

PROF. LEWIS DARTNELL

Curriculum Vitae

Department of Life Sciences,
University of Westminster,
115 New Cavendish St.
London W1W 6UW

lewis@lewisdartnell.com

www.lewisdartnell.com

I am currently a Professor of Science Communication at the University of Westminster. My research is within the field of astrobiology and how bacterial life, and signs of its existence, might survive the cosmic radiation on the surface of Mars.

Academic History

- 2016 - Faculty of Science and Technology, University of Westminster
Professor of Science Communication
- 2013 - 2016 Space Research Centre, University of Leicester
*UK Space Agency Aurora Fellowship,
STFC Science in Society Fellowship*
- 2009 - 2013 Centre for Planetary Sciences, University College London
UCL Institute of Origins Post Doctoral Research Associateship
- 2003 - 2008 CoMPLEX (Centre for Mathematics & Physics in the
Life Sciences and Experimental Biology)
University College London
4-year combined MRes-PhD programme
PhD: 'Computer modelling and experimental work on the
astrobiological implications of the martian subsurface ionising radiation
environment'
MRes in 'Modelling biological complexity': *Distinction*
- 1999 - 2002 The Queen's College, University of Oxford
BA (Hons) Biological Sciences: *First Class*
Michel Scholarship
- 1994 - 1999 Charterhouse School, Godalming
Distinction at STEP level, 4 A at A-level, 8 A at GCSE.*
Sutton Scholarship, Foundation Scholarship

Awards & Appointments

- 2014 Appointed to UK Space Agency Communications Working Group

2013 Awarded UK Space Agency Aurora Fellowship
 2013 Awarded STFC Science in Society Fellowship
 2011 Appointed to the Senior Editorial Board of *Astrobiology* journal
 2009 Awarded UCL Institute of Origins Postdoctoral Research Associateship
 2008 Invited to serve as planetary consultant for *BBC Sky at Night*, writing a monthly *Cutting Edge* column
 2008 Selected as a EPSRC *NOISEmaker* ambassador for science and engineering.
 2007 Appointed to *International Academy of Astronautics* Study Group 1.5: ‘Particle Radiation Hazards *en route* to, and in orbit about, Mars’
 2007 Selected for *NASA Space Radiation Summer School* (NSRSS), USA.
 2007 *Wellcome Trust* and *New Scientist* Essay Competition, runner-up
 2006 European Geophysical Union award for *Young Scientist Outstanding Poster Presentation*, including an invited paper
 2006 Invited on to the Committee of the *Astrobiology Society of Britain*. Currently, Secretary of the Society.
 2005 British Association for the Advancement of Science *Perspectives* public outreach prize, runner-up
 2004 Daily Telegraph/BASF *Young Science Writer Award*, Second prize
 2004 Royal Astronomy Society *Science Writing Competition*, First prize
 2003 Times Higher Education Supplement/Oxford University Press *Science Writing Competition*, Second prize

Teaching experience

I have prepared and delivered a five-week evening course on planetary science and astrobiology at the Royal Observatory Greenwich (Nov’10) and also for The Royal Institution (Sep’12). I am a guest lecturer at the International Space University (May ’14) and have also lectured on astrobiology courses run by STFC summer school (Sept’07, Sept’09), the Scottish Universities Physics Alliance (Dec’07), and the Origins of Life course run by the Viennese Biocenter (Nov’10). I was selected as the Biology department Writing and Learning Mentor, running lectures and classes to help students with their academic writing (2008). I also have five years of experience in private tuition of science and mathematics for CE, GCSE and A-level students.

Student supervision

Nov 2011-Sept 2012: MSc, Planetary Sciences, UCL – Kira Lorber
 June 2011-Sept 2011: MRes, CoMPLEX, UCL – Tom Roberts
 June 2011-Sept 2011: MSc, Cranfield Uni – Sophie Russell
 Nov 2010-Sept 2011: MSc, Planetary Sciences, UCL – Angelica Estelles
 Oct 2010-Mar 2011: MSci, Earth Sciences, UCL – Michaela Musilova. *Paper in prep*
 Apr 2010: MRes, CoMPLEX, UCL – Maria Botcharova
 Apr 2010: MRes, CoMPLEX, UCL – Michaela Moores.
 May-Aug 2008: MRes, CoMPLEX, UCL – David Fallaize. *Published* [8]

Peer-reviewing

I am a Senior Editor on the editorial board of *Astrobiology* journal, and been running and commissioning their Reviews section for four years. I have peer-reviewed research proposals for the US National Astrobiology Institute (NAI), STFC and UK Space Agency, five book proposals and also a total of more than 50 papers for the journals

Science, Nature Communications, Geology, Astrobiology, International Journal of Astrobiology, Planetary and Space Science, Earth Moon and Planets, Journal of Geophysical Research, Origins of Life and the Evolution of Biospheres, and Sustainability.

