

# Cody T. Ross

## Curriculum Vitæ

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### Education

- 2014 **PhD, Anthropology**, University of California, Davis.  
*Specialization in Bayesian Data Analysis and Mathematical Modeling*
- 2010–2013 **Master of Arts, Anthropology**, University of California, Davis.  
*Specialization in Human Behavioral Ecology and Molecular Anthropology*
- 2008–2010 **Master of Arts, Anthropology**, California State University, Fullerton.  
*Specialization in Applied Anthropology, Conservation, and Land-Use Management*
- 2005–2008 **Bachelor of Arts, Anthropology**, California State University, Fullerton.

### Expertise

Bayesian Statistics, Multi-level Modeling, Mathematical Methods in Evolution and Ecology, Applied Anthropology, Gene-Culture Coevolution, Human Behavioral Ecology

### Doctoral Dissertation

- Title *Bayesian Methods in Applied Anthropology and Human Behavioral Ecology*
- Committee Bruce Winterhalder, Monique Borgerhoff Mulder, Richard McElreath, and Pete Richerson
- Description In this dissertation, I explore the use of Bayesian models and Hamiltonian Markov Chain Monte Carlo methods in the analysis of data relevant to applied anthropological and human behavioral ecological studies. The anthropological data in such studies are often incomplete, censored, or uncertain, limiting the usefulness of both the data itself and standard statistical tools. However, recent advances in Bayesian model specification and Hamiltonian Monte Carlo parameter estimation methods allow for integration over uncertainty due to missing, censored, and partially known data, and can thus dramatically improve the quality of analysis in pure and applied anthropological studies.

### Publications

- [19] **Ross, C.T.** Land-use change, environmental service payments, and non-financial incentives: A case study in Costa Rica. *Ecological Economics*. In Review.
- [18] Roodgar, M., **Ross, C.T.**, Tarara, R., Lowenstine, L., Dandekar, S., and Smith, D.G. Gene expression and TB pathogenesis in rhesus macaques: NR2C2,(TR4), CD40, CD40L, Fas (CD95), FASL(CD95L), IL7, NRAMP, and TNF- $\alpha$  are host genetic markers in peripheral blood mononuclear cells that are associated with severity of TB lesions. *Infection, Genetics, and Evolution*. In Review

