 3D.
07.09 – 08.09	Lecturer and Host Site Organizer for the International Space University Summer Session Program, Moffett Field, CA, USA. Space Life Sciences Department Lecturer. Toured the Life Science and Physical Science Departments through the NASA Lunar Dust Biotoxicity Laboratory.
07.08 – 08.08	Lecturer International Space University Summer Session Program, Barcelona Spain. Space Life Sciences Department Lecturer.
07.07 – 08.07	Teaching Associate International Space University Summer Session Program, Beijing China. Taught “Human Engineering and Heart Dissection” workshops. Organized departmental workshops, evening panel sessions, professional visits and assisting lecturers prepare for classes and departmental activities. Assisted in mentoring, marking and grading students.
02.04 – 05.07	Science Coordinator and Teacher at the Vancouver School of Bodywork and Massage. Responsible for course design and implementation, testing, marking and general course organization. 1000+ instruction hours, 450 preparation hours.

SELECTED CONFERENCE ORGANIZATION, TALKS AND OTHER PRESENTATIONS

07.14	Speaker at EMBO Practical Course on 3D Developmental Imaging, Oeiras, Portugal- <i>Three Dimensional Imaging in Electron Microscopy</i>
05.14	Speaker at Instituto Nacional de Saúde Dr Ricardo Jorge Course on Electron Microscopy, Lisbon, Portugal - <i>Improvements in Ultrastructure Preservation by Cryo-Immobilization</i>
12.13	Keynote speaker at Microscopy in Research 2013, Cooperativa de Ensino Superior CRL, Monte da Caparica, Portugal - <i>Applying Electron Tomography to Resolve the Organization of the Xenopus laevis Meiotic Spindle at Single Microtubule Resolution</i>
08.13	Co-Organizer and instructor of week long tomography workshop – Dresden Germany
06.13	Co-chair and speaker in the TEM and Tomography Session at SCANDEM (Annual Meeting of the Nordic Microscopy Society) - <i>The Microtubule Organization in the Xenopus laevis Meiotic Spindle Resolved with Electron Tomography</i> ; Copenhagen, Denmark

SELECTED CONFERENCE ORGANIZATION, TALKS AND OTHER PRESENTATIONS CONTINUED

- 03.12 **Conference Presentation at PANOS** (Annual Meeting of the German Electron Microscopy Society) - *Correlative Light and Electron Microscopy in the Preparation of Meiotic spindles for High Pressure Freezing.*
- 11.11 **Invited Presentation** at Alten Kurfürstlichen Gymnasium in Bensheim, Germany - *Pushing the Limits of Electron Microscopy to Answer a Fundamental Question About Cell Biology.*
- 08.09 **Panellist** in *Lunar Science: from the NASA Lunar Science Institute to the Lunar Crater Observation and Sensing Satellite and Beyond...* Moffett Field CA, USA.
- 07.09 **Presentation** at The NASA Lunar Science Forum, Moffett Field CA, USA – *Chemical Activation of Lunar Dust Specimens and Simulants.*
- 10.08 **Presentation** at The Lunar Exploration Analysis Group Workshop, Cape Canaveral FL, USA – *Chemical Reactivity of Lunar Dust Relevant to Humans.*
- 07.08 **Panellist** in “This is Your Future – Why the Moon?”, NASA Ames Research Center. Moffett Field CA, USA.
- 06.08 **Invited Presentation** at SETI, Moffett Field CA, USA – *Toxicological Effects of Lunar Dust – How Will Humans React in the Lunar Environment.*
- 12.06 **Invited Presentation** at Johns Hopkins School of Public Health – *Architectural Changes in Atherosclerosis Following Repeated Exposure to Particulate Matter.*
- 09.06 **Invited Presentation** at the Center for Research in Environmental Epidemiology; Barcelona Spain – *The Effects of Ambient Particulate Matter on Atherosclerotic Plaque Architecture.*
- 04.04 **Presentation** at FASEB Meeting in Washington DC, USA – *Alterations in Atherosclerotic Plaque Stability Following Exposure to Fine Particulate Air Pollution (PM10).*

