

CURRICULUM VITAE
LUKE JOSEPH MATTHEWS

EMPLOYMENT

- 2015-Current **Pardee RAND Graduate School faculty**, RAND Corporation
2014-Current **Full Behavioral / Social Scientist**, RAND Corporation
2012 - 2014 **Senior Scientific Director**, Activate Networks, Inc.
2011 - 2012 **Director of Data Analytics**, Activate Networks, Inc.

EDUCATION

- 2008-2011 **Postdoctoral Fellow (Research)**, Department of Human Evolutionary Biology, Harvard University. Advisor – Charles L. Nunn.
May 2008 **Ph.D., Anthropology**. New York University, New York, NY.
Dissertation: The comparative socioecology of white-fronted capuchin monkeys (*Cebus albifrons*) and the ethology of social learning in *Cebus*. Advisor – Anthony Di Fiore.
Jan. 2005 **M.A., Anthropology**. New York University, New York, NY.
M.A. Thesis: A comparative survey of culture in non-human primates and other animals.
May 2002 **B.S., Biology; B.A., Anthropology**. *Magna cum laude*. Indiana University of Pennsylvania, Robert E. Cook Honors College, Indiana, PA.

RAND PUBLICATIONS

- Schulker, C., N. Lim, **L. J. Matthews**, G. E. Grimm, A. Lawrence, and P. S. Firoz. 2021. Can Artificial Intelligence Help Improve Air Force Talent Management? An Exploratory Application. RRA812-1
- Mazarr, M. J. R. M. Bauer, A. Casey, S. Heintz, **L. J. Matthews**. 2019. The Emerging Risk of Virtual Societal Warfare: Social Manipulation in a Changing Information Environment. RR2714.
- Mazarr, M. J., A. Casey, A. Demus, S. W. Harold, **L. J. Matthews**, N. Beauchamp-Mustafaga, J. Sladden. 2019. *Hostile Social Manipulation: Present Realities and Emerging Trends*. RR2713
- Chari, R., M. S. Blumenthal, **L. J. Matthews**. 2019. *Community Citizen Science: From Promise to Action*. RAND Corporation. RR2763.
- Whitaker, A. A., G. Baker, **L. J. Matthews**, J. S. McCombs, and M. Barrett. 2019. *Who Plays, Who Pays? Funding for and Access to Youth Sports*. RR2581
- Matthews, L. J.**, R. A. Brown, and D. P. Kennedy. 2018. *A Manual for Cultural Analysis*. RAND Corporation. TL275.

Moore, M., L. J. Faherty, S. H. Fischer, et al. 2018. *Evaluation of Two Programs Supporting Global Family Planning Data Needs: Assessing Achievements, Informing Future Directions*. RAND Corporation. RR2112.

Chari, R., **L. J. Matthews**, M. S. Blumenthal, A. F. Edelman, and T. Jones. 2017. *The Promise of Community Citizen Science*. RAND Corporation. PE-256-RC

Nowak, S. A., **L. J. Matthews**, and A. M. Parker. 2017. *A General Agent-Based Model of Social Learning*. RAND Corporation. RR1768.

Hussey, P (lead report author) Chapter 6 authors, S Ahluwalia, J Broyles, P Ginsburg, T Gulden, S Hirshman, S MacCarthy, **L Matthews**, and K Watkins. 2015. *Resources and Capabilities of the Department of Veterans Affairs to Provide Timely and Accessible Care to Veterans*. RAND Corporation. RR-1165/2-VA

Gonzalez, G.C., **L. Matthews**, M. Posard, P. Roshan, and S. Ross. 2015. *Evaluation of the Military Spouse Employment Partnership: Progress Report on First Stage of Analysis*. RAND Corporation. RR-1349-OSD

COMMENTARIES

Matthews, L. J. 2020. The meta-lessons from COVID-19. *The Pacific Council Magazine*, November 2.

Matthews, L. J. 2019. A moonshot for extraterrestrial communication. *Anthropology News* website, July 12.

Matthews, L. J. 2017. Book Review of *Understanding Cultural Traits: A Multidisciplinary Perspective on Cultural Diversity*. *Journal of Cognitive Historiography*. Volume 4.

