

# ALLISON Q. BYRNE, PhD

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they/them

## CURRENT POSITION



**Postdoctoral Fellow**, USDA Aspergillus Genomics and Transcriptomics Research Lab April 2024 - Present  
Oak Ridge Institute for Science and Education (ORISE)  
USDA Agricultural Research Services Pacific West, Tucson, AZ  
Supervisor: Dr. Kenneth Callicott

## PROFESSIONAL PREPARATION & EDUCATION



**Postdoctoral Scholar**, University of California, Berkeley, CA 2021 - 2024  
NSF Resilience Institute Bridging Biological Training and Research (RIBBiTR)  
Supervisor: Dr. Erica Bree Rosenblum

**Postdoctoral Fellow**, Smithsonian Conservation Biology Institute, Washington, D.C. 2020 - 2021  
Supervisors: Dr. Brian Gratwicke, Dr. Carly Muletz Wolz, Dr. Roberto Ibáñez

**Ph.D. from the Department of Environmental Science, Policy & Management** 2014 - 2020  
University of California, Berkeley, CA  
Advisor: Dr. Erica Bree Rosenblum  
Affiliated Graduate Student at the Museum of Vertebrate Zoology

**B.S. in Environmental Science, Concentration: Ecology & Conservation** 2008 - 2013  
Drexel University, Philadelphia, PA  
Graduated *summa cum laude* from the Pennoni Honors College

## PUBLICATIONS

([google scholar link](#))



Author on 29 papers (12 first author, 1 senior author undergraduate paper) published in high-impact journals (e.g., PNAS, Science, PLOS Biology, Global Change Biology) with an h-index of 12 and 592 citations to date.

## IN REVIEW/REVISION

29. **Byrne, A.Q.**, Legan, A.W., Callicott, K.A. 2024. *Whole genome assembly of Aspergillus toxicus and Aspergillus texensis*. In Review at [Microbiology Resource Announcements](#).
28. Boren, A. (undergraduate), Lesbarrères, D., **Byrne, A.Q.** 2024. *A review of animal deaths in Batrachochytrium salamandrivorans research*. In Review at [Conservation Science and Practice](#).
27. Steigerwald, E., Gendron, C., Chaparro J.C., Gillespie, R.G., **Byrne, A.Q.**, Nielsen, R., Rosenblum, E.B., *Amphibians' expansion to record elevations influences chytrid (Batrachochytrium dendrobatidis) infection dynamics*. In Review at [Biotropica](#).
26. Voyles J., Richards-Zawacki, C.L., **Byrne, A.Q.**, Estrada, A., Ibáñez, R., Rodriguez, K.M., Goldberg, C.S. 2024. *Using environmental DNA sampling for simultaneous detection of hosts and their pathogens: a case study with the critically endangered frog genus Atelopus*. In Revision at [Animal Conservation](#).
25. **Byrne, A.Q.**, Knapp, R.A., Joseph, M.B., Smith, T.C., Rothstein, A.P., Grasso, R.L., Rosenblum, E.B. 2024. *Genomic correlates of resilience for mountain yellow legged frogs (Rana muscosa/sierrae) recovering from disease*. Submission ready.
24. Kouete M.T., Longo, A.V., **Byrne, A.Q.**, Echalle, S.N., Rosenblum, E.B., Blackburn, D.C. 2024. *The pathogen Batrachochytrium dendrobatidis in Central African amphibians: host and environmental influences, lineage diversity, and earliest detection in Africa*. In Revision at [Scientific Reports](#).

## 2024

23. **Byrne, A.Q.** 2024. *What can frogs teach us about resilience? Adaptive renewal in amphibian and academic ecosystems.* Integrative and Comparative Biology. Icae058.
22. Saenz, V., **Byrne, A.Q.**, Altman, K., Brannelly, L., Hammond, T., Ohmer, M., Rosenblum, E.B., Richards-Zawacki, C. 2024. *Landscape-scale drivers of spatial dynamics and genetic diversity in an emerging wildlife pathogen.* In Press at Oecologia.
21. Osborne, O.G., Jiménez, R.R., **Byrne, A.Q.**, Gratwicke, B., Ellison, A., & Muletz-Wolz, C.R. 2024. *Phylosymbiosis shapes skin bacterial communities and pathogen-protective function in Appalachian salamanders.* The ISME Journal. Wrae104.
20. Sauer, E.L., Venesky, M.D., McMahon, T.A., Cohen, J.M. Bessler, S., Brannelly, L.A., Brem, F., **Byrne, A.Q.**, Halstead, N., Hyman, O., Johnson, P.T.J., Richards-Zawacki, C.L., Rumschlag, S.L., Sears, B., Rohr, J.A. 2024. *Are novel or locally adapted pathogens more devastating and why?: Resolving opposing hypotheses.* Ecology Letters. 27 (5), e14431.

