

Cara E. Brook

Assistant Professor, Department of Ecology and Evolution
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Education

- 2012-2017 **Ph.D. Ecology and Evolutionary Biology, Princeton University**
Elucidating mechanisms of viral hosting in bat reservoirs for emerging zoonotic disease.
Advisor: Andrew Dobson
- 2012-2014 **M.Sc. Ecology and Evolutionary Biology, Princeton University**
Deciphering the role of bats as reservoirs in emerging disease.
Advisor: Andrew Dobson
- 2006-2010 **B.S. Earth Systems, Stanford University**
*The Synanthropic Raven: Anthropogenic resource use and the invasion of *Corvus corax* in Yosemite National Park.* Advisors: Elizabeth Hadly, Donald Kennedy, Terry Root

Appointments

- 2021-present **Assistant Professor**, Dept of Ecology and Evolution, University of Chicago, Chicago, IL
2020-present **Branco Weiss Society in Science Fellow**, ETH-Zurich, Zurich, Switzerland
2017-2020 **Miller Postdoctoral Fellow**, Department of Integrative Biology, UC Berkeley, CA

Awards and Fellowships

- 2020-present L'Oréal USA For Women in Science Fellowship
2020-present Branco Weiss 'Society in Science' Fellowship, ETH-Zurich
2017-2020 Miller Postdoctoral Fellowship, UC Berkeley
2013-2017 National Science Foundation, Graduate Research Fellowship
2013 National Defense, Science, and Engineering Graduate Fellowship (*Declined in favor of NSF*)
2010 Firestone Medal, Undergraduate Research Excellence, Stanford University
2010 Earth Systems Award, Senior Thesis Excellence, Stanford University

Publications (in reverse chronological order; *equal lead/ ‡equal senior contributions)

In Review (pre-prints)

1. Andrianiana A*, Andry S*, Gentles A, Guth S, Héraud JM, Ranaivoson HC, Ravelomanantsoa NAF, Treuer T, and **Brook CE**. Reproduction, seasonal morphology, and juvenile growth in three Malagasy fruit bats. In Review. *Journal of Mammalogy*. doi (pre-print): 10.1101/2021.10.28.466299.
2. Kettenburg G, Kistler A, Ranaivoson HC, Ah Yong V, Andrianiana A, Andry S, DeRisi JL, Gentles A, Raharinosy V, Randriambolamanantsoa TH, Ravelomanantsoa NAF, Tato CM, Dussart P, Héraud JM, and **Brook CE**. Full genome *Nobecovirus* sequences from Malagasy fruit bats define a unique evolutionary history for this coronavirus clade. In Review. *Frontiers in Public Health*. doi (pre-print): 10.1101/2021.09.29.462406.
3. **Brook CE**, Rozins C, Guth S, and Boots M. Reservoir host immunology and life history shape virulence evolution in zoonotic viruses. In Review. *Nature Ecology & Evolution*. doi (pre-print): 10.1101/2021.10.06.463372
4. Guth S, Mollentze N, Renault K, Streicker DG, Visher E, Boots M[‡], and **Brook CE[‡]**. Bats host the most virulent—but not the most dangerous—zoonotic viruses. In Review. *PNAS*. doi (pre-print): 10.1101/2021.07.25.453574.

In Revision

5. Andriamandimby SF*, **Brook CE***, Razanajatovo N, Rakotondramanga J-M, Rasambainarivo F, Raharimanga V, Razanajatovo IM, Mangahasimbola R, Razafindratsimandresy R, Randrianarisoa S, Bernardson B, Rabarison JH, Randrianarisoa M, Nasolo FS, Rabetombosoa RM, Randremanana R[‡], Héraud

- J-M[‡], and Dussart P[‡]. Cross-sectional cycle threshold values reflect epidemic dynamics of COVID-19 in Madagascar. In Revision. *Epidemics*. doi (pre-print): 10.1101/2021.07.06.21259473
6. **Brook CE**, Northrup GR, Ehrenberg AJ, the IGI SARS-CoV-2 Testing Consortium, Doudna JA, and Boots M. Optimizing COVID-19 control with asymptomatic surveillance testing in a university environment. In Revision. *Epidemics*. doi (pre-print): 10.1101/2020.11.12. 20230870.
 7. Jones DN, Ravelomanantsoa NAF, Yeoman CJ, Plowright RK[‡], and **Brook CE[‡]**. Bats have “special” microbiomes: unique bacteriomes modulate bat health. In Revision. *Trends in Microbiology*.