Matthews, L. J. 2017. Criteria for good Hilbert problems or other potentially fruitful research directions. *Religion, Brain, & Behavior*. Commentary of special issue on Hilbert problems for the scientific study of religion.

Matthews, L. J. 2016. Mutualistic cooperation – why religion is common but saints are rare. *Religion, Brain, & Behavior*. Commentary on target article by C. Wood, “Ritual well-being: toward a social signaling model of religion and mental health.”

PEER-REVIEWED JOURNAL PUBLICATIONS AND CHAPTERS

Nowak, S. A., C. Chen, A. M. Parker, C. A. Gidengil, and **L. J. Matthews**. 2020. Comparing covariation among vaccine hesitancy and broader beliefs within Twitter and survey data. *PLoS ONE*. e0239826.

Stockly, K., S. Arel, M. K. DeFranza, D. Ruck, **L. Matthews**, W. Wildman. 2020. Women-centered rituals and levels of domestic violence: a cross-cultural examination of ritual as a signaling and solidarity-building strategy. *Journal for the Study of Religion, Nature, and Culture*. 14(1):95-123.

- Ruck, D. J., **L. J. Matthews**, T. Kyritsis, Q. D. Atkinson, and R. Alexander Bentley. 2019. The cultural foundations of modern democracies. *Nature Human Behavior*. Early access online.
- Gidengil, C., C. Chen, A. M. Parker, S. Nowak, and **L. J. Matthews**. 2019. Beliefs around childhood vaccines in the United States: A systematic review. *Vaccine*. doi:<https://doi.org/10.1016/j.vaccine.2019.08.068>
- Matthews, L.J.** 2019. Dealing with culture as inherited information. In: *Social-Behavioral Modeling for Complex Systems*. Eds. P.K. Davis, A. O'Mahony, and J. Pfautz. pp 163-185. Hoboken NJ: Wiley & Sons Inc.
- Karimov, R. and **L. J. Matthews**. 2017. A simulation assessment of methods to infer cultural transmission on dark networks. *Journal of Defense Modeling and Simulation: Applications, Methodology, Technology*. 14:7-16.
- Matthews, L. J.**, S. Passmore, P. M. Richard, R. D. Gray, and Q. D. Atkinson. 2016. Shared cultural history as a predictor of political and economic changes among nation states. *PLoS ONE*. 11:e0152979
- Matthews, L. J.**, P. Dewan, and E. Y. Rula. 2013. Methods for inferring health-related social networks among coworkers from online communication patterns. *PLOS ONE*. 8:e55234.
- Matthews, L. J.**, J. Edmonds, W. Wildman, and C. L. Nunn. 2013. Cultural inheritance or cultural diffusion of religious violence? A quantitative case study of the Radical Reformation. *Religion, Brain, & Behavior*. 3:3-15.
- Matthews, L. J.** 2012. The recognition signal hypothesis for the adaptive evolution of religion: a phylogenetic test with Christian denominations. *Human Nature*. 23:218-249.
- Matthews, L. J.** 2012. Variations in sexual behavior among capuchin monkeys function for conspecific mate recognition: a phylogenetic analysis and a new hypothesis for female proceptivity in tufted capuchins. *American Journal of Primatology*. 74:287-298.
- Alfaro, J. W., **L. Matthews**, A. H. Boyette, S. J. Macfarlan, K. A. Phillips, T. Falótico, E. Ottoni, M. Verderane, P. Izar, M. Schulte, A. Melin, L. Fedigan, C. Janson, and M. E. Alfaro. 2012. Anointing variation across wild capuchin populations: a review of material preferences, bout frequency and anointing sociality in *Cebus* and *Sapujus*. *American Journal of Primatology*. 74:299-314.
- Diogo, R., **L. J. Matthews**, and B. Wood. 2012. A major reason to study muscle anatomy: myology as a tool for evolutionary, developmental, and systematic biology. *Biological Systems*. 1:1.