Conference organisation & talks

I co-organised a Royal Astronomical Society Specialist Discussion meeting on planetary habitability, '*Is the Earth Special?*', Dec 2011. I sit on the Astrobiology Society of Britain (ASB) Committee, overseeing the organisation of the 2008, 2010, 2012, and 2015 Astrobiology conferences. I co-organised the 2006 EPSRC Life Science Interface Conference and the 2007 CoMPLEX Conference. I have given Invited talks at Vienna Biocenter Center 'Origins of Life' symposium (Nov'10), European Geophysical Union General Assembly (Apr'07), 3rd European Space Weather Week (Nov'06), and also talked at ASB4 (Apr'10), Swedish Astrobiology Network meeting (Nov'09), UK Space Biomedicine Conference (Nov'09), Habitability in the Galaxy (Oct'08), Space Generation Congress (Oct'08), ASB3 (Jul'08), European Astrobiology Network Association (Oct'07), European Geophysical Union General Assembly (Apr'07), COSPAR 36th Scientific Assembly (July'06), as well as numerous other seminars and smaller meetings.

Publications

Journals

25. De Angelis, G., **Dartnell, L.R.** (IN PRESS) Modeling of the Radiation Environment on Mars. I. Modeling Approaches and Techniques
24. De Angelis, G., **Dartnell, L.R.** (IN PRESS) Modeling of the Radiation Environment on Mars. II. Results from Calculations.
23. Domagal-Goldman, S.D., Wright, K.E., Adamala, K., de la Rubia, L.A., Bond, J., **Dartnell, L.R.**, *et al.* (2016) The Astrobiology Primer v2.0. *Astrobiology* 16(8) p.561-653.
22. Musilova, M., Wright, G., Ward, J.M., **Dartnell, L.R.** (2015) Isolation of Radiation-Resistant Bacteria from Mars Analog Antarctic Dry Valleys by Preselection, and the Correlation between Radiation and Desiccation Resistance. *Astrobiology* 15(12) p.1076-1090.
21. **Dartnell, L.R.**, Nordheim, T.A., Patel, M., Mason, J.P., Coates, A.J., Jones, G.H. (2015) Constraints on a potential aerial biosphere on Venus: I. Cosmic rays. *Icarus* 257 (0) p.396-405.
20. Nordheim, T.A., **Dartnell, L.R.**, Desorgher, L., Coates, A.J., Jones, G.H. (2015) Ionization of the Venusian atmosphere from solar and galactic cosmic rays. *Icarus* 245 (0) p. 80-86
19. Herschy, B., Whicher, A., Camprubi, E., Watson, C., **Dartnell, L.R.**, Ward, J., Evans, J.R.G., Lane, N. (2014) "An Origin-of-Life Reactor to Simulate Alkaline Hydrothermal Vents." *Journal of Molecular Evolution*, 79, p.213-227.
18. **Dartnell, L.R.**, and Patel, M. (2014) Degradation of microbial fluorescence biosignatures by solar ultraviolet radiation on Mars. *International Journal of Astrobiology*, 13(2), p. 112-123.
17. Preston, L.J., **Dartnell, L.R.**, (2014) Planetary habitability: lessons learned from terrestrial analogues. *International Journal of Astrobiology*. 13(1), p 81-98.
16. **Dartnell, L.R.**, Roberts, T., Moore, G., Ward, J., and Muller, J.-P. (2013) Fluorescence Characterization of Clinically-Important Bacteria. *PLoS ONE* 8:e75270.
15. Zhang, D., Muller, J.-P., Lavender, S., Walton, D., and **Dartnell, L.R.** (2012) Fluorescent analysis of photosynthetic microbes and Polycyclic Aromatic Hydrocarbons linked to optical remote sensing. In: *Int. Arch. Photogramm. Remote*

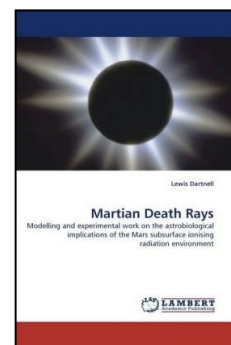
Sens. Spatial Inf. Sci., p 555-559.