Accepted, and In Press

8. Albery GF, Becker DJ, Brierley L, **Brook CE**, Christofferson RC, Cohen LE, Dallas TA, Eskew EA, Fagre A, Farrell M, Glennon E, Guth S, Joseph MB, Mollentze N, Neely BA, Poisot T, Rasmussen AL, Ryan SJ, Sjodin AR, Seifert S, Sorrell EM, Carlson CJ. In Press. The science of the host-virus network. *Nature Microbiology*.
9. Ruiz-Aravena M, McKee C, Gamble A, Hudson P, Parrish CR, Bharti N, Faust C, Schountz T, Restif O, Morris A, Jax E, Dee L, Lunn T, Peel A, Munster VJ, Yinda CK, Port JR, **Brook CE**, Aguilar HC, Yeo YY, Buchholz DW, Lloyd-Smith JO, Snedden C, Gurley ES, Jones D, Kessler M, Falvo C, Crowley D, Botto G, Rynda-Apple A, Plowright RK. In Press. Coronaviruses in bats: Ecology, evolution, and zoonotic spillover. *Nature Microbiology*.

2021

10. Wilkinson E, Giovanetti M, Tegally T, San JE, Lessels R, Cuadros D, Martin DP, Zekri A-RN, Sangare AK, Ouedraogo A-S, Sesay AK, Hammami A, Amuri AA, Sayed A, Rebai A, Elargoubi A, Trotter AJ, Keita AK, Sall AA, Kone A, Souissi A, Gutierrez AV, Page AJ, Iranzadeh A, Lambisia A, Sylverken A, Ibrahimi A, Dhaala B, Kouriba B, Kleinhans B, **Brook CE**, Williamson C, Pratt CB, Akoua-Koffi CG, Agoti CN, Morang’a CM, Nokes DJ, Bridges DJ, Bugembe DL, Baker D, Doolabh D, Ssemwanga D, Tshabuila D, Bassirou D, Amuzu DSY, Goedhals D, Maruapula D, Foster-Nyarko E, Lusamaki EK, Simulundu E, Moraa E, Ngabana EN, El Fahime E, Jacob E, Lokilo E, Mukantwari E, Belarbi E, Simon-Loriere E, Anoh EA, Leendertz F, Ajili F, Wasfi F, Takawira FT, Derrar F, Bouzid F, Muyembe FM, Tanser F, Mbunsu GK, Thilliez G, Kay G, Githinji G, van Zyl G, Awandare GA, Schubert G, Maphalala GP, Ranaivoson HC, Lemriss H, Abe H, Karray HH, Nansumba H, Elgahzaly HA, Gumbo H, Smeti I, Ayed IB, Boubaker IB-B, Gaaloul I, Gazy I, Ssewanyana I, Lekana-Douk JB, Makangara J-CC, Tamfum J-JM, Heraud J-M, Shaffer JG, Giandhari J, Li J, Yasuda J, Mends JQ, Kiconco J, Morobe J, Nkengasong JN, Gyapong JO, Kayiwa JT, Edwards JA, Gyamfi J, Farah J, Ngoi JM, Namulondo J, Andeko JC, Lutwama JJ, O’Grady J, Tumedi KA, Said KM, Hae-Young K, Duedu KO, Belyamani L, Singh L, de O. Martins L, Mine M, Ramuth M, Mastouri M, Aouni M, el Hefnawi M, Matsheka MI, Kebabonye M, Turki M, Nyaga MM, Mareka M, Damaris M, Cotton M, Mburu MW, Mpina M, Owusu M, Wiley MR, Ali MA, Abouelhoda M, Seadawy MG, Khalifa MK, Sekhele M, Ouadghiri M, Mwenda M, Allam M, Phan MVT, Abid N, Touil N, Kharrat N, Ismael N, Mabunda N, Hsiao NY, Silochi NB, Saasa N, Mulder N, Combe P, Semanda P, Oluniyi PE, Arnaldo P, Quashie PK, Bester PA, Dussart P, Mbala PK, Kaleebu P, Ayivor-Djanie R, Njouom R, Phillips RO, Gorman R, Kingsley RA, Carr RAA, El Kabbaj S, Gargouri S, Masmoudi S, Kassim S, Trabelsi S, Kammoun S, Lemriss S, Agwa SH, Calvignac-Spencer S, Doumbia S, Mandanda SM, Aryeetey S, Ahmed SS, Moyo S, Gaseitsiwe S, Lekana-Douki S, Prosolek S, Ouangraoua S, Mundeke SA, Rudder S, Panji S, Pillay S, Engelbrecht S, Nabadda S, Behillil S, Budiaki SL, van der Werf S, Mashe T, Aanniz T, Mohale T, Le-Viet T, Schindler T, Anyaneji UJ, Ramphal U, Fonseca V, Enouf V, Gorova V, Roshdy WH, Ampofo WK, Preiser W, Choga WT, Bediako Y, Tebeje YK, Naidoo Y, de Laurent ZR, Tessema SK, de Oliveira T. A year of genomic surveillance reveals how the SARS-CoV-2 pandemic unfolded in Africa. 2021. *Science*. doi: 10.1126/science.abj4336.
11. Annapragada A, **Brook CE**, Luskin MS, Rahariniaina RP, Helin M, Razafinarivo O, Ralaizarison AR, Randriamady HJ, Olson LE, Goodman SM, Golden CD. 2021. Evaluation of tenrec population viability and potential sustainable management under hunting pressure in northeastern Madagascar. *Animal Conservation*. doi: 10.1111/acv.12714.
12. Ehrenberg AJ, Moehle EA, **Brook CE**, Doudna Cate AH, Witkowski LB, Sachdeva R, Hirsch A, Barry K, Hamilton JR, Lin-Shiao E, McDevitt S, Valentin-Alvarado L, Letourneau KN, Hunter L, Pestal K, Frankino

