ADITYA CHOPRA

Curriculum Vitae

Visiting Fellow
Planetary Science Institute
The Australian National University
Canberra, Australia
aditya.chopra@anu.edu.au
www.adi.life

Refereed Publications

- **Aditya Chopra** and Charles H. Lineweaver (2017), *The cosmic evolution of biochemistry*, in Richard Gordon & Alexei Sharov (Eds.) Habitability of the Universe before Earth, Series: Astrobiology: Exploring Life on Earth and Beyond (View on ScienceDirect).
- Sarah R. N. McIntyre, Charles H. Lineweaver, Colin P. Groves, **Aditya Chopra** (2017) *Global biogeography since Pangaea*, Proc. R. Soc. Biol Sci. 284, 1856 (doi:10.1098/rspb.2017.0716).
- Charles H. Lineweaver, **Aditya Chopra** and Sarah R. N. McIntyre (in press), *The Evolution of Habitability: Characteristics of Habitable Planets*, in Vera M. Kolb (Ed.) Handbook of Astrobiology, Taylor & Francis
- Catherine Elder, Ali Bramson, Lauren Blum, Heather Chilton, **Aditya Chopra** et al. *OCEANUS: A high science return Uranus orbiter with a low-cost instrument suite* (submitted) Acta Astronautica.
- **Aditya Chopra** and Charles H. Lineweaver (2016), *The Case for a Gaian Bottleneck: the Biology of Habitability,* Astrobiology, 16, 1, 7-22 (http://bit.ly/gaianbottleneck).
- **Aditya Chopra** (2016), *What is the history of elements in the Universe?*, Chapter Section in the Astrobiology Primer 2.0., Astrobiology, 16, 8, 561-653 (http://bit.ly/AstrobioPrimer2).
- *Charles H. Lineweaver and **Aditya Chopra** (2012), Habitability of Earth and Other Earths: Astrophysical, Geochemical, Geophysical and Biological Limits on Planet Habitability,* Annual Review of Earth and Planetary Sciences, Vol. 40, 597-623 (http://is.gd/annrevlc12)
- Charles H. Lineweaver and **Aditya Chopra** (2012), *What can life on Earth tell us about life in the universe?* In J. Seckbach (Ed.), Genesis - In The Beginning: Precursors of Life, Chemical Models and Early Biological Evolution, 799-815, Springer. ISBN 978-94-007-2940-7.(http://is.gd/etlife12)
- **Aditya Chopra**, Charles H. Lineweaver, Jochen J. Brocks and Trevor R. Ireland (2010), *Palaeoecophylostoichiometrics: Searching for the Elemental Composition of the Last Universal Common Ancestor,* in Australian Space Science Conference Series: 9th Conference Proceedings. Full Refereed Proceedings DVD, National Space Society of Australia Ltd, ISBN 13: 978-0-9775740 (www.tinyurl.com/ACetal10)
- **Aditya Chopra** and Charles H. Lineweaver (2009), *The major elemental abundance differences between Life, the Oceans and the Sun,* in Australian Space Science Conference Series: 8th Conference Proceedings. Full Refereed Proceedings DVD, National Space Society of Australia Ltd, ISBN 13:978-0-9775740-2-5 (www.tinyurl.com/ACCL08)
- **Aditya Chopra** (2009), *What is Life made of?,* The Australian National University's Undergraduate Research Journal, Volume 1, 1-6, ISSN 1837-2872
- **Aditya Chopra,** John Baross and Charles H. Lineweaver (in prep.), *Early biospheres on Earth.*
- **Aditya Chopra** and Charles H. Lineweaver (in prep.), *A reference elemental composition of life.*
- **Aditya Chopra,** Charles H. Lineweaver, John Baross and Mike Mottl (in prep.), *Can elemental abundances be used to identify the most likely site for the origin of life?*

A comprehensive list of publications, talk and poster presentations, and activities related to teaching, media, outreach and administrative activities at http://www.adi.life/publications_activities.html