- Griffin, R. H., **L. J. Matthews**, and C. L. Nunn. 2012. Evolutionary disequilibrium and activity period in primates: a Bayesian phylogenetic approach. *American Journal of Physical Anthropology*. 147:409-416.
- MacLean, E.L., **L. J. Matthews**, B. A. Hare, C. L. Nunn, R. C. Anderson, F. Aureli, E. M. Brannon, J. Call, C. M. Drea, N. J. Emery, D. B. M. Haun, E. Herrmann, L. F. Jacobs, M. L. Platt, A. G. Rosati, A. A. Sandel, K. K. Schroepfer, A. M. Seed, J. Tan, C. P. van Schaik, V. Wobber. 2012. How does cognition evolve? Phylogenetic comparative psychology. *Animal Cognition*. 15:223-238.
- Toussaint, G., **L. Matthews**, M. Campbell, and N. Brown. 2012. Measuring musical rhythm similarity: Transformation versus feature-based methods. *Journal of Interdisciplinary Music Studies*. 6:23-53.
- Matthews, L. J.**, C. Arnold, Z. Machanda, and C. L. Nunn. 2011. Primate extinction risk and historical patterns of speciation and extinction in relation to body mass. *Proceedings of the Royal Society, Series B*. 278:1256-1263.
- Matthews, L. J.**, P. M. Butler. 2011. Novelty-seeking DRD4 polymorphisms are associated with human migration distance out-of-Africa after controlling for neutral population gene structure. *American Journal of Physical Anthropology*. 145: 382-389.
- Matthews, L. J.**, F. Jordan, M. Collard, C. L. Nunn, and J. J. Tehrani. 2011. Testing for divergent transmission histories among cultural characters: a study using Bayesian phylogenetic methods and Iranian tribal textile data. *PLoS ONE*. 6: e14810.
- Matthews, L. J.**, A. Paukner, and S. J. Suomi. 2010. Can traditions emerge from the interaction of stimulus enhancement and reinforcement learning? An experimental model. *American Anthropologist*. 112:257-269.
- Arnold, C., **L. J. Matthews**, and C. L. Nunn. 2010. The 10kTrees website: a new online resource for primate phylogeny. *Evolutionary Anthropology*. 19:114-118.
- Franz, M. and **L. J. Matthews**. 2010. Social enhancement can create adaptive, arbitrary and maladaptive cultural traditions. *Proceedings of the Royal Society, Series B*. 277:3363-3372.
- Nunn, C. L., C. Arnold, **L. J. Matthews**, and M. Borgerhoff Mulder. 2010. Simulating Trait Evolution for Cross-Cultural Comparison. *Philosophical Transactions of the Royal Society*. 365:3807-3819.
- Matthews, L. J.** 2009. Activity patterns, home range size, and intergroup encounters in *Cebus albifrons* support existing models of capuchin socioecology. *International Journal of Primatology*. 30:709-728.

Matthews, L. J. 2009. Intragroup behavioral variation in white-fronted capuchin monkeys (*Cebus albifrons*): mixed evidence for social learning from new and established analytical methods. *Behaviour*. 146:295-324.

Hodgson, J. A., K. N. Sterner, **L. J. Matthews**, A. S. Burrell, R. L. Raaum, C. B. Stewart, and T. R. Disotell. 2009. Successive radiations, not stasis, in the South American primate fauna. *Proceedings of the National Academy of Sciences, USA*. 106:5534-5539.

Matthews, L. J. and A. L. Rosenberger. 2008. Taxon combinations, parsimony analysis (PAUP*), and the taxonomy of the yellow-tailed woolly monkey, *Lagothrix flavicauda*. *American Journal of Physical Anthropology*. 137:245-255.

Rosenberger, A. L. and **L. J. Matthews**. 2008. *Oreonax* – not a genus. *Neotropical Primates*. 1:8-12.

GRANTS

- 2020 **Belmont Forum / National Science Foundation / National Oceanic and Atmospheric Administration.** Community Collective Action to Respond to Climate Change Influencing the Environment-health Nexus. (\$329,860)
- 2017 **National Institutes of Health, National Center for Child Health and Human Development.** Vaccine Beliefs and Decision Making. (\$481,989)
- 2009 **Harvard University Postdoctoral Travel Grant.** For presentation of research at the annual meeting of the American Association of Physical Anthropologists. \$1000.00
- 2004 **New York Consortium in Evolutionary Primatology (NYCEP) Field Research Grant.** Pilot research with *Cebus albifrons* at the Tiptuni Biodiversity Station. \$4000.00
- 2003 **NYCEP Field Research Grant.** Latin American Primate Conservation Biology Field Course. \$3000.00

INVITED PRESENTATIONS

July 2020. Panelist for: *The multiverse of what people do with a PhD in biological anthropology*. Hosted by the American Association of Physical Anthropologists.

