

Ana I.R. Bento

Odum School of Ecology & CEID, UGA 140 E Green Street, Athens GA 30601, USA

☎ (+1) 706-206-2929 | ✉ anabento@uga.edu | 🌐 www.anabento.io | 📱 anabento | 🐦 @anisabelbento

Employment

Odum School of Ecology, University of Georgia

Athens, GA, USA

POSTDOCTORAL RESEARCH ASSOCIATE WITH **PROF. PEJMAN ROHANI**

June 2015 - PRESENT

- Ecology, Immunology and Evolution of childhood diseases. Developing mathematical and statistical models that provide a coherent link between theory and data to explain disease transmission and how it is affected by strategic control policies.

Infectious Disease Epidemiology, Imperial College London

St Mary's Campus, London, UK

MRC POSTDOCTORAL RESEARCH FELLOW WITH **PROF. CHRISTL DONNELLY, FRS, OBE**

2012 - 2015

- Modeling herd dynamics and bovine tuberculosis transmission in the context of vaccine strategies.
- Studying emerging infectious diseases - PREDEMICS consortium.

Education

Imperial College London

Silwood Park, Ascot, UK

PHD ECOLOGY, UNDER THE SUPERVISION OF **PROF. MICK CRAWLEY, FRS**

November 2012

- Thesis: Climate variation, plant productivity, herbivore performance and population dynamics. Funded by Natural Environment Research Council (NERC), UK
- Brief Synopsis of Research: Determining the direct and indirect effects of local weather on forage productivity and the ecology of red deer on Rum and Soay sheep on St.Kilda and elucidating changes in fitness and the role of phenological change in the contrasting population dynamics.

Imperial College London

S. Kensington, London, UK

BSC (HONORS) & ARCS IN BIOLOGY, THESIS ADVISOR **PROF. TIM COULSON**

2007

- Upper Second Class Honours

Publications

PUBLISHED

2018 **Bento, A.I.**, Donnelly, C.A. (2018) Epidemiological impact of control and immunisation activities on within-herd bovine tuberculosis outbreaks. Forthcoming in *Scientific Reports*

Bento, A.I., Riolo, M.A., Choi, Y.H., King, A.A. & Rohani, P. (2018) Core Pertussis transmission groups in England and Wales: A tale of two eras. *Vaccine* 36(9):1160-1166. doi.org/10.1016/j.vaccine.2018.01.046

Bento, A.I., King, A.A. & Rohani, P. (2018) Quantifying relative role of age groups under differing pertussis transmission scenarios. *BioRxiv* doi:https://doi.org/10.1101/247007

2017 **Bento, A.I.**, King, A.A. & Rohani, P. (2017) Maternal pertussis immunisation: clinical gains and epidemiological legacy. *Eurosurveillance* 22(15):30510. doi:10.2807/1560-7917.ES.2017.22.15.30510

Garnier, R., **Bento, A.I.**, Pemberton, J.M. & Graham, A.L. (2017) Physiological proteins in resource-limited herbivores experiencing a population die-off. *The Science of Nature* 104(7):68-72. doi:10.1007/s00114-017-1490-4

2016 **Bento, A.I.**, Rohani, P. (2016) Forecasting epidemiological consequences of maternal immunization. *Clinical Infectious Diseases* 63(Suppl 4):S205-S212. doi:10.1093/cid/ciw557

Finnie, T.J.R., **Bento, A.I.**, South, A., Sherrard-Smith, E. & Jombart, T. (2016) EpiJSON: A unified data-format for epidemiology. *Epidemics* 15:20-26. doi:10.1016/j.epidem.2015.12.002

2015 Van Kerkhove, M.D.*, **Bento, A.I.***, Mills, H.L., Ferguson, N.M. & Donnelly, C.A. (2015) A review of epidemiological parameters from Ebola outbreaks to inform early public health decision-making. *Scientific Data* 2:150019. doi: 10.1038/sdata.2015.19 (* joint first authors)