Honours & Awards

- "Best Oral Presentation" Gordon Research Seminars on the Origins of Life in 2016.
- Recipient of Australia Awards Endeavour Post-doctoral Research Fellowship in 2015.
- "Best Postgraduate Oral Presentation"" Runner Up, 2015 Australian Space Science Conference.
- Awarded 2014 Resident of the Year at UniLodge ANU.
- Student of the Year Finalist at the 2013 ANU Alumni Awards.
- Best Talk Prize at the 2014, 2012 and 2011 Stromlo Student Christmas Seminars.
- Australian delegation member of 2014 Commonwealth Science Conference (India) and 2013 Lindau Nobel Laureate Meeting (Germany).

- 2012 Robert Hill Memorial Prize for displaying excellence in research, good communication skills, proven publications record, and the ability to communicate research to a broad audience.
- "Best Postgraduate Oral Presentation" at the 2012 Australian Space Science Conference.
- 1st Prize and Audience Favourite Prize at the 2012 "3 Minute Thesis Competition" at ANU (represented the university at the national competition).
- Vice-Chancellor's 2011 Award for Community Outreach recognising the contributions of the Student Outreach Team at the Research School of Astronomy and Astrophysics at ANU.
- Community Spirit Award from UniLodge ANU for outstanding contributions during 2011.
- Best Poster Award for two posters presented at the 2011 European Workshop on Astrobiology.
- 3rd prize at *The Space Factor* student contest at the 2011 European Workshop on Astrobiology.
- 2nd prize for poster presented at the ANU 2010 ResearchFest.
- Australian Postgraduate Award for PhD studies commencing in 2009.
- Honours Year Scholarship at the Australian National University in 2008.
- Fluor Foundation scholarship by Scholarship America in 2008.
- 'Best Chemical OH&S Poster' in 2007 at the University of Western Australia in 2008.
- Summer Research Scholarship at the Australian National University in 2007.
- 'Most Promising Science Communicator', Western Australian 2004 CSIRO Student Research Scheme

Grant Activity

- $5000 from the 34th International Geological Congress for field trip to Pilbara & Shark Bay in 2016.
- $1500 from NASA JPL to participate in the 2016 Planetary Science Summer School (Uranus Mission Concept Study, mentored by Team-X at the Jet Propulsion Laboratory, California, USA).
- $2300 from the organising committee to present a talk and poster at the 2016 Gordon Research Conference and Seminars on the Origin of Life in Galveston, USA.
- $2700 to undertake an Executive Education Course (ANU Crawford School of Public Policy) in 2015.
- $2500 from the Australian Academy of Science and ANU to participate at the 2014 Commonwealth Science Conference in India and 2015 Global Young Scientists Summit in Singapore.
- $2500 from the Uwingu Fund and ISSOL to present at the 2014 Origins Meeting in Nara, Japan.
- $6800 from the Aust. Academy of Sci. to participate in the 2013 Lindau Nobel Laureate Meeting.
- $200 from the Humboldt Foundation to present at the Humboldt Colloquium in Sydney, Australia.
- $700 from the local organising committee and RSES, ANU to present at the 2012 Australian Space Science Conference in Melbourne, Australia.
- $2500 from the Astronomical Society of Australia and RSES, ANU to present at the 2012 Astrobiology Science Conference in Atlanta, USA.
- $500 from the Geological Society of Australia to present at the 2012 IGC in Brisbane, Australia.
- $600 from CSRIO and ANU to support education and outreach activities during the 2011 National Science Week Experimenthon at the CSIRO Discovery Centre, Canberra, Australia.
- $2500 from the Australian Centre for Astrobiology, International Society for the Study of the Origin of Life and Astrobiology Society, and ANU (Vice-Chancellor's HDR travel grant) to present at the 2011 Origins Conference in Montpellier, France.
- $400 from the European Astrobiology Network Association to present at the 2011 European Workshop on Astrobiology in Cologne, Germany.
- $400 from the ANU Student ANU Student Recruitment Office to present to present guest lectures at 3 high schools in Perth, Australia.
- $700 from RSES and ANU to cover travel expenses for field work to study hydrothermal vent fluids at the Kermadec Arc submarine volcanoes (off the coast of New Zealand) on-board *RV Tangaroa*.
- $3500 from the LOC to participate in the 2011 Astrobiology Winter School in Hawaii, USA.
- $100 from RSES to participate in a science communication workshop by the Australian National Centre for Public Awareness of Science in Canberra, Australia in 2010.
- $400 from RSES and LOC to present at the 2010 Aust. Space Science Conf. in Brisbane, Australia.
- $1600 from RSES and RSAA for demonstration flights for the EARTHRISE program.
- $3600 from the organising committee and RSES to present at the 2010 Astrobiology Graduate Conference in Tällberg, Sweden.