May 2020. Panelist for: *Fact and Fiction: Art, News, and Propaganda*. Hosted by The Pacific Counsel on International Policy and the Wende Museum of the Cold War.

<https://www.pacificcouncil.org/activities/fact-and-fiction-art-news-and-propaganda>

Matthews, L. J. October 2019. Cultural inheritance mechanics: their affordances for evolutionary adaptation and applications to policy analysis. DySoC/NIMBioS Seminar Seires. University of Tennessee, Knoxville.

- Matthews, L. J.** *May* 2019. Quantitative cultural analysis of vaccine beliefs suggests novel messaging strategies. Immunization Services Division, Centers for Disease Control and Prevention (CDC)
- Matthews, L. J.** *September* 2018. Safe and effective marketing analytics for vaccine uptake. Anthropology in Action Speaker Series, Department of Anthropology, Indiana University of Pennsylvania
- Matthews, L. J.** *April* 2017. Passing through history: 128 years of Galton's problem and counting. Department of Anthropology, Boston University.
- Matthews, L. J.** *November* 2015. Cultural evolution from its primate origins to modern geopolitics, Anthropology in Action Speaker Series, Department of Anthropology, Indiana University of Pennsylvania.
- Matthews, L. J.** *December* 2013. Culture as an Evolved Emergent Property. Department of Anthropology, Yale University.
- Matthews, L. J.** *October* 2013 Tracking the electronic metadata trail of the social network. Connected Insight Summit.
- Matthews, L. J.** *April* 2013 Panelist and moderator in session: Using email and online data to discover organizational networks and leverage influence. The Network Roundtable Conference.
- Matthews, L. J.** *February* 2013. Panelist in session: Healthcare innovations for driving consumers to action. Healthcare Conference, Healthcare Club of Harvard Business School.
- Matthews, L. J.** *October* 2010. Cultural inheritance and the evolution of primate behavior: parallel patterns with genetics. George Washington University, Department of Anthropology, Center for the Advanced Study of Hominid Paleobiology (CASHP).
- Matthews, L. J.** and P. M. Butler. *September* 2010. Novelty-seeking DRD4 polymorphisms are associated with human migration distance out-of-Africa after controlling for neutral population gene structure. N. Christakis lab group, Department of Health Care Policy, Harvard Medical School.
- Matthews, L. J.** *June* 2010. Genetic and cultural inheritance in the evolution of primate behavior. National Centre for Biological Sciences, Bangalore, India.
- Matthews, L. J.** *April* 2010. Cultural inheritance mechanisms and the evolution of primate behavior. Department of Anthropology, New Mexico State University.
- Matthews, L. J.** and M. Franz. *January* 2010. Distinguishing tree-like descent from ongoing network transmission in putatively cultural data. N. Christakis lab group, Department of Health Care Policy, Harvard Medical School.

Matthews, L. J. August 2008. Field experiments of an extractive processing task in wild white-fronted capuchin monkeys (*Cebus albifrons*). Conference Symposium – Field experiments: The challenges and benefits of using experimental methods in field research. International Primatological Society XXII Congress.

CONFERENCE PRESENTATIONS and PUBLISHED ABSTRACTS

Matthews, L. J. 2019. Quantitative cultural analysis of vaccine beliefs suggests novel messaging strategies. Society for Applied Anthropology Annual Meeting.

Matthews, L. J., S. Nowak, C. Gidengil, C. Chen, J. M. Stubbersfield, J. J. Tehrani, and A. M. Parker. 2018. Antivaccine beliefs exhibit multiple modes of cultural transmission. Cultural Transmission of Social Norms 3rd workshop.

Matthews, L. J. 2018. Toward a robust statistical toolkit for cultural evolutionary modeling. Cultural Evolution Society Meeting.

