

Collin Michael McCabe, PhD

Curriculum Vitae

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471 E Broad St, Ste 1400, Columbus, OH 43215, USA

collin.mccabe@radpartners.com

+1 (614) 586-3701

PROFESSIONAL EXPERIENCE:

Data Scientist , Radiology Partners, Inc.	2018-present
Lecturer , The Ohio State University, Department of Mathematics	2018-present
Data Science Consultant , Illumination Works, LLC	2018
Postdoctoral Associate , Duke University School of Medicine, Department of Medicine, Division of Infectious Diseases and Global Health	2017-2018

EDUCATION:

Duke University Certificate, One Health Training Program	Durham, NC 2017
Harvard University PhD, Human Evolutionary Biology <i>Dissertation: Behavioral determinants of pathogen exposure across scales among humans, primates, and other mammals</i>	Cambridge, MA 2017
Harvard Business School Pass with Honors, HBX Credential of Readiness (CORE)	Boston, MA 2014
University of Notre Dame BS, Biological Sciences BA with Honors, Anthropology <i>Thesis: Conceptualizing & operationalizing a theory of culture among great apes</i>	Notre Dame, IN 2010 2010

RESEARCH INTERESTS:

Data science, natural language processing (NLP), machine learning (ML), artificial intelligence (AI), radiology, healthcare, global health, data management, biostatistics, epidemiology, emerging infectious diseases, zoonoses, parasitology, personality, innovation, social learning, commensalism, phylogenetic comparative methods, meta-analysis, social network analysis, simulation modeling of disease spread

PUBLICATIONS:

* *Undergraduate advisees underlined*

McCabe CM, Nunn CL. 2018. Effective network size predicted from simulations of pathogen outbreaks through social networks provides a novel measure of structure-standardized group size. *Front Vet Sci* 5:71. DOI: <https://doi.org/10.3389/fvets.2018.00071>.

Sumner K, **McCabe CM**, Nunn CL. 2018. Network size, structure, and pathogen transmission: a simulation study comparing different community detection algorithms. *Behaviour* 155(7-9). DOI: <https://doi.org/10.1163/1568539X-00003508>.

McCabe CM. 2016. The scientist's guide to summer reading: Death on Earth. *Science* 352(6290):1169-1170. DOI: 10.1126/science.aaf6929.
[Non-peer-reviewed Editorial]

Nunn CL, Jordán F, Verdolin J, **McCabe CM**, Fewell J. 2015. Infectious disease and group size: More than just a numbers game. *Philos Trans R Soc B* 370:20140111. DOI: 10.1098/rstb.2014.0111.

- McCabe CM**, Reader SM, Nunn CL. 2014. Infectious disease, behavioral flexibility, and the evolution of culture in primates. *Proc R Soc B* 282:20140862. DOI: 10.1098/rspb.2014.0862.
- McCabe CM**, Rand DG. 2014. Coordinated punishment does not proliferate when defectors can also punish cooperators. In: JH Gallo (Ed.), *Antisocial Behavior: Etiology, Genetic and Environmental Influences and Clinical Management*. Nova Science Publishers: Hauppauge, NY. pp 1-14.
- Garamszegi LZ, Nunn CL, **McCabe CM**. 2012. Informatics approaches to developing dynamic meta-analyses. *Evol Ecol* 26(5):1275-1276. DOI: 10.1007/s10682-012-9592-0.
- McCabe CM**, Agwanda B, Weinstein SB, Young HS, Nunn CL. In Prep. Human-rodent commensalism and implications for parasite transmission in the modern agricultural transitions of central Kenya.
- McCabe CM**, Lee T, Archie EA, Shaw E, Fuentes A. In Prep. Variation in gastrointestinal parasite burdens among semi-free-ranging Barbary macaques, *Macaca sylvanus*, in the Upper Rock Nature Reserve, Gibraltar.
- Yegian AK, Castillo ER, **McCabe CM**. In Prep. If you can't stand the heat: Evolutionary patterns of mammalian species distributions and their associations with habitat temperature, heat retention, and tendon inefficiency.