- [17] **Ross, C.T.**, and Winterhalder, B. (20015). Sit-and-wait versus active search hunting: A behavioral ecological model of hunting strategies. *Journal of Theoretical Biology*. Minor Revisions.
- [16] **Ross, C.T.**, Borgerhoff Mulder, M., Strimling, P., Lindenfors, P., and Ericksen, K. (2015). Adaptive phylogenetic modeling of cultural traits: The origins and maintenance of female genital modification. *Human Nature*. In Review.
- [15] **Ross, C.T.** (2015). A Multi-Level Bayesian Analysis of Racial Bias in Police Shootings at the County-Level in the United States, 2011-2014. *PLOS One*. Major revisions.
- [14] Winterhalder, B., Puleston, C., and **Ross, C.T.** (2015). Production risk, inter-annual food storage by households, and population-level consequences in prehistoric agrarian societies. *Environmental Archaeology: The Journal of Human Palaeoecology*. In Press.
- [13] **Ross, C.T.**, Borgerhoff Mulder, M., Winterhalder, B., Uehara, R., Headland, J., and Headland, T. (2015). Bayesian analysis of Agta demography through the transition from foragers to landless peasantry (eastern Luzon, Philippines). *Evolution and Human Behavior*. Revised draft submitted.
- [12] **Ross, C.T.**, and Winterhalder, B. (2015). A hierarchical Bayesian analysis of parasite prevalence and socio-cultural outcomes: The mediating role of structural racism and sanitation infrastructure. *American Journal of Human Biology*. In Press.
- [11] **Ross, C.T.**, Joyas Campino, P., and Winterhalder, B. (2015). Inter-ethnic transfer and cultural evolution of female genital modification in the African diaspora and Indigenous populations of Colombia. *Human Nature*. In Press.
- [10] Richerson, P., Baldini, R., Bell A., Demps, K., Frost, K., Hillis, V., Mathew, S., Naar, N., Newson, L., Newton, E., **Ross, C.T.**, Smaldino, P., Waring, T., and Zimmerman, M. (2015). Cultural group selection plays an essential role in explaining human cooperation: A sketch of the evidence. *Behavioral and Brain Sciences*. 5, 1-71.
- [9] Roodgar, M., **Ross, C.T.**, Kenyon, N., Marcelino, G., and Smith, D.G. (2014). *iNOS* regulatory region variation in non-human primates. *Infection, Genetics, and Evolution*. 31, 236-244
- [8] **Ross, C.T.**, Roodgar, M., and Smith, D.G. (2015). Evolutionary distance of amino acid sequence orthologs across macaque subspecies: Candidate genes for SIV resistance in Chinese rhesus macaques. *PLOS One* 10 (4), e0123624.
- [7] **Ross, C.T.**, and Richerson, P.J.(2014). New frontiers in the study of human cultural and genetic evolution. *Current Opinion in Genetics & Development* 29. 103-109.
- [6] **Ross, C.T.**, Weise, J.A., Bonnar, S., Nolin, D., Satkoski Trask, J., Smith, D.G., ... and Kanthaswamy, S. (2014). An empirical comparison of short tandem repeats (STRs) and single nucleotide polymorphisms (SNPs) for relatedness estimation in Chinese rhesus macaques (*Macaca mulatta*). *American Journal of Primatology*. 76 (4), 313-324.
- [5] **Ross, C.T.**, Richerson, P.J., and Rogers, D. (2013). Mechanisms of cultural change and the transition to sustainability. In *Global Environmental Change: The Handbook of Global Environmental Pollution*. Springer. Edited by Bill Freedman.
- [4] Kanthaswamy, S., Ng, J., **Ross, C.T.**, Trask, J.S., Smith, D.G., Buffalo, V.S., ... and Lin, D. (2013). Identifying human-rhesus macaque gene orthologs using heterospecific SNP probes. *Genomics*. 101(1), 30-37.

- [3] Kanthaswamy, S., Trask, J.S., **Ross, C.T.**, Kou, A., Houghton, P., Smith, D.G., and Lerche, N. (2012). A large-scale SNP-based genomic admixture analysis of the captive rhesus macaque colony at the California National Primate Research Center. *American Journal of Primatology*, 74(8), 747-757.
- [2] **Ross, C.T.** (2014). *Bayesian Methods in Applied Anthropology and Human Behavioral Ecology*. PhD Dissertation, University of California, Davis. ISBN 9781321363838.
- [1] **Ross, C.T.** (2010). *Pura vida in a land of chemicals and pasture: An anthropological exploration of the Pagos por Servicios Ambientales program, linking conservation, human needs, and sustainable land-use in Costa Rica*. MA Dissertation, California State University, Fullerton. Dissertations & Theses: A&I. (Publication No. AAT 1486164).

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### Papers in Preparation (PDFs Available Upon Request)