Matthews, L. J. 2018. Correcting for genetic and cultural nonindependence (Galton’s Problem) when testing genetic associations with substance abuse. National Institutes of Drug Abuse (NIDA) Genetics Consortium, NIH.

Participant in roundtable, “Anthropology matter for professionals! Forging non-academic career pathways at the graduate and undergraduate level.” 2017. American Anthropological Association, 116th Annual Meeting

Matthews, L. J. 2016. The evolution and adaptive function of anti-vaccine conspiracy theories. American Anthropological Association, 115th Annual Meeting

Matthews, L. J. 2016. Predictive health analytics with networks. International Sunbelt Social Network Conference, 36.

Matthews, L. J. 2014. What phylogenies can teach us about cultural diffusion. American Anthropological Association, 113th Annual Meeting.

Matthews, L. J. 2014. Why religion is common but saints are rare: non-altruistic coordination as an adaptive driver for religion. Society for the Scientific Study of Religion, Annual Meeting.

Matthews, L. J. 2013. Biologically informed approaches to the diffusion of religious ideas. Society for the Scientific Study of Religion, Annual Meeting.

Matthews, L. J. 2012. Recognition signals in Christian denominations as mechanisms that enable cooperation: a comparative and phylogenetic approach. American Anthropological Association, 110th Annual Meeting.

- Matthews, L. J.**, and C. L. Nunn. 2011. Using phylogenies and social networks to detect the modality of disease transmission in wild primate social groups. *American Journal of Physical Anthropology*, Supplement. 144: 208-209
- Russo, G. A., J. W. Young, and **L. J. Matthews**. 2011. Ontogeny of caudal vertebral structure in capuchin monkeys (*Cebus albifrons* and *C. apella*). *American Journal of Physical Anthropology*, Supplement. 144: 259-260.
- Matthews, L. J.**, C. Arnold, and C. L. Nunn. 2010. Niche construction and the evolution of primate sex-biased dispersal patterns. *American Journal of Physical Anthropology*, Supplement. 141:166.
- Arnold, C., **L. J. Matthews**, and C. L. Nunn. 2010. The 10kTrees Project: a new inference of primate phylogeny for comparative studies. *American Journal of Physical Anthropology*, Supplement. 141:58.
- Franz, M. and **L. J. Matthews**. 2010. Social enhancement can create adaptive, arbitrary and maladaptive cultural traditions. European Human Behaviour and Evolution Association, 5th Annual Conference.
- Matthews, L. J.** 2009. Organizer and Chair of session – Social learning and development in an evolutionary context: adapted mechanisms and emerging patterns of tradition. American Anthropological Association, 108th Annual Meeting.
- Matthews, L. J.** 2009. Simple social learning mechanisms are sufficient to produce foraging traditions in capuchin monkeys (genus *Cebus*). Presented at: American Anthropological Association, 108th Annual Meeting.
- Matthews, L. J.** 2009. Cluster analysis and social network theory applied to the study of socially learned traditions in primates. *American Journal of Physical Anthropology*, Supplement. 138:256.
- Montague, M. J. and **L. J. Matthews**. 2009. Why do capuchin and squirrel monkeys form interspecific associations? A GIS based test using ranging and feeding data. *American Journal of Physical Anthropology*, Supplement. 138:265-266.
- Matthews, L. J.** 2008. Ranging behavior of white-fronted capuchins (*Cebus albifrons*) in the Ecuadorian Amazon: effects of resource use and intergroup interactions. *American Journal of Physical Anthropology*, Supplement. 46:151.
- Hodgson, J. A., K. N. Sterner, **L. J. Matthews**, R. Jani, C. B. Stewart, and T. R. Disotell. 2008. Phylogenetic relationship of the Platyrrhini inferred from complete mitochondrial genome sequences. *American Journal of Physical Anthropology*, Supplement. 46:118-119.
- Matthews, L. J.** and C. A. Schmitt. 2007. Courtship behaviors of genus *Cebus*: a test case for

inferences from phylogeny. *American Journal of Physical Anthropology*, Supplement. 44:166.

Schmitt, C. A., A. Di Fiore, A. Link, **L. J. Matthews**, M. J. Montague, A. M. Derby, D. Hurst, G. Carrillo, C. Sendall, M. Y. Field, and E. Fernandez-Duque. 2007. Comparative ranging behavior of eight species of primates in a western Amazonian rainforest. *American Journal of Physical Anthropology*, Supplement. 44:208-209.