- PA, Murley A, Nandakumar D, Stahl EC, Tsuchida CA, Gildea H, Murdock A, Hochstrasser ML, Bardet L, Sherry C, the IGI SARS-CoV-2 consortium, Harte A, Nicolette G, Petersen M, Giannikopoulos P, Hockemeyer D, Urnov FD, Ringeisen BR, Boots M, Doudna JA. 2021. Launching a saliva-based SARS-CoV-2 surveillance testing program on a university campus. *PLoS One*: 16(5): e0251296. doi: 10.1371/journal.pone.0251296
13. Randremanana R, Andriamandimby SF, Rakotondramanga J-M, Razanajatovo N, Mangahasimbola R, Randriambolamanantsoa T, Ranaivoson HC, Rabemananjara H, Razanajatovo I, Razafindratsimandresy R, Rabarison J, **Brook CE**, Rakotomanana F, Rabetombosoa R, Razafimanjato H, Ahyong V, Raharinosy V, Raharimanga V, Raharinantoanina S, Randrianarisoa M, Bernardson B, Randrianasolo L, Randriamampionona L, Tato CM, DeRisi JR, Dussart P, Vololoniaina M, Randriatsarafara F, Randriamanantany Z, Heraud J-M. The COVID-19 Epidemic in Madagascar: clinical description and laboratory results of the first wave, March-September 2020. *Influenza and Other Respiratory Viruses*. 2021. 00:1-12. doi: 10.22541/au.161088504.46456502/v1.
- 2020**
14. Ravelomanantsoa NAF, Guth S, Andrianiana A, Andry S, Gentles A, Ranaivoson HC, **Brook CE**. 2020. The zoonotic potential of bat-borne coronaviruses. *Emerging Topics in Life Sciences*. doi: 10.1042/ETLS20200097.
 15. Gentles A, Guth S, Rozins C, **Brook CE**. 2020. A review of mechanistic models of viral dynamics in bat reservoirs for zoonotic disease. *Pathogens and Global Health*. doi: 10.1080/20477724.2020. 1833161.
 16. Rocha R, Aziz SA, **Brook CE**, Carvalho WD, Cooper-Bohannon R, Frick WF, Huang JCC, Kingston T, Lopez-Baucells A, Maas B, Mathews F, Medellin RA, Olival KJ, Peel AJ, Plowright RK, Razgour O, Rebelo H, Rodrigues L, Rossiter SJ, Russo D, Straka TM, Teeling EC, Treuer T, Voigt CC, and Webala PW. Bat conservation and zoonotic disease risk: A research agenda to prevent misguided persecution in the aftermath of COVID-19. 2020. *Animal Conservation*. doi: 10.1111/acv.12636.