- 2015** Donnelly, C.A.*, **Bento, A.I.***, Goodchild, A.V. & Downs, S.H. (2015) Exploration of the power of routine surveillance data to assess the impacts of industry-led badger culling on bovine tuberculosis incidence in cattle herds. *Veterinary Record* 177(16):417-420. doi:10.1136/vr.103201 (* joint first authors)
- 2014** Stopher K.V., **Bento A.I.**, Clutton-Brock T.H., Pemberton J.M. & Kruuk L.E.B. (2014) Multiple pathways mediate the effects of climate change on maternal reproductive traits in a red deer population. *Ecology* 95:3124-3138. doi:10.1890/13-0967.1
- 2011** **Bento A.I.**, Wilson A.J. (2011) Counting Sheep in a changing world. *Biodiversity Science* 4:1 <https://www.biodiversityscience.com/2011/11/01/counting-sheep-changing-world/>

SCIENTIFIC REPORTS

- 2015** **Bento, A.I.**, Donnelly, C.A. (2015) Impact of immunisation activities on within-herd bovine tuberculosis outbreaks. *Defra Final Report SE3130*: 35 Pages.
- 2013** **Bento, A.I.**, Donnelly, C.A. (2013) Impact of immunisation activities on within-herd bovine tuberculosis outbreaks. *Defra Interim Report SE3130*: 20 Pages.

MANUSCRIPTS SUBMITTED

- 2018** Garnier R., **Bento A.I.**, Rohani P., Omer, S.B. & Bansal, S. Feeding the disparities: the geography and trends of breastfeeding in the United States. (submitted to *JAMA*)

TO BE SUBMITTED (*available upon request*)

- 2018** **Bento, A.I.**, King, A.A., Taujale, R., Bosch, T. & Rohani, P. *Bordetella pertussis* epidemiology, transmission and evolution in the vaccine era. (Will submit to *Nature Medicine*)
- 2018** **Bento, A.I.**, Bansal, S., Omer, S.B. & Rohani, P. Herd immunity erosion across scales. (Will submit to *JRS Interface*)
- 2018** **Bento, A.I.**, Pemberton, J.M., Clutton-Brock, T.H., Kruuk, L.E.B. & Crawley, M.J. Vegetation community dynamics in a wild red deer population. (Will submit to *J of Animal Ecology*)

MANUSCRIPTS *in preparation*

Bento, A.I., Kettlewell, P.S., Poulton, P.R. & Crawley, M.J. *Spring temperature and rain mediate summer growth in the ParkGrass experiment. (Will submit to the Am Naturalist)*

Bento, A.I., Pemberton, J.M., Clutton-Brock, T.H., Coulson, T.M. & Crawley, M.J. *Climatic effects of plant productivity and herbivore performance in St Kilda.*

Treddenick, A., **Bento, A.I.**, Hall, S.D., Rohani, P. & Drake, J. *Forecasting the trajectory of infectious diseases using generic time series models: an inter-model comparison across five diseases.*

Computational Skills

Programming R, C, Python, Matlab, Perl, LaTeX
Web JavaScript, HTML5, CSS, JSON
Software user BEAST, ArcGIS, BLAST, GATK, Picard Tools, SQL, MS Access, github

Software & Code

EpiJSON R (CRAN) package and bTB Cattle Risk application for the field for DEFRA (UK). Code associated with publications can be found on my website.

Awards & Grants

- 2017-2018 **Postdoctoral Research Award Nomination**, Odum School of Ecology
2017 **Postdoctoral Fellowship- short listed**, Life Science Research Foundation
2016 **Travel grant**, from EEID, UGA for EEID Annual Meeting at Cornell University
2013 **Travel grant**, British Ecological Society for INTECOL congress
2009-2011 **Teaching award**, Silwood Park, Imperial College UK
2010-2011 **Best student presentation award**, Macaulay Institute, Aberdeen, UK
2008-2012 **NERC-CASE studentship grant**, Phd studentship grant, Imperial College London
2003-2005 **BBSRC grant**, Undergraduate Research Opportunity Project, Imperial College London

Ongoing External Collaborations

***Bordetella holmesii* evolution**

DR BODO LINZ, PROF. ERIC HARVILL

Infectious Diseases, UGA, USA

September 2018 - PRESENT

- Understanding the impact of *B. pertussis* vaccination on *B. holmesii* evolution.