## 2023

19. **Byrne, A.Q.**, Rothstein, A.P. (co-first authors), Smith, L., Kania, H., Knapp R.A., Boiano, D.M., Briggs, C.J., Backlin, A.R., Fisher, R.N., Rosenblum E.B. 2023. *Revisiting conservation units for the endangered mountain yellow-legged frog species complex (*Rana muscosa*, *Rana sierrae*) using multiple genomic methods.* Conservation Genetics. 1-16.
18. **Byrne, A.Q.**, 2023. *Response to "Specimen collection is essential for modern science".* PLOS Biology. 21(11): e3002390.
17. **Byrne, A.Q.**, 2023. *Reimagining the future of natural history museums with compassionate collection.* PLOS Biology. 21(5): e3002101.
16. Ghose, S., Yap, T., **Byrne, A.Q.**, Sulaeman, H., Rosenblum, E.B., Chan-Alvarado, A., Chaukulkar, S., Greenbaum, E., Koo, M.S., Kouete, M.T., Lutz, K., McAloose, D., Moyer, A.J., Parra, E., Portik, D.M., Rockney, H., Zink, A., Blackburn D.C., Vredenburg, V.T. 2023. *Continent-wide recent emergence of a global pathogen in African amphibians.* Frontiers in Conservation Science. 4:8.

## 2022

15. **Byrne, A.Q.**, Waddle, A.W., Jaeger, J.R., Richards-Zawacki, C.L., Voyles, J., Rosenblum, E.B. 2022. *Host Species is Linked to Pathogen Genotype for the Amphibian Chytrid Fungus (*Batrachochytrium dendrobatidis*) in the USA.* PLOS ONE. 17(3), p.e0261047.
14. Basanta, M.D., Ávila-Akerberg, V.D., **Byrne, A.Q.**, Castellanos-Morales, G., González Martínez, T.M., Maldonado-López, Y., G., Rosenblum, E.B., Suazo, I., Parra-Olea, G., Rebollar, E.A. 2022. *The fungal pathogen *Batrachochytrium salamandrivorans* is not detected in wild and captive amphibians from Mexico.* PeerJ. 10:e14117.
13. Basanta, M.D., Rebollar, E.A., García-Castillo, M.G., Rosenblum, E.B., **Byrne, A.Q.**, Piovita-Scott, J., Parra-Olea, G. 2022. *Genetic variation of *Batrachochytrium dendrobatidis* is linked to skin bacterial diversity in the Pacific treefrog *Hyla regilla* (*hypochondriaca*).* Environmental Microbiology. 24(1), 494-506.

## 2021

12. Basanta, M.D., **Byrne, A.Q.**, Rosenblum, E.B., Piovita-Scott, J., Parra Olea, G. 2021. *Early presence of *Batrachochytrium dendrobatidis* in Mexico with a contemporary dominance of the global panzootic lineage.* Molecular Ecology; 30(2), 424-437.
11. Rothstein, A.P., **Byrne A.Q.**, Knapp, R.A., Briggs, C.J., Voyles, J., Richards-Zawacki, C.L., Rosenblum, E.B. 2021. *Divergent regional evolutionary histories of a devastating global amphibian pathogen.* Proceedings of the Royal Society B; 288(1953), 20210782.
10. Sheets, C.N., Schmidt, D.R., Hurtado, P.J., **Byrne, A.Q.**, Rosenblum, E.B., Richards-Zawacki, C.L., Voyles, J. 2021. *Thermal Performance Curves of Multiple Isolates of *Batrachochytrium dendrobatidis*, a Lethal Pathogen of Amphibians.* Frontiers in Veterinary Science, 8, p.648.