 17. Olival KJ*, Cryan PM*, Amman BR, Baric RS, Blehert DS, **Brook CE**, Calisher CH, Castle KT, Coleman JTH, Daszak P, Epstein JH, Field H, Frick WF, Gilbert AT, Hayman DTS, Ip HS, Karesh WB, Johnson CK, Kading RK, Kingston T, Lorch JM, Mendendall IH, Peel AJ, Phelps KL, Plowright RK, Reeder DM, Reichard JD, Sleeman JM, Streicker DG, Towner JS, and Wang L-F. 2020. Possibility for reverse zoonotic transmission of SARS-CoV-2 to free-ranging wildlife: a case study of bats. *PLoS Pathogens*. 16(9): e1008758. doi: 10.1371/journal.ppat.1008758.
 18. Amen AM, Barry KW, Boyle JM, **Brook CE**, Choo S, Cornmesser LT, Dilworth DJ, Doudna JA[‡], Ehrenberg AJ, Fedrigo I, Friedline SE, Graham TGW, Green R, Hamilton JR, Hirsh A, Hochstrasser ML, Hockemeyer D[‡], Krishnappa N, Lari A, Li H, Lin-Shiao E, Lu T, Lyons EF, Mark KG, Martell LA, Martins ARO, McDevitt SL, Mitchell PS, Moehle EA, Naca CL, Nandakumar D, O'Brien E, Pappas DJ, Pestal K, Quach DL, Rubin BE, Sachdeva R, Stahl EC, Syed AM, Tan I-L, Tollner AL, Tsuchida CA, Tsui CK, Turkalo TK, Urnov F[‡], Warf MB, Whitney ON, Witkowski LB. 2020. Blueprint for a Pop-up SARS-CoV-2 Testing Lab. *Nature Biotechnology*. doi: 10.1038/s41587-020-0583-3
 19. **Brook CE**, Boots M, Chandran KC, Dobson AP, Drosten C, Graham AL, Grenfell BT, Müller MA, Ng M, Wang L-F, and van Leeuwen A. 2020. Accelerated viral dynamics in bat cell lines, with implications for zoonotic emergence. *eLife*. 9:e48401. doi: 10.7554/eLife.48401.
- 2019**
20. **Brook CE**. 2019. A batty concept goes viral. *Nature Ecology & Evol*. doi:10.1038/s41559-019-1045-5.
 21. Guth S, Visser E, Boots M, and **Brook CE**. 2019. Host phylogenetic distance drives trends in virus virulence and transmissibility across the animal-human interface. *Philosophical Transactions of the Royal Society* 374(1782): 20190296. doi: 10.1098/rstb.2019.0296.
 22. **Brook CE**, Ranaivoson HC, Broder CC, Cunningham AA, Héraud J-M, Peel AJ, Gibson L, Wood JLN, Metcalf CJE[‡], and Dobson AP[‡]. 2019. Disentangling serology to elucidate henipa- and filovirus transmission in Madagascar fruit bats. *Journal of Animal Ecology*. doi: 10.1111/1365-2656.12985.
 23. **Brook CE**, Ranaivoson HC, Andriafidison D, Ralisata M, Razafimanahaka J, Héraud JM, Dobson AP, and Metcalf CJE. 2019. Population trends for two Malagasy fruit bats. *Biological Conservation* 234:165-171. doi: 10.1016/j.biocon.2019.03.032.