- $550 from the Geological Society of Australia and RSES to present at the 2009 Australian Space Science Conference and 2010 Australian Earth Sciences Convention in Australia.
- $2300 from ANU (Vice-Chancellor's HDR travel grant) and the NASA Astrobiology Institute to present a talk and poster at the 2010 Astrobiology Science Conference in Texas, USA.
- $2000 from the organising committee to present a poster at the 2010 Gordon Research Conference and Seminars on the Origin of Life in Galveston, USA.
- $2700 from the organising committee to present a poster at the 2009 NASA Astrobiology Graduate Conference in Washington, USA.
- $3800 from RSES and the organising committee to attend the 2009 International Astrobiology Summer School in Santander, Spain.
- $1100 by RSAA to participate in the 2008 ASA Harley Wood Winter School in Perth, Australia.

Education & Experience

Visiting Fellow, Australian National University **2017-2018**

- Research School of Astronomy and Astrophysics + Research School of Earth Sciences

Residential Life Manager, UniLodge @ ANU **2017**

- Deputy Head of Hall at the largest residence at the university (2000 students)

- Managed a team of 80 individuals, with the group providing 24/7 pastoral care in a residential setting

- Managed the Community Spirit Program ($200,000 fund) supporting a diverse group of students

- Developed comprehensive well-being and academic initiatives aligned with the university's vision

- Implemented new administrative, accounting and incident management processes to enhance student experience and improve business practices.

Australia Awards Endeavour Post-doctoral Research Fellow **2016**

- University of Washington (Mentor: John Baross) & University of Hawaii (Mentor: Mike Mottl)

PhD Cadidate: Planetary Science Institute, Australian National University **2009 - 2015**

The Origin and Evolution of Life on a Pale Blue Dot: Astrophysical, Geochemical and Biological Constraints on Habitability (Supervisor: Charles H. Lineweaver)

Bachelor of Science (1st class Honours), Australian National University **2008**

- Undertook research under the supervision of Charles H. Lineweaver studying the elemental abundances of life on Earth, the Oceans and the Sun.

- Performed analysis of the elemental composition of *E. coli* to identify resources required for future studies of the elemental composition of bacteria and archaea.

- Completed courses in Planetary Geology, Astrophysics, Chemistry and Science Communication.

Bachelor of Science: University of Western Australia **2005 - 2007**

- Consistently achieved High Distinctions for the 2nd and 3rd years with GPA of 6/7.

- Completed courses in Chemistry, Mathematics, Physics, Astronomy and Biology.

Secondary Education: Rossmoyne Senior High School, Perth, Australia **2004**

Research (3 month project): with Prof. John Watling, University of WA **2007**

Performed elemental analyses of marine sponges and studied nutrient uptake in mussels to identify relationships between metabolic pathways and the composition of its environment.

Summer Research Scholarship: with Dr. Charles H. Lineweaver, ANU **2007**

Research on the abundance of elements in organisms in the context of the origin and evolution of life.

Undergraduate Researcher: with Dr. Susan Barker, UWA **2005-2007**

Identified genes contributing to beneficial symbiosis between plants and fungi.

Student Research Scheme: with Dr. Patrick Finnegan, UWA **2004**

Investigation of mitochondrial protein synthesis to confirm the identity of transcription factor cDNA.