- [IP1] **Ross, C.T.** and Beheim, B. The Cultural Evolution of Chess Strategy. Completed
- [IP2] **Ross, C.T.**, and Frost, K. Rethinking the presentation of data in the CDC-NCHHSTP HIV/STD Atlas: Multi-level Bayesian models can improve inference on STD prevalence and better ensure the anonymity of individual-level data. Completed.
- [IP3] Blackwell, A., and **Ross, C.T.** Modeling the ecological and demographic conditions underlying martyrdom: A mathematical model of perceived inclusive fitness outcomes via self-sacrifice. Completed.
- [IP4] **Ross, C.T.**, Grote, M. and Winterhalder, B. A Bayesian analysis of spatial and temporal variation in Medieval English cereal yields with implications for models of agrarian social development and resilience. In Progress.
- [IP5] **Ross, C.T.**, Grote, M. and Winterhalder, B. A time series Bayesian network linking ecology, population, and political economy in agrarian England, 1280-1400. In Progress.
- [IP6] **Ross, C.T.**, Winterhalder, B., Kennett, D. Grote, M. and Bartruff, J. Ideal free prehistoric settlement of the Northern Channel Islands: A spatially explicit Bayesian analysis of settlement patterning. In Progress.
- [IP7] **Ross, C.T.** The rise and persistence of Somali piracy: An approach to policy rooted in human behavioral ecological modeling. In Progress.
- [IP8] **Ross, C.T.** An Econometric Analysis of Wealth Transmission from Slaves to Slave-Owners and the Inter-Generational Persistence of Injustice. In Progress.
- [IP9] **Ross, C.T.** Oh, S.Y., Borgerhoff Mulder, M., and Bowles, S. The Polygyny Threshold in the Context of Rival and Non-Rival Wealth: A Case Study of Kipsigis Agropastoralists. In Progress.
- [IP10] Oh, S.Y., Bowles, S., Borgerhoff Mulder, M., and **Ross, C.T.** The decline of polygyny: An interpretation. In Progress.
- [IP11] Schacht, R. and **Ross, C.T.** Partner Preferences in the Makushi: A Bayesian  $\ell_1$  Regularization Approach to Analysis of Multi-dimensional Likert-scale Data. In Progress.

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## Presentations at Professional Meetings

### Papers, Invited Talks, and Art Performances

- 2015 **Ross, C.T.** Queerness and Closet Doors: Reclaiming Representation. Third Space Art Collective.
- 2015 **Ross, C.T.** Big data approaches to the study of human social learning: The cultural evolution of Chess strategy. Inaugural presentation of the UC Davis Data Sciences Workshop.
- 2015 **Ross, C.T.** The polygyny puzzle: Addressing empirical challenges. Santa Fe Institute Workshop on the Dynamics of Wealth Inequality and Family Structure.
- 2015 **Ross, C.T.** Art is Offensive: Integrative Art and Social Justice. UC Davis Leonardo Art Science Evening Rendezvous.
- 2014 **Ross, C.T.** Winterhalder, B., Puleston, C. Impacts of environmental variability and food storage on the demography and development of agricultural societies. Evolutionary Demography Society Meeting, Stanford.
- 2014 **Ross, C.T.**, Borgerhoff Mulder, M., Winterhalder, B., Joyas Campino, P., Strimling, P., Lindenfors, P., and Ericksen, K. The evolutionary dynamics of female genital modification: Origins, maintenance, and transmission. Human Behavior and Evolution Society. Natal, Brazil.
- 2014 **Ross, C.T.**, Joyas Campino, P., and Winterhalder, B. The social transmission of female genital modification in Colombia. California Workshop on Evolutionary Social Sciences. San Luis Obispo, California.
- 2012 Winterhalder, B., Puleston, C. and **Ross, C.T.** Household-level storage and population-level consequences in a temperate zone, agrarian production system. Workshop on Neolithic Technologies - Amerind Foundation, Dragoon, Arizona.
- 2009 **Ross, C.T.** Land-use allocation and stakeholder concerns: Community conservation in Limón, Costa Rica. Society for Applied Anthropology. Santa Fe, New Mexico.
- 2008 **Ross, C.T.** Closed Doors: Assassinations and 'altitude sickness.' Southwestern Anthropological Association. Fullerton, California.

### Posters

- 2012 **Ross, C.T.**, Ng, J., Trask, J.S., Smith, D.G., Buffalo, V.S., Fass, J., Lin, D. and Kanthaswamy, S. Identifying and cataloguing human-rhesus macaque gene orthologs using heterospecific SNPs. Poster. International Conference on Primate Genomics. Houston, Texas.
- 2011 **Ross, C.T.** The rise and persistence of Somali piracy: An approach to policy rooted in human behavioral ecology. Poster. Institute on Global Conflict and Cooperation. Berkeley, California.
- 2010 **Ross, C.T.**, Mas por Menos: Integrating prestige and social status into conservation incentive programs. Poster. Human Behavior and Evolution Society. Eugene, Oregon.
- 2009 **Ross, C.T.**, Land-use, profitability, and conservation in Limón, Costa Rica. Poster. Society for Applied Anthropology. Santa Fe, New Mexico. (Second place in poster competition).