24. Ranaivoson HC, Héraud JM, Goethert HK, Telford SR, Rabetafika L[±] and **Brook CE[±]**. 2019. Babesial infection in the Madagascan flying fox, *Pteropus rufus* É. Geoffroy, 1803. *Parasites & Vectors* 12(51): 1307101933. doi: 10.1186/s13071-019-3300-7.

2018

25. **Brook CE**, Herrera JP, Borgerson C, Fuller E, Andriamahazoarivosoa P, Rasolofoniaina BJR, Randrianasolo JLRR, Rakotondrafarasata ZRE, Randriamady HJ, Dobson AP and Golden CD. 2018. Population viability and harvest sustainability for Madagascar lemurs. *Conservation Biology* 33(1): 99- 111. doi: 10.1111/cobi.13151.

2017

26. **Brook CE**, Bai Y, Yu EO, Ranaivoson HC, Shin H, Dobson AP, Metcalf CJE[±], Kosoy MY[±], and Dittmar K[±]. 2017. Elucidating transmission dynamics and host-parasite-vector relationships for rodent-borne *Bartonella* spp. in Madagascar. *Epidemics* 20: 56-66. doi:10.1016/j.epidem.2017.03.004.

2016

27. Wesolowski A*, Mensah K*, **Brook CE***, Andrianjafimasy M, Winter A, Buckee CO, Razafindratsimendresy R, Tatem AJ, Heraud J-M[±], and Metcalf CJE[±]. 2016. Introduction of Rubella-Containing-Vaccine to Madagascar: Implications for roll-out and local elimination across low-income countries. *Journal of the Royal Society Interface* 13(177): 20151101. doi:10.1098/rsif.2015.110.

2015

28. **Brook CE**, Beauclair R, Ngwenya O, Worden L, Ndeffo-Mbah M, Lietman TM, Satpathy SK, Galvani AP, and Porco TP. 2015. Spatial heterogeneity in projected leprosy trends in India. *Parasites & Vectors* 8(1): 542. doi: 10.1186/s13071-015-1124-7.
29. Rist CL, Ngonghala CN, Garchitorea A, **Brook CE**, Ramananjato, Miller AC, Randrianariveolosia M, Wright PC, Gillespie TR, and Bonds MH. 2015. Modeling the burden of poultry disease on the rural poor in Madagascar. *One Health* 1: 60-65. doi: 10.1016/j.onehlt.2015.10.002.
30. **Brook CE**, Bai Y, Dobson AP, Osikowicz L, Ranaivoson HC, Zhu Q, Kosoy MY, and Dittmar K. 2015. *Bartonella* spp. in fruit bats and blood-feeding ectoparasites in Madagascar. *PLoS Neglected Tropical Diseases* 10(2): e0003532. doi:10.1371/journal.pntd.0003532.
31. **Brook CE** and Dobson AP. 2015. Bats as ‘special’ reservoirs for emerging zoonotic pathogens. *Trends in Microbiology* 23(3): 172-180. doi:10.1016/j.tim.2014.12.00.
32. Guyton J and **Brook CE**. 2015. African Bats: Conservation in the Time of Ebola. *Therya* 6(1): 69-88. doi: 10.12933/therya-15-244.
33. Young HS, McCauley DJ, Dirzo R, Goheen JR, Agwanda B, **Brook CE**, Castillo EO, Ferguson AW, Kinyua SN, McDonough MM, Palmer TM, Pringle RM, Young TP, and Helgen KM. 2015. Context - dependent effects of large wildlife declines on small mammal communities in central Kenya. *Ecological Applications* 25(2): 348–60. doi:10.1890/14-0995.1.

2013

34. **Brook CE**, Bernstein DP, and Hadly EA. 2013. Human food subsidies and Common Raven occurrence in Yosemite National Park, CA. *Western Birds* 44(2):127-34.