## 2020

9. **Byrne, A.Q.**, Richards-Zawacki, C.L., Voyles, J., Bi, K., Ibañez, R., Rosenblum, E.B. 2020. *Whole exome sequencing identifies conservation units and the potential for genetic rescue in critically endangered Panamanian golden frogs*. Global Change Biology; 27(1), 50-70.
8. Olivares-Miranda, M., Vredenburg, V.T., García-Sánchez, J.C., **Byrne, A.Q.**, Rosenblum, E.B., Rovito S.M. 2020. *Fungal infection, decline and persistence in the only obligate troglodytic Neotropical salamander*. PeerJ; 8:e9763
7. Lambert, M.R., Womack, M.C., **Byrne, A.Q.**, Hernández-Gómez, O.H., Noss, C.F., Rothstein, A.R., Blackburn, D.C., Collins, J.P., Crump, M.L., Koo, M.S., Nanjappa, P., Rollins-Smith, L., Vredenburg, V.T., Rosenblum, E.B. 2020. *Comment on "Amphibian fungal panzootic causes catastrophic and ongoing loss of biodiversity"*. Science; 367(6484).
6. Hernández-Gómez, O.H., **Byrne, A.Q.**, Gunderson, A.R., Jenkinson, T.S., Noss, C.F., Rothstein, A.R., Womack, M.C., Rosenblum, E.B. 2020. *Invasive vegetation affects amphibian skin microbiota and body condition*. PeerJ; 8:e8549

## 2019

5. **Byrne, A.Q.**, et al. (28 additional co-authors), Rosenblum, E.B. 2019. *Cryptic diversity of a widespread global pathogen reveals expanded threats to amphibian conservation*. Proceedings of the National Academy of Sciences; 116(41), 20382-20387.

## 2018

4. **Byrne, A.Q.**, Poorten, T., Voyles, J., Willis, C.K.R., Rosenblum, E.B. 2018. *Opening the file drawer: Unexpected insights from a chytrid infection experiment*. PLOS ONE; 13(5): e0196851.
3. Voyles, J., Woodhams, D.C., Saenz, V., **Byrne, A.Q.**, Perez, R., Rios-Sotelo, G., Ryan, M.J., Bletz, M., Sobell, F.A., McLetchie, S., Reinert, L., Rosenblum, E.B., Rollins-Smith, L.A., Ibañez, R., Ray, J.M., Griffith, E.J., Ross, H., Richards-Zawacki, C.L. 2018. *Shifts in disease dynamics in a tropical amphibian assemblage are not due to pathogen attenuation*. Science; 359(6383).

## 2017

2. **Byrne, A.Q.**, Rothstein, A., Poorten, T.J., Erens J., Settles M.L., & Rosenblum, E.B. 2017. *Unlocking the story in the swab: A new genotyping assay for the amphibian chytrid fungus *Batrachochytrium dendrobatidis**. Molecular Ecology Resources; 17(6), 1283-1292.

## 2016

1. **Byrne, A.Q.**, Voyles, J., Rios-Sotelo, G., & Rosenblum, E.B. 2016. *Insights from Genomics into Spatial and Temporal Variation in *Batrachochytrium dendrobatidis**. Progress in Molecular Biology and Translational Science; 142, 269-290.

## TEACHING, MENTORSHIP & OUTREACH



Dedicated educator who designed and taught a course with embedded research projects, served as an instructor in large undergraduate courses, and demonstrated a commitment to community outreach.

<b>Workshop designer and instructor</b> , Amphibian pathogen genomics at RIBBiTR BII meeting La Selva Biological Station, Costa Rica Awarded "most educational instructor" by participant vote	2023
<b>Course designer and instructor</b> , ESPM139A: Genetics of Amphibian Declines Course-based Undergraduate Research Experience (CURE), UC Berkeley	2022
<b>Workshop designer and instructor</b> , Analyzing pathogen genetic data at RIBBiTR BII meeting Pymatuning Field Station, University of Pittsburgh, PA	2022
<b>Invited Guest Lecturer</b> , Cal Poly Pomona's Landscape Ecology Course	2022
<b>Volunteer Mentor</b> , Berkeley GiGS (Getting into Graduate School) Program	2019-2020
<b>Graduate Student Instructor</b> , ESPM50AC: Intro to Culture & Natural Resource Management	2019

