

**Melanie E. Moses**  
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**(a) Professional Preparation**

Stanford University	Palo Alto	Symbolic Systems	B.S. 1993
University of New Mexico	Albuquerque	Biology	Ph.D. 2005
University of New Mexico	Albuquerque	Biology & Computer Science	Postdoc 2006

**(b) Appointments**

University of New Mexico	Associate Professor	2013 to present
UCLA	Visiting Associate Professor	2014
Universitat Pompeu Fabra	Visiting Associate Professor	2013
Santa Fe Institute	External Faculty	2012 to present
University of New Mexico	Assistant Professor	2007 to 2013
University of New Mexico	Joint Appointment - Department of Biology	2010 to present

**(c) Publications (5 most relevant)**

\*Fricke, G. M., \*K. A. Letendre, M. E. Moses, and J. L. Cannon (2016) "Persistence and adaptation in immunity: T cells balance the extent and thoroughness of search" *PLoS Computational Biology* in press.

\*Hecker, J. P., and M. E. Moses. (2015). "Beyond pheromones: evolving error-tolerant, flexible, and scalable ant-inspired robot swarms." *Swarm Intelligence* 9(1): 43-70.

\*Flanagan, T. P., \*K. Letendre, \*W. Burnside, \*M. Fricke & M. E. Moses. (2011). "How ants turn information into food." *Proc. of the 2011 IEEE conference on Artificial Life*: 178-185. Best Paper Award.

DeLong, J.P., J.G. Okie, M.E. Moses, R.M. Sibly, and J.H. Brown. (2010). Shifts in metabolic scaling, production, and efficiency across major evolutionary transitions of life." *Proceedings of the National Academy of Sciences* 107(29): 12941-12945.

Banavar, J.R., M.E. Moses, J.H. Brown, J. Damuth, A. Rinaldo, R.M. Sibly and A. Maritan. (2010). A general basis for quarter power scaling in biology." *Proceedings of the National Academy of Sciences* 107(36): 15816-158120.

**Publications (5 additional)**

Kanigel-Winner K, Steinkamp MP, Lee R, Swat M, Muller CY, Moses ME, Jiang Y, Wilson BS. (2015). Spatial modeling of drug delivery routes for treatment of disseminated ovarian cancer. *Cancer Research* 1620 [Epub ahead of print].

Moses, M.E., C. Hou, W.H. Woodruff, G.B. West, J.C. Nekola, \*W. Zuo, and J.H. Brown. (2008). "Revisiting a Model of Ontogenetic Growth: Estimating Model Parameters from Theory and Data." *The American Naturalist* 171(5):632-645.

Hou, C., Zuo, W., Moses, M. E., Woodruff, W. H., Brown, J. H., & West, G. B. (2008). Energy uptake and allocation during ontogeny. *Science*, 322(5902), 736-739.

Samaniego, H., & Moses, M. E. (2008). Cities as organisms: Allometric scaling of urban road networks. *Journal of Transport and Land use*, 1(1): 21-39.

Moses, M. E. (2009). "Engineering: World Wide Ebb" (in Being Human Series). *Nature* 457: 660-661.

#### **(d) Synergistic Activities**

PI, NM CSforAll (2015 – present, <http://cs4all.cs.unm.edu/>) a professional development course for high school teachers preparing them to teach an introductory computer science course for UNM dual credit in New Mexico high schools. The program has trained 50 high school teachers who have taught 1000 high school students introductory computer programming and scientific modeling.

PI, NASA Swarmathon (2015 – present, <http://NasaSwarmathon.com>) a swarm robotics programming challenge designed to revolutionize space exploration. In the first annual challenge, the Swarmathon has built 60 robots and engaged 500 undergraduates from 36 Minority Serving Institutions.

Co-PI & Computer Science Faculty Advisor (2011 –present) for the NSF-funded STEPs in the Right Direction: Transforming Engineering/Computer Science Education at the University of New Mexico which funds summer internships for ~70 undergraduates each year and quarterly meetings of mentoring “families” in which computer science students meet with quarterly with a faculty mentor.

Co-director (2013- 2015) and Advisory Board member (2011-2015) for the UNM Program in Interdisciplinary Biological and Biomedical Science (PiBBs, <http://biology.unm.edu/PIBBS/Index.html>) which funds interdisciplinary graduate training for approximately 8 PhD students each year who have collectively produced over 100 publications in interdisciplinary biology.

Co-Chair (2010-2012) of the Gordon Research Conference on the Metabolic Basis of Ecology (2008-2010 Co-Vice Chair), a week-long conference with 100 attendees, 20 speakers and 40 graduate students attending the associated Graduate Research Seminar.

Speaker for numerous organizations to promote diversity in education and interdisciplinary education including: Project GUTS (Growing Up Scientifically) through the Santa Fe Institute; the Project for New Mexico Graduates of Color, McNair Program, UNM PCMP for African American pre-college students.

#### **(e) Collaborators & Other Affiliations (Outside of UNM)**

Deborah Gordon (Stanford University)

Chen Hou (University of Missouri)

Fred Koster (Lovelace Respiratory Institute)

Alan Perelson (Los Alamos National Labs)

Yi Jiang (University of Georgia)

**PhD advisor** (1): Bruce Milne, UNM Biology

**Postdoc advisors** (2): James H. Brown, UNM Biology and Stephanie Forrest, UNM Computer Science

I currently advise 4 Ph.D students (Matthew Fricke, John Ericson, Wayne Just, Qi Lu) and 1 postdoc (Dr. Joshua Hecker) at UNM. I have graduated the following 4 PhD students and sponsored 2 Postdocs.

<b>Name</b>	<b>Degree</b>	<b>Organizational Affiliation</b>
Kimberly Kanigel-Winner	Ph.D.	University of Colorado, Denver, postdoc
Soumya Banerjee	Ph.D.	Harvard University, postdoc
Tatiana P. Flanagan	Ph.D.	Research Scientist, Sandia National Labs
Joshua P. Hecker	Ph.D.	University of New Mexico, postdoc
Sheldon Jordon	postdoc	Self employed entrepreneur
Horacio Samaniego	postdoc	U. Austral de Chile, Assistant Professor