Selected Oral Presentations

- 2021 *Molecular Methods in Animal Ecology*, Universidad Federal do Paraná, Brazil. ***invited talk**
- 2020 *Bugs and Drugs: Infectious Disease Seminar Series*, UCSF, San Francisco, CA. ***invited talk**
- 2019 *Interdisciplinary Disease Across Scales Seminar Series*, Univ. of Georgia, Athens, GA. ***invited talk**
- 2018 *Fall Biology Seminar Series*, University of San Francisco, CA. ***invited talk**
- 2018 *Ecology and Evolution of Infectious Diseases*, University of Glasgow, Scotland.

Research Grants

- 2020-present. **Branco Weiss Science in Society Fellowship**. *PI*. 500,000 CHF.
“Understanding bats to decipher disease, aging, and virus virulence in one fell swoop.”
- 2020-present. **Loréal USA For Women in Science Fellowship**. *PI*. \$60,000.
“Understanding bats to simultaneously solve disease and aging.”

2020-2021.	Innovative Genomics Institute. PI. \$100,000. “Next Generation Sequencing to Inform COVID-19 Outbreak Response in Madagascar.”
2019-2021.	Bill & Melinda Gates Foundation Grand Challenges Explorations. PI. \$100,000. “Metagenomics and the Etiology of Zoonotic Disease: Deciphering Bat-to-Human Viral Transmission in Madagascar.”
2018-2020	DARPA PREdicting Emerging Pathogenic Threats (PREEMPT). co-PI with RK Plowright (lead), H Arguilar-Carreno, N Bharti, P Ebby, E Gurley, B Han, PJ Hudson, JO Lloyd-Smith, H McCallum, L McGuire, V Munster, CR Parrish, AJ Peel, O Restif, T Schountz. \$10,000,000. “Preventing emergence and spillover of bat viruses in high-risk global hotspots”.
2018-2019	Center for Emerging and Neglected Tropical Diseases, Thomas C. Alber Science and Engineering Fellowship. PI. \$10,000. “A transcriptomic window into zoonotic bat virus seasonality in Madagascar.”
2017-present	National Institutes of Health, International Research in Infectious Diseases (R01). Co-PI with P Dussart. \$625,000. “Investigating seasonal drivers of viral zoonoses from Madagascar fruit bats.”
2016-2017	Princeton Environmental Institute, Walbridge Graduate Award. PI. \$10,000. “Climate Change, Resource Scarcity, & Emerging Fruit Bat Zoonoses in Madagascar.”
2016-2017	National Science Foundation, Doctoral Dissertation Improvement Grant. co-PI with AP Dobson and AL Graham. \$13,000. “Within-host seasonal drivers of pathogen dynamics in a fruit bat reservoir.”
2015-2016	PIVOT Research Award. co-PI with AP Dobson and J-M Héraud. \$15,000. “Investigating spillover of viral hemorrhagic fevers from fruit bats in Madagascar.”
2015-2016	National Geographic Society: Waitt Grant. PI. \$15,000. “Investigating risks for Ebola virus spillover from Madagascar fruit bats.”
2013-2014	Lubee Bat Conservancy. Bacardi Conservation & Research Fund. PI. \$5,000. “Bushmeat harvesting impacts on risk for henipavirus spillover among fruit bats in Madagascar.”
2013-2014	Bat Conservation International. Student Research Scholarship. PI. \$3,200. “Bushmeat harvesting impacts on population dynamics and corresponding risk for henipavirus spillover in Malagasy fruit bats.”
2013-2014	The Explorer’s Club. Exploration Fund. PI. \$2,250. “Mechanisms for viral persistence among mixed species fruit bat populations in Madagascar.”
2013-2014	Bill and Melinda Gates Foundation: Grand Challenges in Global Health Explorations. co-PI with MH Bonds, PC Wright, and TR Gillespie. \$100,000. “Quantifying the economic burden of disease in Ranomafana NP, Madagascar.”
2013-2014	Princeton University: Health Grand Challenges Grant. PI. \$5,000. “Biodiversity and human livelihood: Quantifying vector-control impact of insectivorous bats on human malaria burden in Ranomafana, Madagascar.”
2013	American Society of Mammalogist: Grants-in-Aid. PI. \$1,500. “Mammalian Biodiversity, Metapopulation Connectivity, & Potential for Zoonosis.”
2013	National Geographic Society: Young Explorer Grant. PI. \$5,000. “Habitat Modification and the Ecology of Plague Emergence in Madagascar.”
2013	Princeton University: Health Grand Challenges Grant. PI. \$1,200. “Habitat Modification and Plague Emergence in Madagascar.”