Led two discussion sections in >500 student course	
<b>Volunteer Mentor</b> , oSTEM (out in STEM) national mentorship program	2019
<b>Volunteer Mentor</b> , Joint Meeting of Ichthyologists and Herpetologists	2019
<b>Graduate Student Mentor</b> , Berkeley Connect program	2018-2020
Led two discussion sections each semester	
<b>Graduate Student Instructor</b> , ESPM100ES: Methods in Environmental Science	2018
Mentored students writing senior thesis proposals, led data and writing workshops	
Awarded Outstanding Graduate Student Instructor	
<b>Invited Guest Lecturer</b> , ESPM112: Microbial Ecology at UC Berkeley	2018
<b>Graduate Student Instructor</b> , ESPM137: Landscape Ecology	2017
Led computer-based lab sections using ArcGIS and R	
<b>Outreach Volunteer</b> , Bay Area Scientists in Schools program	2016-2017
Taught 3 <sup>rd</sup> graders lesson on evolution and natural selection	
<b>Invited Guest Lecturer</b> , ESPM98: <i>One Health for Action</i>	2016
<b>Mentor and Direct Supervisor</b> , nine undergraduate research assistants	2016-Present
Taught laboratory techniques related to DNA extraction, PCR, library preparation, as well as R coding and manuscript writing	
<i>Madeline Moore, Madeline Gregory, Shreeya Garg, Christina Meyer, Sylvia Targ, Courtney Hendrickson, Sean O'Neil, Ismena Jameau, Alex Boren</i>	

## PRESENTATIONS

(\*indicates invited talk)



Dynamic presenter with a proven commitment to effective science communication in many communities, resulting in multiple invitations to speak at seminars and conferences and awards for presentation excellence.

* <i>What can frogs teach us about resilience?</i> (talk)	2024
Society of Integrative and Comparative Biology Meeting	
<i>Identifying genomic signatures of rapid evolutionary change in mountain yellow-legged frogs (<i>Rana muscosa/sierrae</i>) recovering from disease.</i> (talk)	2023
Evolution Meeting	
<i>Reimagining the future of natural history museums with compassionate collection.</i> (virtual discussion)	2023
Digital Data in Biodiversity Research Conference	
* <i>Piecing together the amphibian pandemic.</i> (talk)	2023
Museum of Vertebrate Zoology Seminar Series, UC Berkeley	
<i>A snapshot of <i>Batrachochytrium dendrobatidis</i> (<i>Bd</i>) genetic diversity across the USA.</i> (talk)	2022
Global Amphibian and Reptile Disease Conference	
<i>Host Species is Linked to Pathogen Genotype for the Amphibian Chytrid Fungus</i> (talk)	2021
Joint Meeting of Ichthyologists and Herpetologists (July)	
Amphibian Pathogens Annual Meeting (November), awarded the "Lightning Bolt Award" for the most scientifically exciting presentation	
<i>Cryptic diversity of a widespread global pathogen reveals new threats for amphibian conservation.</i> (talk)	2019
Joint Meeting of Ichthyologists and Herpetologists, awarded for best student presentation in conservation	
<i>The genetics of persistence in the Panamanian Golden Frog.</i> (talk)	2019
Evolution Meeting	
* <i>Surviving chytrid: Dynamics of a globalized amphibian pathogen and how some frogs are fighting back.</i> (talk)	2019

Wildlife & Conservation Biology Seminar Series, UC Berkeley

<i>Using whole exome sequencing to reveal genetic mechanisms of persistence in the critically endangered Panamanian golden frogs.</i> (talk)	2018-2019
Ecological Society of America Meeting Museum of Vertebrate Zoology Research Symposium, awarded best student presentation	
<i>Unlocking the story in the swab: A new genotyping assay for the amphibian chytrid fungus.</i> (talk)	2017
Evolution Meeting	
<i>Hitching a Ride: Did Herpetologists Introduce the Deadly Chytrid Fungus to Southern Mexico?</i> (talk)	2013
Museum of Vertebrate Zoology Lunch Seminar Series, UC Berkeley	
<i>Morphological Variation Along an Elevation Gradient in Two Amphibian Species from Bioko Island, Equatorial Guinea.</i> (poster)	2013
Drexel University College of Arts & Sciences Research Day	
<i>Distribution and Abundance of Frogs at Moka Wildlife Center, Bioko Island, Equatorial Guinea.</i> (poster)	2012
Drexel University College of Arts & Sciences Research Day	
<i>Vegetation Survey of Southeastern Pennsylvania Wetlands to Assess Habitat Quality.</i> (poster)	2009
Drexel University College of Arts & Sciences Research Day	

GRANTS



Proven record of writing successful grant applications at the national and institutional level, including an NSF GRFP, Smithsonian Postdoctoral Fellowship, and Revive and Restore Catalyst grant totaling >\$370,000.