Matthews, L. J. 2005. A behavioral phylogeny of the platyrrhines. Presented at “Monkeys: Old and New,” a symposium sponsored by the New York Consortium in Evolutionary Primatology.

POPULAR PRESS COVERAGE

My research on SETI/METI policy (Matthews 2019, *Anthropology News*) was covered by *The Christian Science Monitor*.

My research on the cultural foundations of democracy (Ruck et al. 2019) was covered by *Science News*.

My research on Body Mass Index and social networks (Matthews, Dewan, Rula 2013) was covered by CBS news online.

My research on anointing variation among capuchin monkeys (Alfaro et al. 2012) was covered by *The New York Times*.

My research on novelty seeking genes and human migration (Matthews and Butler 2011) was covered by *New Scientist*, *The Toronto Star*, and *The Washington Post*.

HONORS and AWARDS

- 2018 Inducted into the Alumni Hall of Distinction, Indiana University of Pennsylvania, College of Humanities and Social Sciences
- 2010 Harvard University Derek Bok Center for Teaching and Learning – Certificate of Distinction in Teaching (given for excellence in teaching of the course “Primate Genetics”).
- 2009 Best New Investigator Award, presented by the Evolutionary Anthropology Society (AAA) for the presentation, “Simple social learning mechanisms are sufficient to produce foraging traditions in capuchin monkeys (genus *Cebus*).”
- 2003 NSF graduate research training fellowship, honorable mention.

PROFESSIONAL SERVICE

2020 - present Member of the Pacific Council on International Policy

2019 - present Member of Cultural Evolution Society Working Group for Education and Outreach. Main activities are reviewing proposals for small grants to build education modules on cultural dynamics.

- 2008-2011 Assisted in the development of the *10kTrees* website that provides primate-wide Bayesian inferences of phylogeny from DNA sequence data. This webserver is produced by Charlie Nunn's lab and is available at - <http://10ktrees.fas.harvard.edu>
- June 2011 Instructor at the AnthroTree workshop organized by Charlie Nunn.
- 2009-2011 Participant, NESCent (National Evolutionary Synthesis Center) working group - "How Does Cognition Evolve?"
- 2008-2011 Assisted in the development of the *AnthroTree* website, an instructional website on comparative methods produced by Charlie Nunn's lab.
- 2004-2005 NYU Catholic Grad-Law Students & Young Professionals Association, Co-President.
- 2003-2004 New York University Anthropology Graduate Student Association, Officer.

Peer Reviewer for *American Journal of Physical Anthropology*; *American Journal of Preventative Medicine*; *American Journal of Primatology*; *Animal Behaviour*; *Current Anthropology*; *Ethology*; *Evolution and Human Behavior*; *Folia Primatologica*; *Human Nature*; *International Journal of Primatology*; *Journal of Defense Modeling and Simulation*; *Journal of General Internal Medicine*; *Journal of Theoretical Biology*; *PLOS ONE*; *Proceedings of the Royal Society B*; *Religion, Brain, & Behavior*; *Science Advances*; *The John Templeton Foundation*.

TEACHING EXPERIENCE

- 2017, 2019 **Instructor** for course "Cultural Measurement and Analysis for Policy Research" in Pardee RAND Graduate School
- 2015-Present **Doctoral Dissertation Committee Member and Chair**, Pardee RAND Graduate School
- 2015, 2018 **Instructor** for individual tutorial on Machine Learning, Pardee RAND Graduate School
- 2010 **Teaching Fellow** (Instructor) for course "Primate Social Behavior" in Department of Human Evolutionary Biology, Harvard University.
- 2009 **Teaching Fellow** (Instructor) for course "Primate Genetics" in Department of Human Evolutionary Biology, Harvard University.
- 2008 **Adjunct Instructor** for course "Human Evolution" in Department of Anthropology, New York University.
- 2007 **Teaching assistant** for course "Emerging Diseases" in Department of Anthropology, New York University.
- 2003-2005 **Teaching assistant** for three semesters of course "Human Evolution" in Department of Anthropology, New York University.