14. **Dartnell, L.R.**, Patel, M., Storrie-Lombardi, M.C., Ward, J.M., and Muller, J.-P. (2012) Experimental determination of photostability and fluorescence-based detection of PAHs on the Martian surface. *Meteoritics & Planetary Science* 47:806-819.
13. **Dartnell, L.R.**, Page, K., Villar, S.J., Wright, G., Munshi, T., Scowen, I., Ward, J., and Edwards, H. (2012) Destruction of Raman biosignatures by ionising radiation and the implications for life-detection on Mars. *Analytical and Bioanalytical Chemistry* 403:131-144. *** This publication was selected by the journal editors as a 'Paper In Forefront'**
12. **Dartnell, L.R.**, Storrie-Lombardi, M., Mullineaux, C., Ruban, A., Wright, G., Griffiths, A., Muller, J.-P., and Ward, J. (2011) Degradation of Cyanobacterial Biosignatures by Ionizing Radiation. *Astrobiology* 11:997-1016.
11. **Dartnell, L.R.** (2011) Ionizing Radiation and Life. *Astrobiology* 11:551-582.
10. **Dartnell, L.R.**, Storrie-Lombardi, M.C., and Ward, J.M. (2010) Complete fluorescent fingerprints of extremophilic and photosynthetic microbes. *International Journal of Astrobiology* 9:245-257.
09. **Dartnell, L.R.**, Hunter, S., Lovell, K., Coates, A., and Ward, J. (2010) Low-Temperature Ionizing Radiation Resistance of *Deinococcus radiodurans* and Antarctic Dry Valley Bacteria. *Astrobiology* 10:717-732. *** This paper was selected as a key article by the journal editor and so offered as Open Access**
08. **Dartnell, L.R.**, Fallaize, D., Whiting, S., and Ward, J. (2010) Desiccation resistance of Antarctic Dry Valley bacteria isolated from contrasting locations,. *Antarct Sci* 22:171-172.
07. **Dartnell, L.R.**, and Burchell, M. (2009) Survey on Astrobiology Research and Teaching Activities Within the United Kingdom. *Astrobiology* 9:717-730.
06. Le Postollec, A., Incerti, S., Dobrijevic, M., Desorgher, L., Santin, G., Moretto, P., Vandenabeele-Trambouze, O., Coussot, G., **Dartnell, L.R.**, and Nieminen, P. (2009) Monte-Carlo simulation of the radiation environment encountered by a biochip during a space mission to Mars. *Astrobiology* 9:311-323.
05. Morthekai, P., Jaina, M., **Dartnell, L.R.**, Murray, A., Bøtter-Jensen, L., and Desorgher, L. (2007) Dose-rate variations with depth in the Martian regolith: Model simulations and constraints. *Nuclear Instruments and Methods in Physics Research Section A* 580:667-670.
04. **Dartnell, L.R.**, Desorgher, L., Ward, J.M., and Coates, A.J. (2007) Martian sub-surface ionising radiation: biosignatures and geology. *Biogeosciences* 4:545-558. *** This paper was an invited contribution after my EGU Outstanding Young Scientist award**
03. **Dartnell, L.R.**, Desorgher, L., Ward, J., and Coates, A. (2007) Modelling the surface and subsurface Martian radiation environment: Implications for Astrobiology. *Geophysical Research Letters* 34:L02207. *** This paper was selected by the editors for a 'Special Highlight' in the journal**
02. **Dartnell, L.R.**, Ward, J.M., and Coates, A.J. (2006) Modelling Planetary Radiation Environments: Astrobiological Perspectives. *European Modelling Symposium (ISBN 0-9516509-3-9/978-0-9516509-3-6)*.
01. **Dartnell, L.R.**, Simeonidis, E., Hubank, M., Tsoka, S., Bogle, I., and Papageorgiou, L. (2005) Robustness of the p53 network and biological hackers. *FEBS Letters* 579:3037-3042.