SCIENTIFIC MEMBERSHIPS

- American Microscopy Society: 2014 – current
- Portuguese Microscopy Society: 2013 – current
- American Society of Cell Biology: 2010 – 2014

COMPUTER KNOWLEDGE

- Standard office software (MS Office, Adobe creative suite, etc)
- Linux, PC, and Mac systems
- Electron tomography software (SerialEM, imod)
- Data analysis software (Amira)
- Image processing (ImageJ, Fiji) and statistical data analysis

OTHER ACTIVITIES AND INTERESTS

- Extensive volunteer experience in the arts (Opera, Ballet, Symphony, and Theatre productions) and in Breast Cancer awareness events.
- Hiking, camping, fishing, running, biking, scuba diving, swimming and photography.

PUBLICATIONS

A) ARTICLES IN JOURNALS:

Tranfield EM, Heiligenstein X, Peristere I, Antony C. Correlative Light and Electron Microscopy for a Free-Floating Spindle in *Xenopus laevis* Egg Extracts. *Methods Cell Biol.* 2014;124:111-28.

Weber B, **Tranfield EM**, Höög JL, Baum D, Prohaska S, Antony C, Gull K, Hyman T Verbavatz JM. Automated stitching of microtubule networks in serial sections of electron tomograms. *PLoS One.* 2014 Dec 1;9(12):e113222.

Escrevente C, Grammel N, Kandzia S, Zeiser J, **Tranfield EM**, Conradt HS, Costa J. Sialoglycoproteins and N-glycans from secreted exosomes of ovarian carcinoma cells. *PLoS One.* 2013 Oct 24;8(10):e78631.

Linnarsson D, Carpenter J, Fubini B, Gerde P, Karlsson LL, Loftus DJ, Prisk GK, Stauffer U, **Tranfield EM**, van Westrenen W. Toxicity of lunar dust. *Planetary and Space Science.* 2012 Dec;74(1):57-71.

Bai N, **Tranfield EM**, Kavanagh T, Kaufman JD, Rosenfeld ME, van Eeden SF. Exposure to Diesel Exhaust Up-regulates COX-2 Activity in ApoE Knockout Mice. *Inhal Toxicol.* 2012 Jul;24(8):518-27.

Loftus DJ, Rask JC, McCrossin CG, **Tranfield EM**. The Chemical Reactivity of Lunar Dust: From Toxicity to Astrobiology. *Earth, Moon, and Planets.* 2011;107(1):95-105.

Tranfield EM, van Eeden SF, Yatera K, Hogg JC, Walker DC. Ultrastructural changes in atherosclerotic plaques following the instillation of airborne particulate matter into the lungs of rabbits. *Can J Cardiol.* 2010 Jul;26(7):e258-69.

Yatera K, Hsieh J, Hogg JC, **Tranfield E**, Suzuki H, Shih CH, Behzad AR, Vincent R, van Eeden SF. Particulate matter air pollution exposure promotes the recruitment of monocytes into atherosclerotic plaques. *Am J Physiol Heart Circ Physiol.* 2008 Feb;294(2):H944-53.

Lai JC, **Tranfield EM**, Walker DC, Dyck J, Kerjner A, Loo S, English D, Wong D, McDonald PC, Moghadasian MH, Wilson JE, McManus BM; Heart Stroke Foundation of British Columbia and Yukon, Program Project Grant Investigators. Ultrastructural evidence of early endothelial damage in coronary arteries of rat cardiac allografts. *J Heart Lung Transplant.* 2003. 22(9):993-1004.

B) PUBLISHED CONTRIBUTIONS TO ACADEMIC CONFERENCES:

Good BM, **Tranfield EM**, Tan PC, Shehata M, Singhera GK, Gosselink J, Okon EB, Wilkinson MD. Fast, cheap and out of control: A zero curation model for ontology development. In: Pacific Symposium on Biocomputing, January 3-7, 2006, Hawaii, USA:World Scientific, 128-139.

C) INVITED REVIEWS:

Tranfield EM, Walker DC. The Ultrastructure of Animal Atherosclerosis: What Has Been Done, and the Electron Microscopy Advancements That Could Help Scientists Answer New Biological Questions. *Micron.* 2013 Mar;46:1-11.

