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 (11 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 11 and 565 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. Knapp, R.A., Wilber, M.Q., **Byrne, A.Q.**, Joseph, M.B., Smith, T.C., Rothstein, A.P., Grasso, R.L., Rosenblum, E.B. 2024. *Reintroduction of resistant frogs facilitates landscape-scale recovery in the presence of a lethal fungal disease*. Submission ready. Preprint: https://doi.org/10.1101/2023.05.22.541534
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*. Submission ready.

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.,** Piovia-Scott, J., Parra-Olea, G. 2022. *Genetic variation of Batrachochytrium dendrobatidis is linked to skin bacterial diversity in the Pacific treefrog Hyliola regilla* (*hypochondriaca*). Environmental Microbiology, 24(1), 494-506.

2021

12. Basanta, M.D., **Byrne, A.Q.**, Rosenblum, E.B., Piovia-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., Ibáñez, 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 has successfully designed and taught a course with embedded research projects, served as an instructor in many large undergraduate courses, and demonstrated a commitment to community outreach.

Created and led workshop on amphibian pathogen genomics at the RIBBiTR Training Workshop. 2023
La Selva Biological Station, Costa Rica.
Voted "most educational instructor" by participants.

Co-designed and taught ESPM139A: Genetics of Amphibian Declines. 2022
A Course-based Undergraduate Research Experience (CURE)
Fall semester at UC Berkeley

Created and led workshop on analyzing pathogen genetic data at RIBBiTR team meeting. 2022
Focused on using reproducible workflows in Rstudio and Github
Pymatuning Field Station, University of Pittsburgh, PA

Invited Guest Lecturer for Landscape Ecology at Cal Poly Pomona 2022

Volunteer Mentor for Berkeley GiGS (Getting into Graduate School) Program 2019-2020

Graduate Student Instructor for ESPM50AC: Intro to Culture & Natural Resource Management 2019
Led multiple discussion sections in >500 student course

Volunteer Mentor for oSTEM (out in STEM) national mentorship program 2019

Volunteer Mentor at the Joint Meeting of Ichthyologists and Herpetologists 2019

Graduate Student Mentor for the Berkeley Connect program 2018-2020
Led multiple discussion sections every semester with the goal of fostering belonging on campus for freshmen and transfer students.

Graduate Student Instructor for ESPM100ES: Methods in Environmental Science 2018
Mentored students writing senior thesis proposals, led data and writing workshops.
Awarded Outstanding Graduate Student Instructor Award.

Invited Guest Lecturer for ESPM112: Microbial Ecology 2018

Graduate Student Instructor for ESPM137: Landscape Ecology 2017
Led computer-based lab sections using ArcGIS and R.

Outreach Volunteer for Bay Area Scientists in Schools program 2016-2017
Taught 3rd graders lesson on evolution and natural selection.

Invited Guest Lecturer for ESPM98: *One Health for Action* 2016

Mentor and Direct Supervisor for nine undergraduate students 2016-Present
Taught laboratory techniques related to DNA extraction, PCR, library preparation. Also taught R coding and manuscript writing.
Madeline Moore, Madeline Gregory, Shreeya Garg, Christina Meyer, Sylvia Targ, Courtney Hendrickson, Sean O'Neil, Ismena Jameau, Alex Boren

PRESENTATIONS *(*indicates invited talk)*

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

*__What can frogs teach us about resilience?__ 2024
Invited symposium oral presentation given at the Society of Integrative and Comparative Biology Conference. January 4.

Identifying genomic signatures of rapid evolutionary change in mountain yellow-legged frogs (Rana muscosa/sierrae) recovering from disease. 2023
Oral presentation given at the Evolution Conference. June 22.

Reimagining the future of natural history museums with compassionate collection. 2023
Led a virtual discussion at the Digital Data in Biodiversity Research Conference. June 6.

*__Piecing together the amphibian pandemic.__ 2023
Oral presentation given at the Museum of Vertebrate Zoology Seminar Series, UC Berkeley. February 1.

A snapshot of Batrachochytrium dendrobatidis (Bd) genetic diversity across the USA. 2022
Oral presentation given virtually at the Global Amphibian and Reptile Disease conference. August 8.

Host Species is Linked to Pathogen Genotype for the Amphibian Chytrid Fungus 2021
Oral presentation given virtually at the Joint Meeting of Ichthyologists and Herpetologists. July 22.
Oral presentation given virtually at the Amphibian Pathogens Annual Meeting. November 12.
Awarded the "Lightning Bolt Award" for the most scientifically exciting presentation.

Cryptic diversity of a widespread global pathogen reveals new threats for amphibian conservation. 2019
Oral presentation given at the Joint Meeting of Ichthyologists and Herpetologists. July 26.
Awarded for best student presentation in Conservation.

The genetics of persistence in the Panamanian Golden Frog. 2019
Oral presentation given at the Evolution Conference. June 22. Providence, R.I.