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## Professional Experience

### Teaching, Research, and Employment

- 2014-2015 **Postdoctoral Scholar**, *Santa Fe Institute*, New Mexico, under Sam Bowles and Monique Borgerhoff Mulder.
- 2012-2014 **Graduate Student Researcher**, *Department of Anthropology, UC Davis*, California, under Bruce Winterhalder.
- 2010-2012 **Teaching Assistant**, *Department of Anthropology, UC Davis*, California.
- 2011-2012 **Junior Specialist**, *Molecular Anthropology Laboratory, UC Davis*, California.
- 2009-2010 **Academic Tutor**, *University Learning Center, CSUF*, California.

### Data Analysis and Contract Work

- 2014-2015 **Data Analysis**, *NIMBioS*.  
Cross-cultural analysis of reproductive skew in humans.
- 2012-2013 **Bayesian Analysis**, *BloodSource*, Mather, CA.  
Report for BloodSource: A descriptive and inferential statistical analysis of the BloodSource donor base.
- 2011 **Genetic Analysis**, *Molecular Anthropology Laboratory, UC Davis*, California.  
Report for Allergan Pharmaceuticals: An estimation of relatedness between two microencephalic long-tailed macaques.

### Anthropological Fieldwork

- 2012-2013 **Colombia**, *Chocó and Riseralda*, 5 months.  
I conducted a study on the social transmission of female genital modification from the Afrocolombian population to specific indigenous groups.
- 2011-2012 **Lebanon**, *Beirut*, 6 months.  
I conducted a pilot study on ethnic tensions and the effects of collateral damage on attitudes about the use of violence.
- 2010 **Costa Rica**, *All regions*, 5 months.  
I conducted Masters degree fieldwork on environmental service payments, and the perceived value of non-monetary incentives among land-owners of varying socioeconomic status.

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## Grants and Fellowships

- 2014 Graduate Student Travel Award, Graduate Studies. UC Davis. (\$1,000).
- 2012 EVOL Summer Research Award, Dept. of Anthropology. UC Davis. (\$4,000).
- 2011 EVOL Summer Research Award, Dept. of Anthropology. UC Davis. (\$3,537).
- 2009 Sadovszky International Research Award, Dept. of Anthropology, CSUF. (\$300).
- 2011 Emeriti Memorial Award, Emeriti Association (2009), CSUF. (\$600).
- 2011 Golden State Scholarshare Trust, Governor's Scholarship Program (2004), State of California. (\$1,300).

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## Awards

- 2014 Dean's Prize for Best Artwork (*for* Closed Doors: Assassinated Activists and Political Prisoners), Interdisciplinary Graduate Symposium. UC Davis. (\$1,000).

- 2013 Dean's Prize for Best Artwork (*for A Doorway Burned Open: Mohamed Bouazizi and the Arab Spring*), Interdisciplinary Graduate Symposium. UC Davis. (\$1,000).
- 2010 Outstanding Individual Achievement Award, Lambda Alpha Honor Society.
- 2010 Masters Thesis Award in Anthropology, Dept. of Anthropology, CSUF.
- 2009 Student Poster Competition 2nd Place (2009), The Society for Applied Anthropology. (\$200).

## Computer skills

Mathematical	R, Stan, BUGS, JAGS, Mathematica
Data	R, Excel, OpenOffice
Typesetting	L <sup>A</sup> T <sub>E</sub> X, Microsoft Office, OpenOffice
Other	HTML, Inkscape, Git

## Languages

English	<i>Native speaker</i>
Spanish	<i>Non-native speaker, fluent</i>
Arabic	<i>Basic communication abilities</i>
French	<i>Basic communication abilities</i>