Ph.D. thesis 'Computer modelling and experimental work on the astrobiological implications of the martian subsurface ionising radiation environment', University College London, April 2008

The *Geophysical Research Letters* paper (#3) was selected by the editors for a special highlight in the journal, and received considerable media attention. The *Biogeosciences* publication (#4) was an invited paper from my EGU *Outstanding Young Scientist* award, and included an invited talk at the General Assembly in April 2007. My recent *Astrobiology* publication (#9) was selected by the Editor-in-Chief of the journal as a Key Paper, and my 2012 ABC paper (#13) was selected by the journal editor as a 'Paper In Forefront'.

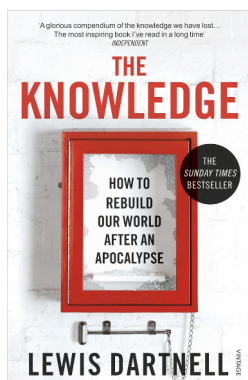
In addition, my *Ph.D.* thesis was independently re-published in May 2010 in paperback by Lambert Academic Publishing as 'Martian Death Rays'
www.amazon.co.uk/Martian-Death-Rays-experimental-astrobiological



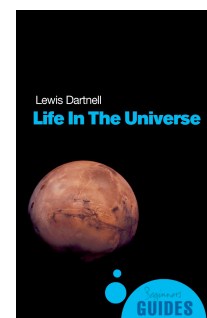
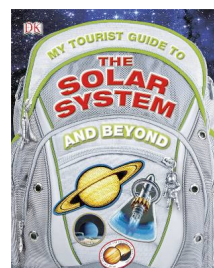
Learned Publications

8. D. Waltham & **L. R. Dartnell** (2012), Is the Earth special?, *Astronomy & Geophysics*, 53(4), p.25–29
7. **L. R. Dartnell** (2011), Biological constraints on habitability, *Astronomy & Geophysics*, 52(1), p.25–28
6. **L. R. Dartnell** (2010), The Search for Our Neighbours, *Public Service Review: Science and Technology*, issue 7, p.19
5. M. Burchell & **L. R. Dartnell** (2009), Astrobiology in the UK, *Astronomy & Geophysics*, 50(4), p27–30
4. **L. R. Dartnell** (2008), A Living Mars?, *Geology Today*, 24(2), p.62-67
3. **L. R. Dartnell** (2008), Mars: Waterworld or Dune?, *The Biochemist*, 30(4), p.22-25
2. **L. R. Dartnell** (2008), Space Bugs, *Microbiology Today*, May 2008, p.62-64
1. **L. R. Dartnell** (2005), It's life, Jim..., *Astronomy & Geophysics*, 46(1), p1.12-1.13

Books



3. **Lewis Dartnell** (2014), '*The Knowledge: How to Rebuild our World from Scratch*', Bodley Head, hardback 352 pages, ISBN: 978-1847922274
2. **Lewis Dartnell** (2012), '*My Tourist Guide to the Solar System and Beyond*', Dorling Kindersley, hardback 64 pages, ISBN: 9781405391429
1. **Lewis Dartnell** (2007), '*Life in the Universe: A Beginner's Guide*', Oneworld Publications, paperback 224 pages, ISBN: 1851685057



The Knowledge (www.the-knowledge.org) has been translated into 14 languages and is a New York Times and Sunday Times best-seller, and also The Sunday Times 'New Thinking' Book of the Year.

International/National Media

I have a regular column in *BBC Sky at Night* and also regularly write news and feature articles for *New Scientist*, *The Guardian*, *The Daily Telegraph*, *BBC Focus* and *Times*

Higher Education. I have appeared in a number of TV documentaries such as *BBC Horizon*, *Wonders of the Universe*, *Stargazing Live*, and *Sky at Night*, as well as shows on *National Geographic*, *Discovery* and *History* channels. I have also acted as scientific consultant and script-writer for films including a full-dome planetarium show 'We Are Aliens' and documentaries with Brian Cox. Further details of my media work is available on my website www.lewisdartnell.com