RESEARCH GRANTS:

Doctoral Dissertation Research Improvement Grant, NSF (\$21,812)	2014
Dissertation Fieldwork Grant, Wenner-Gren Foundation (\$15,681)	2014
Early Training & Research Grant, Harvard University, HEB Dept (\$5,000)	2012
Nanovic Institute Research Grant, University of Notre Dame (\$1,072)	2010
President's Circle Grant, University of Notre Dame (\$500)	2010
College of Science Travel Grant, University of Notre Dame (\$500)	2010
Undergrad Research Opportunity, University of Notre Dame (\$1,750)	2009

AWARDS & FELLOWSHIPS:

Cora du Bois Dissertation Completion Fellowship	2016
Graduate Research Fellowship, NSF	2011-2016
Lambda Alpha National Collegiate Honors Society for Anthropology	2010
McGrath Award for Excellence in Research, University of Notre Dame	2009
Bernard J Hank Research Fellowship, University of Notre Dame	2008-2009
Eagle Scout Award	2006

INVITED LECTURES:

- McCabe CM**, Jordán F, Nunn CL. "More than just a numbers game: populations, networks, and disease dynamics in primates." Keynote session podium presentation at: *Joint International & American Society of Primatologists Biannual Meeting*; Bend, OR, June 2015.
- McCabe CM**, Castillo ER, Otárola-Castillo E. "Enhancing physical anthropology graduate education with public outreach in the K-12 classroom." Invited poster at: *American Association of Physical Anthropologists Annual Meeting*; St. Louis, MO, March 2015.
- McCabe, CM**. "Monkey Business: How studying primates and other animals can teach us more about human epidemiology." *Harvard Global Health Institute Seminar Series*; Cambridge, MA, October 2012.

PRESENTATIONS:

* *Undergraduate advisees underlined*

- Nunn CL, Sumner K, **McCabe CM**. "Infectious disease and group size: The social bottleneck hypothesis." Podium presentation at: *European Society for Evolutionary Biology XVI Congress*; Groningen, The Netherlands, August 2017.

- McCabe CM**, Young HS, Weinstein SB, Nunn CL. “Unwelcome guests: Human-rodent commensalism and its implications for zoonotic disease transfer.” Podium presentation at: *American Association of Physical Anthropologists Annual Meeting*; New Orleans, LA, April 2017.
- McCabe CM**, Wrangham RW. “Habitat temperature and implications for total energy expenditure among mammals and primates.” Poster at: *American Association of Physical Anthropologists Annual Meeting*; Atlanta, GA, April 2016.
- McCabe CM**, Reader SM, Nunn CL. “Social learning as a conduit for parasite transmission in the evolution of primates.” Podium presentation at: *Göttinger Freiländertage IX*; Göttingen, Germany, December 2013.
- McCabe C**, Nunn C, Reader S. “How do social learning and environmental exploration affect infectious disease risk in primates?” Poster at: *Ecology and Evolution of Infectious Diseases Annual International Meeting*; Ann Arbor, MI, May 2012.
- Nunn CL, Rifkin JL, Garamszegi LZ, **McCabe CM**. “Do parasites constrain group size? A phylogenetic comparative study and meta-analysis.” Podium presentation at: *American Association of Physical Anthropologists Annual Meeting*; Portland, OR, April 2012.
- McCabe CM**, Nunn CL, Reader SM. “Infectious disease risk in the evolution of culture.” Podium presentation at: *American Association of Physical Anthropologists Annual Meeting*; Portland, OR, April 2012.
- McCabe CM**, Lee T, Fuentes A. “Variation in parasite burdens among semi-free-ranging Barbary macaques, *Macaca sylvanus*, in the Upper Rock Nature Reserve, Gibraltar.” Poster at: *Midwest Primate Interest Group Annual Meeting*; Allendale, MI, October 2009.

TEACHING:

- Lecturer**, The Ohio State University
- *Data Science with R, an Erdős Institute Bootcamp* Summer 2018
- Teaching Fellow**, Harvard University
- *Primate Social Behavior* (Drs Zarin Machanda & Stephanie Meredith) Fall 2013
- *Animal Behavior* (Profs Bence Ölveczky & Naomi Pierce) Spring 2013
- *Primate Disease Ecology and Global Health* (Prof Charles Nunn) Fall 2012
- Teaching Assistant**, University of Notre Dame
- *Practicum in Environmental Field Biology* (Prof Gary Belovsky) Summer 2010

LABORATORY & FIELD RESEARCH EXPERIENCE:

- Veterinary Medicine Institute Mongolia
Postdoctoral Associate; PI: Gregory Gray & Battsetseg Gonchigoo 2017-2018
Surveillance of Emerging Mosquito-borne Arboviruses in Mongolia
- Duke University Durham, NC
Dissertation Laboratory Researcher; Advisors: Charles Nunn & Christine Drea 2015-2016
Parasite Ova Flotation, Ectoparasite Identification, and Behavior Evaluation
- Mpala Research Centre Kenya
Dissertation Field Researcher; Advisors: Charles Nunn & Richard Wrangham 2012-2015
Zoonotic Disease Risks of Rodent-Human Interactions
- UND Environmental Research Center-West Moiese, MT
Undergraduate Researcher; Advisors: Gretchen Gerrish & Gary Belovsky 2009
Geospatial Movement Patterns and Learning Behavior in *Marmota flaviventris*
- Upper Rock Nature Reserve Gibraltar
Field Researcher & Technician; PI: Agustín Fuentes 2009-2011
Gastrointestinal Parasites in *Macaca sylvanus* on the Rock of Gibraltar

UND Environmental Research Center-East Undergraduate Researcher ; Advisors: Michael Cramer & Gary Belovsky Habitat Disturbance and Foraging Strategies in <i>Peromyscus maniculatus gracilis</i>	Land Lakes, WI 2008
University of Notre Dame, Department of Biological Sciences Laboratory Technician ; PI: Gary Belovsky Ecosystem Structure and Function in Palouse Grasslands	Notre Dame, IN 2007-2010

ACADEMIC SERVICE:

Conference Organizing Committee , 2nd annual meeting of International Society for Evolution, Medicine, and Public Health (ISEMPH), Durham NC	2016
Manuscript Reviewer : <i>EcoHealth</i> , <i>Intelligence</i>	2014-present
Undergraduate Thesis Mentor , Harvard University & Duke University	2013-2017
Curriculum Development Coordinator , "Professional Development for Graduate Students," Department of Human Evolutionary Biology, Harvard University	2013-2014
Faculty-Graduate Student Liaison , Harvard University	2012-2014
Invited Panelist , Notre Dame Undergraduate Research Grant-writing Workshop	2010

PUBLIC OUTREACH:

Guest Lecturer, American School of Ulaanbaatar, Human Evolution Lecture and Q&A Session; Ulaanbaatar, Mongolia, December 2017.

Guest Lecturer, Chapel Hill High School, Parasite Ecology Lecture / Human Evolution Lecture and Hands-on Fossil Comparisons; Chapel Hill, NC, April-May 2016.

Education Volunteer, Clearwater Environmental Festival; Croton-on-Hudson, NY, June 2014.

Human Evolution Educator, Harvard Museums of Science and Culture, Stories Through Time Family Festival; Cambridge, MA, March 2013.

Guest Lecturer, Boston Day and Evening Academy, Global Development and Infectious Diseases Lecture and Q&A Session; Cambridge, MA, December 2012.

Guest Lecturer, Somerville High School, Human Evolution Lecture / Hands-on Fossil Comparisons; Somerville, MA, May 2012-2014.

Microblogger, Twitter, Sharing interesting biology and infectious disease news stories and commentary from @collinmmccabe; April 2012-present.

COLLABORATIVE RESEARCH AFFILIATIONS:

Radiology Partners Research Institute (RPRI) Analytical Support Researcher ; Director: Jay Bronner, MD Various clinical research initiatives within radiology	El Segundo, CA 2018-present
National Evolutionary Synthesis Center (NESCent) Working Group Participating Researcher ; Organizer: Jennifer Fewell, PhD Large-scale Demographic, Network, and Behavioral Trait Analyses of Sociality	Durham, NC 2011-2013
National Evolutionary Synthesis Center (NESCent) Working Group Participating Researcher ; Organizers: Charles Nunn, PhD, Brian Hare, PhD How Does Cognition Evolve?	Durham, NC 2011

SKILLS:

Parasitological quantification via ova flotation, incubation, and microscopy
Ectoparasite combing, small mammal handling, Sherman trap use and repair
Mammalian gut dissection, cardiac puncture and retro-orbital blood collection
Rodent anesthesia, IACUC review for ethical treatment of small mammals
Field project management, manual transmission driving and basic vehicle repair
Linear and non-linear modeling, non-linear dynamics, game theory modeling
Epidemiological statistics, survival analysis, Cox Proportional-Hazard analysis
Bayesian phylogenetic comparative methods and trait reconstruction
Social network analysis, epidemiological and diffusion simulation

Languages: English (native), Kiswahili (basic), Mongolian (basic)

Software: R, Matlab, Python, MySQL, BayesTraits, Mesquite, NetLogo, Noldus Ethovision XT