****Surviving chytrid: Dynamics of a globalized amphibian pathogen and how some frogs are fighting back.*** 2019
Oral presentation given for the Wildlife & Conservation Biology Seminar Series at UC Berkeley. April 12.

Using whole exome sequencing to reveal genetic mechanisms of persistence in the critically endangered Panamanian golden frogs. 2018-2019
Oral presentation given at Ecological Society of America Conference. August 7.
Oral presentation given at Museum of Vertebrate Zoology Research Symposium. January 17.
Awarded best student presentation at MVZ symposium.

Unlocking the story in the swab: A new genotyping assay for the amphibian chytrid fungus. 2017
Oral presentation given at Evolution Conference. June 25. Portland, OR.

Hitching a Ride: Did Herpetologists Introduce the Deadly Chytrid Fungus to Southern Mexico? 2013
Oral presentation given as part of the Museum of Vertebrate Zoology Lunch Seminar Series. September 4. Berkeley, CA.

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Morphological Variation along an Elevation Gradient in Two Amphibian Species from Bioko Island, Equatorial Guinea. 2013
Poster presented at the Drexel University College of Arts & Sciences Research Day. April 9.

Distribution and Abundance of Frogs at Moka Wildlife Center, Bioko Island, Equatorial Guinea. 2012
Poster presented at the Drexel University College of Arts & Sciences Research Day. April 3.

Vegetation Survey of Southeastern Pennsylvania Wetlands to Assess Habitat Quality. 2009
Poster presented at the Drexel University College of Arts & Sciences Research Day. April 6.

GRANTS

Proven track 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.

Revive and Restore Catalyst Science Fund . 2021
$211,000 awarded for postdoc research expenses at the Smithsonian Conservation Biology Institute.

Smithsonian Institution Postdoctoral Fellowship 2020
$50,400 awarded for 1-year postdoctoral stipend.

Bob Lane and Sandy Purcell Graduate Support Fund (College of Natural Resources, UC Berkeley) 2018
$1,500 awarded for research expenses.

David and Marvalee Wake Fund (Museum of Vertebrate Zoology, UC Berkeley) 2018
$1,000 awarded for research expenses.

Oliver Lyman Fund for Wildlife Research (ESPM Dept. UC Berkeley) 2017
$1,500 awarded for research expenses.

Wilhelm Martens Fund (Museum of Vertebrate Zoology, UC Berkeley) 2017
$1,500 awarded for research expenses.

David and Marvalee Wake Fund (Museum of Vertebrate Zoology, UC Berkeley) 2016
$2,000 awarded for research expenses.

National Science Foundation Graduate Research Fellowship 2015

$102,000 awarded for graduate research and tuition.

Starter Grant (ESPM Dept. UC Berkeley) 2014
$1,000 awarded for research expenses.

Benjamin A. Gilman International Scholarship 2012
$4,000 awarded for Study Abroad to Bioko Island, Equatorial Guinea

Drexel University Study Abroad Scholarship 2012
$1,000 awarded for Study Abroad to Bioko Island, Equatorial Guinea

A.J. Drexel Scholarship (Drexel University) 2008-2013
$14,500 per quarter awarded for tuition.

ACADEMIC SERVICE

Served as an expert advisor for conservation breeding strategies. 2023
Mountain Yellow Legged Frog breeding program at the San Diego Zoo.

Served as graduate student representative for faculty search committee. 2019
ESPM department at UC Berkeley.

Served as graduate student representative on the graduate student admissions committee. 2019
ESPM department at UC Berkeley.

Reviewer for ESPM Starter Grant. 2017-2018
Allocated $20,000 in research funds to first-year graduate students in ESPM department by judging written proposals.

Manuscript reviewer for various journals 2017-Present
Including Microbial Ecology, Animal Conservation, Conservation Genetics, Evolutionary Applications, PLOS ONE, Hydrobiologia, and Microbiology

Served as member of Amphibiaweb guiding committee 2017-2023

RELEVANT WORK EXPERIENCE

Lab Manager Rosenblum Lab, UC Berkeley, CA 2016-2018
Inventoried, stocked, and organized molecular lab. Onboarded and trained new graduate and undergraduate students. Ensured compliance with environmental health & safety measures.

GIS Analyst Home Junction, Inc. San Diego, CA 2013-2014
Digitized neighborhoods and school attendance areas in ArcGIS.

VertNet Intern Museum of Vertebrate Zoology. UC Berkeley 2013
Designed an independent research project using museum data to study the spread of Chytrid fungus in Central American amphibians.

Watershed Sciences Co-op Philadelphia Water Department. Philadelphia, PA 2011-2012
Lead a team of two in collecting field data for various stream studies. Developed and implemented a stormwater basin inspection plan.

Environmental Science Student Intern Federal Aviation Administration. 2010
William J. Hughes Technical Center, 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.