Evolution of resistance of influenza virus to Oseltamivir

DR. SAM SCARPINO & PROF. KATIA KOELLE

Multi-Institution, USA

August 2018 - PRESENT

- Computationally test the hypothesis that increased HA binding avidity is associated with increased rates of Oseltamivir resistance.

***Bordetella pertussis* evolution**

DR. THIJS BOSCH

RIVM, Bilthoven, The Netherlands

June 2018 - PRESENT

- Working with RIVM on a pertussis mechanistic model we are developing, they provide both epidemiology and isolate sequences.

Influenza viral attributes

DR. JAZMINA LUCZO & PROF. MARK THOMPSON

CVI, UGA, USA

May 2018 - PRESENT

- Identification of attributes which influence tropism, pathogenicity, and evolution of influenza viruses.

Drivers of pertussis seasonality in Brazil

PROF. CLAUDIA PIO

UNESP, São Paulo, Brazil

December 2017 - PRESENT

- Drivers of pertussis seasonality in Brazil.

Teaching (relevant examples)

COURSE ORGANIZER

- 2018 **Introduction to Machine Learning**, For graduate students, cross campus *Odum School, UGA*
2018 **Scientific programing**, Course co-organizer with Prof. J Drake, cross campus *Odum School, UGA*
2017 **Intro to programming in R**, For graduate students, cross campus *Odum School, UGA*

GUEST LECTURER

- 2018 **Ecol 8030**, Graduate Ecology course *Odum School, UGA*
2013-2015 **MSc. Public Health**, Modeling infection diseases, IDE *Imperial College*
2013 **Matrix population models**, II Southern-Summer School on Mathematical Biology *UNESP, Brazil*
2012-2015 **Infectious disease modeling**, Population and Community Ecology, final year Biology BSc. *Imperial College*
2018 **Short course**, Introduction to Mathematical Models of Epidemiology & Control of Infectious Diseases *Imperial College*
2009-2014 **Generalised Linear Modeling in R**, Instructor for Prof. Mick Crawley at Silwood Park *Imperial College*
2009-2012 **Conservation MSc.**, Discussion groups - Tutor at Silwood Park *Imperial College*

Research Mentoring

- 2017-2018 **Shahab Razvi**, Research Assistant, Physics PhD student *UGA*
2017 **Yue Yun**, ILS PhD rotation student *UGA*
2016 **Jonathan Waring**, The Population Biology of Infectious Diseases REU program *UGA*
2011 **Emmanuela Karametta**, MSc Conservation at Silwood Park *Imperial College*

Fieldwork

2013-2015	Badger mark-recapture , Oxfordshire and Cornwall, UK	UK
2008-2015	Vegetation sampling and identification techniques , St Kilda, Isle of Rum, Parkgrass	UK
2008-2015	Soay sheep and deer mark-recapture , St Kilda & Isle of Rum	UK

Presentations

INVITED SPEAKER

2018	EDGE (Enthusiasts of Genetics Diversity & Evolution), Phylodynamic models of <i>B. pertussis</i> transmission RIVM : Netherlands Public Health, Drivers of evolution of <i>B. pertussis</i> MIDAS (Models of Infectious Disease Agent Study) annual meeting , Integrating parallel data streams to understand disease resurgence	Genetics, UGA The Netherlands Bethesda, MD
2017	Odum School 50th Anniversary , Puzzling pertussis Bordetella symposium , <i>B. pertussis</i> evolution in the vaccine era	UGA UGA & CDC