D) BOOK CHAPTER:

Tranfield EM, Walker DC. Understanding Human Illness and Death Following Exposure to Particulate Matter Air Pollution in Environmental Health, in *Environmental Health*. 2011 ISBN 979-953-307-110-6.

E) SELECTED ABSTRACTS OF SIGNIFICANCE:

Correia A, Bonucci S, Sousa AL, Barros A, **Tranfield EM**. Microwave Processing for Electron Microscopy - A Comparison with Conventional Processing in Zebrafish tissues. Presented at the International Conference on Microscopy and Microanalysis in Porto, Portugal November 2014.

Sousa AL, Barros A, Correia AC, Bonucci S, **Tranfield EM**. Comparison of Mouse Kidney Ultrastructure using PHEM, Phosphate, Cacodylate, PIPES and H₂O. Presented at the International Conference on Microscopy and Microanalysis in Porto, Portugal November 2014.

E) SELECTED ABSTRACTS OF SIGNIFICANCE CONTINUED:

Bonucci S, Sousa AL, Correia AC, Barros A, **Tranfield EM**. Influence of Temperature in Membrane Preservation during OsO₄ Fixation, for Electron Microscopy. Presented at the International Conference on Microscopy and Microanalysis in Porto, Portugal November 2014.

Tranfield EM, Peristere I, Ellenberg J, Nedelec F, Antony C. The Three-dimensional Organization of the *Xenopus laevis* Meiotic Spindle Resolved Using Electron Tomography. Presentation Number 1155. American Society of Cell Biology, San Francisco, December 2012.

Tranfield EM, Heiligenstein X, Antony C. Using Electron Tomography to Understand the Organization of the Microtubules in the *Xenopus laevis* Spindle. American Society of Cell Biology, Denver, December 2011.

Tranfield EM, Heiligenstein X, Nedelec F, Antony C. Application of Electron Tomography in the 3D Reconstruction of the *Xenopus laevis* Spindle. Sixth International Congress on Electron Tomography May 2011, Heidelberg, Germany.

Tranfield EM, Rask JC, Wallace WT, McCrossin CG, Kuhlman KR, Loftus DJ. Chemical Activation of Lunar Dust Specimens and Simulants. NASA Lunar Science Forum, July 2009.

Tranfield EM, Rask JC, Wallace WT, Kuhlman KR, Jeevarajan AS, Kerschmann R, Loftus DJ. Chemical Reactivity of Lunar Dust as it Pertains to Biological Systems. EANA '08 Neuchatel Switzerland.

Tranfield EM, van Eeden SF, Hogg JC, Walker DC. Morphological Changes in the Extracellular Matrix of Atherosclerotic Plaques Following Exposure to Particulate Matter Air Pollution (PM₁₀) in Watanabe Heritable Hyperlipidemic Rabbits Proc Am Thorac Soc, 2006; 2(Abtract): A162. American Thoracic Conference.

Tranfield EM, van Eeden SF, Hogg JC, Walker DC. Alterations in Atherosclerotic Plaque Architecture Following Exposure to Fine Particulate Air Pollution (PM₁₀). FASEB J, 2004 March;18(4):A11-12. Mini-symposium presentation at FASEB.

F) EDUCATION AND PUBLIC OUTREACH PUBLICATIONS

E. Tranfield. Building a space habitat in the classroom. Science in Schools 2011, Issue 19. <http://www.scienceinschool.org/2011/issue19/habitat>

E. Tranfield. Earth without a moon. Science in Schools 2013, Issue 26. <http://www.scienceinschool.org/2013/issue26/moon>

E Tranfield. Lunar Diary: a chronicle of Earth's journey through space and time, as seen from the Moon. Science in Schools 2014, Issue 30. <http://www.scienceinschool.org/2014/issue30/Moon>

E Tranfield. The challenging logistics of lunar exploration. Science in Schools 2015, Issue 31. <http://www.scienceinschool.org/content/challenging-logistics-lunar-exploration>