<b>Revive and Restore Catalyst Science Fund</b>	2021
\$211,000 awarded for postdoc research expenses at the Smithsonian Conservation Biology Institute	
<b>Smithsonian Institution Postdoctoral Fellowship</b>	2020
\$50,400 awarded for 1-year postdoctoral stipend	
<b>Bob Lane and Sandy Purcell Graduate Support Fund</b> (College of Natural Resources, UC Berkeley)	2018
\$1,500 awarded for research expenses	
<b>David and Marvalee Wake Fund</b> (Museum of Vertebrate Zoology, UC Berkeley)	2018
\$1,000 awarded for research expenses	
<b>Oliver Lyman Fund for Wildlife Research</b> (ESPM Dept. UC Berkeley)	2017
\$1,500 awarded for research expenses	
<b>Wilhelm Martens Fund</b> (Museum of Vertebrate Zoology, UC Berkeley)	2017
\$1,500 awarded for research expenses	
<b>David and Marvalee Wake Fund</b> (Museum of Vertebrate Zoology, UC Berkeley)	2016
\$2,000 awarded for research expenses	
<b>National Science Foundation Graduate Research Fellowship</b>	2015
\$102,000 awarded for graduate research and tuition	
<b>Starter Grant</b> (ESPM Dept. UC Berkeley)	2014
\$1,000 awarded for research expenses	
<b>Benjamin A. Gilman International Scholarship</b>	2012
\$4,000 awarded for Study Abroad to Bioko Island, Equatorial Guinea	
<b>Drexel University Study Abroad Scholarship</b>	2012
\$1,000 awarded for Study Abroad to Bioko Island, Equatorial Guinea	
<b>A.J. Drexel Scholarship</b> (Drexel University)	2008-2013
\$14,500 per quarter awarded for tuition	

## ACADEMIC SERVICE



<b>Expert advisor</b> for conservation breeding strategies Mountain Yellow Legged Frog breeding program at the San Diego Zoo	2023
<b>Graduate Student Representative</b> for faculty search committee ESPM department at UC Berkeley	2019
<b>Graduate Student Representative</b> on the graduate student admissions committee ESPM department at UC Berkeley	2019
<b>Reviewer</b> for ESPM Starter Grant Allocated \$20,000 in research funds to first-year graduate students in ESPM department by judging written proposals	2017-2018
<b>Manuscript reviewer</b> for various journals Including Microbial Ecology, Animal Conservation, Conservation Genetics, Evolutionary Applications, PLOS ONE, Hydrobiologia, and Microbiology	2017-Present
<b>Member</b> of Amphibiaweb guiding committee	2017-2023

## RELEVANT WORK EXPERIENCE



<b>Lab Manager</b> Rosenblum Lab. UC Berkeley Inventoried, stocked, and organized molecular lab Onboarded and trained new graduate and undergraduate students Ensured compliance with environmental health & safety measures	2016-2018
<b>GIS Analyst</b> Home Junction, Inc. San Diego, CA Digitized neighborhoods and school attendance areas in ArcGIS	2013-2014
<b>VertNet Intern</b> Museum of Vertebrate Zoology. UC Berkeley Designed an independent research project using museum data to study the spread of Chytrid fungus in Central American amphibians	2013
<b>Watershed Sciences Co-op</b> Philadelphia Water Department. Philadelphia, PA Lead a team of two in collecting field data for various stream studies Developed and implemented a stormwater basin inspection plan	2011-2012
<b>Environmental Science Student Intern</b> Federal Aviation Administration. Egg Harbor City, NJ Completed a vegetation survey of the base's 5000+ acres using ArcPad Designed a presentation on stormwater and pollution Assisted various biologists with field work including bat, butterfly, and snake surveys	2010