CONTRIBUTED TALKS

2018	ESA (Ecological Society of America) annual meeting , <i>B. pertussis</i> evolution in the vaccine era EEID (Ecology and Evolution of Infectious Diseases Conference , Integrating parallel data streams to identify drivers of <i>B. pertussis</i> resurgence	New Orleans, LA Glasgow, UK
2017	ESA annual meeting , Pertussis epidemiology, transmission & evolution in the vaccine era EEID conference , Covariates of <i>B. pertussis</i> selection	Portland, OR Santa Barbara, CA
2016	ESA annual meeting , Predicting the relative role of age groups in pertussis dynamics	Fort Lauderdale, FL
2013	INTECOL (International Association for Ecology) meeting , Effects of weather and phenology on primary production at ParkGrass over 130 years	London, UK
2011	BES (British Ecological Society) annual meeting , Weather effects on Soay Sheep demography	Sheffield, UK
2010	BES annual meeting , Weather impacts on ecological processes	Leeds, UK

POSTER SESSION

2016	EEID anual meeting , Pertussis Maternal Immunization	Ithaca, NY
-------------	---	------------

Workshops

Phylodynamics models	Odum School, UGA
INVITED WORKSHOP FOR CEID	2017
• Ran a CEID workshop in applications of phylodynamics models.	
Hackout 2	Imperial College London, UK
GRAPHICAL RESOURCES FOR INFECTIOUS DISEASE EPIDEMIOLOGY IN R	2015
• Developed EpiJSON in a team, as part of the workshop.	
Hackout	Imperial College London, UK
HACKATHON FOR THE ANALYSIS OF DISEASE OUTBREAKS IN R	2013
• Exploring ways of analyzing outbreak data.	

Service

Reviewer, Journal of Animal Ecology, Applied Ecology, Epidemics, PLoS Computational Biology, Proceedings of the Royal Society B., Vaccine, Nature Scientific Reports, Journal of Theoretical Biology, Royal Society Open Science

Institutional Service

Advisory Board Member , CEID, UGA	2017-PRESENT
Section Officer , ESA Disease Ecology Section	2017-PRESENT
Board Member , Postdoctoral Association, UGA	2016-PRESENT
Judge , Odum School of Ecology: Graduate Student Symposium	2016-2018
Co-organizer , DIDE seminar series, Imperial College London	2014-2015

Recruitment & Retention for Diversity in STEM Service

Committee member , Diversity Recruitment Events at UGA	2018-2019
Safe Space Training , Microaggression Workshop at UGA	2018
Founding member , R-ladies UGA	2018
Mentor , WiSci Mentoring program - I currently mentor 2 undergraduates & 1 graduate student	2016-PRESENT
Committee member , Athena Swan application (advancing gender equality in academia), Imperial College	2014

Outreach - Diversity in STEM

R-ladies Athens Co-founder	Athens GA
WOMEN IN STEM	2018
<ul style="list-style-type: none">• Presider and co-founder of R-Ladies chapter in Athens.	
Girls Who Code	Athens, GA
KIDS IN STEM	2016-PRESENT
<ul style="list-style-type: none">• Ran a after school coding club for kids (6-12 years of age).	
Co-founder Lean-In Circle	Imperial College London
WOMEN IN STEM	2014-2015
<ul style="list-style-type: none">• As a part of the Athena qualifications for the IDE at Imperial.	
Code club	Wandsworth, London, UK
KIDS IN STEM	2013-2015
<ul style="list-style-type: none">• Ran weekends coding club for kids (9-11 years of age).	
The Life Game	Natural history museum, London UK
MRC CENTENARY AT THE SCIENCE MUSEUM	2013
<ul style="list-style-type: none">• Part of the MRC anniversary: We ran a "who infect whom" and other disease games with children between 6-12 years of age.	

Memberships

American Society of Naturalists, Ecological Society of America, British Ecological Society, European Platform of Women Scientists, R-ladies global, WiSci (UGA), Women Who Code.

Languages

English (Fluent), Portuguese (native), Spanish (native), French (proficient).

References

Prof. Pejman Rohani

ROHANI@UGA.EDU | PHONE: +1 706 542 8838

- Odum School of Ecology, UGA, Athens GA, USA

Prof. Mick Crawley, FRS

M.CRAWLEY@IMPERIAL.AC.UK | PHONE: +44 (0)20 7594 2216

- Imperial College London, Silwood Park, UK

Prof. Aaron King

KINGAA@UMICH.EDU | PHONE: +1 734 936 7861

- University of Michigan, Ann Arbor, MI, USA