Teaching Experience

2016-present	E²M²: Ecological and Epidemiological Modeling in Madagascar. <i>Founder, Instructor: E2M2.org</i> - Design and deliver lectures and exercises for introductory programming (R) workshop for Malagasy students in biology, medicine, public health
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- 2015-2016 **International Clinics on Infectious Disease, Dynamics, and Data.**
Workshop Faculty: ici3d.org
- Designed and delivered lectures and exercises for introductory programming (R) workshop for African/N. American students in biology, medicine, public health
- 2014 **Evolution & Behavior of Sexes.** EEB 301. Princeton University. *Assistant-in-Instruction.*
- Taught weekly discussion section, designed exams and assignments for upper-division seminar in Ecology and Evolutionary Biology (EEB)
- 2012-2013 **Life on Earth.** EEB 211. Princeton University. *Assistant-in-Instruction.*
- Taught weekly discussion section, designed exams, labs and assignments for primary introductory course in the EEB major
- 2009 **Introduction to Earth Systems.** ES10. Stanford University. *Teaching Assistant.*
- Taught weekly classroom section, wrote and graded assignments, and designed curriculum for the primary introductory course in the ES major

Advising

University of Chicago PhD Students:

- Gwen Kettenberg (2021-*current*)
- Sophia Horigan (2019-*current*; *co-advised with Greg Dwyer*)

University of Chicago Postdocs:

- Dr. Emily Rhus (Ph.D., 2021-*current*)
- Dr. Theresa Lavery (Ph.D., 2021-*current*)

University of Chicago Lab Managers:

- Freddy Gonzalez (NIH PREP Fellow, 2021-*current*)
- Yimei Li (2021-*current*)

Other Advisees (committees, informal mentors):

- Sarah Guth (UC Berkeley, 2018-*current*; *informal mentor*)
- Anecia Gentles (University of Georgia, 2020-*current*; *PhD committee member*)
- Santino Andry (University of Antananarivo, 2019-*current*; *foreign advisor*)
- Fifi Ravelomanantsoa (University of Antananarivo, 2019-*current*; *foreign advisor*)
- Angelo Andrianiana (Ph.D., University of Antananarivo, 2018-*current*; *foreign advisor*)
- Christian Ranaivoson (Ph.D., University of Antananarivo, 2013-*current*; *foreign advisor*)

Service and Outreach

- University of Chicago, Dept of Ecology and Evolution, Graduate Admissions Committee (2020-2021)
- University of Chicago, Dept of Ecology and Evolution, Seminar Speaker Committee (2021-2022)
- Bay Area Ecology and Evolution of Infectious Diseases Conference – *Co-Organizer* (2020)
- UC Berkeley Ecology and Evolution of Infectious Diseases Seminar Series – *Co-Organizer* (2019-*present*)
- Miller Institute Annual Symposium – *Planning Committee* (2018-*present*)
- Women's March Madagascar, Ranomafana, Madagascar – *Co-Founder, Co-Organizer* (2019)
- Women-In-Science Partnership, Princeton University – *Organizer* (2015-2017)

Skills

- **Writing:** NGS Voices (2013-2018): <http://voices.nationalgeographic.com/author/carabrook/>
- **Language:** French (highly proficient written and spoken). Malagasy (highly proficient spoken).
- **Computer:** R, MatLab, C++, ArcGIS, Microsoft Office (Powerpoint, Word, Excel)