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 33 papers (13 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 13 and 686 citations to date.

IN REVIEW/REVISION

33. **Byrne, A.Q.**, Mehl, H.L., Callicott, K.A. *Assessing the competitive potential of Aspergillus tamarii and Aspergillus flavus co-inoculated on maize*. Submitted to Phytofrontiers.
32. Rosenblum, E.B., Chen Musgrove, M.M., Kaufmann, N., Liu, K., Masching, H., Woodhams D., Ohmer, M.E.B., Rollins-Smith, L.A., Le Sage, E., **Byrne, A.Q.**, Richards-Zawacki, C.L. *CURE for Undergraduate Education: How Course-based Undergraduate Research Experiences (CUREs) can scale innovative practices in STEM education and assessment.* Conference paper submitted to 11th International Conference on Higher Education Advances.
31. Boren, A. (undergraduate), Lesbarrères, D., **Byrne, A.Q**. *A review of animal use in Batrachochytrium salamandrivorans research*. In Revision at Conservation Science and Practice.
30. 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.
29. **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*. In Revision at Molecular Ecology.

2025

28. **Byrne, A.Q.**, Legan, A.W., Callicott, K.A. 2024. *Whole genome assembly of Aspergillus toxicus and Aspergillus texensis*. Microbiology Resource Announcements. e01033-24.

27. Bamba-Kaya, A.G., Fokou, O.R., Saenz, V., Scheinberg, L.A., **Byrne, A.Q.**, Gonwouo, L.N., Becker C.G., Bell, R.C. *Initial survey of the amphibian chytrid fungus Batrachochytrium dendrobatidis around Bouamir Research Station, Dja Faunal Reserve, Cameroon*. Herpetology Notes. 18: 529-537.

26. Nguyen, J., Becker C.G., **Byrne, A.Q.**, Medina, D., Harrod, A.E., Bell, R.C. *Historical Prevalence of the Amphibian Chytrid Fungus (Batrachochytrium dendrobatidis) in West Africa*. Herpetologica.

25. Kouete M.T., Longo, A.V., **Byrne, A.Q.**, Echalle, S.N., Rosenblum, E.B., Blackburn, D.C. 2025. *Host and environmental factors drive prevalence of the pathogen Batrachochytrium dendrobatidis in Central African amphibians diversity, and earliest detection in Africa*. Scientific Reports. 15:14908.

24. Voyles J., Richards-Zawacki, C.L., **Byrne, A.Q.**, Estrada, A., Ibáñez, R., Rodriguez, K.M., Goldberg, C.S. 2025. *Using environmental DNA sampling for simultaneous detection of hosts and their pathogens: a case study with the critically endangered frog genus Atelopus.* Animal Conservation. 1367-9430.

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*. Oecologia. 207 (1): 3.

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

Workshop designer and instructor, Amphibian pathogen genomics at RIBBiTR BII meeting 2023
La Selva Biological Station, Costa Rica
Awarded “most educational instructor” by participant vote

Course designer and instructor, ESPM139A: Genetics of Amphibian Declines 2022
Course-based Undergraduate Research Experience (CURE), UC Berkeley

Workshop designer and instructor, Analyzing pathogen genetic data at RIBBiTR BII meeting 2022
Pymatuning Field Station, University of Pittsburgh, PA

Invited Guest Lecturer, Cal Poly Pomona's Landscape Ecology Course 2022

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

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

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

Volunteer Mentor, Joint Meeting of Ichthyologists and Herpetologists 2019

Graduate Student Mentor, Berkeley Connect program 2018-2020
Led two discussion sections each semester

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

Invited Guest Lecturer, ESPM112: Microbial Ecology at UC Berkeley 2018

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

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

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

Mentor and Direct Supervisor, nine undergraduate research assistants 2016-Present
Taught laboratory techniques related to DNA extraction, PCR, library preparation, as well as 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 communities, resulting in multiple invitations to speak at seminars and conferences and awards for presentation excellence.

**What can frogs teach us about resilience?* (talk) 2024
Society of Integrative and Comparative Biology Meeting

Identifying genomic signatures of rapid evolutionary change in mountain yellow-legged frogs (Rana muscosa/sierrae) recovering from disease. (talk) 2023
Evolution Meeting

Reimagining the future of natural history museums with compassionate collection. (virtual discussion) 2023
Digital Data in Biodiversity Research Conference

**Piecing together the amphibian pandemic.* (talk) 2023
Museum of Vertebrate Zoology Seminar Series, UC Berkeley

A snapshot of Batrachochytrium dendrobatidis (Bd) genetic diversity across the USA. (talk) 2022
Global Amphibian and Reptile Disease Conference

Host Species is Linked to Pathogen Genotype for the Amphibian Chytrid Fungus (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*

Cryptic diversity of a widespread global pathogen reveals new threats for amphibian conservation. (talk) 2019
Joint Meeting of Ichthyologists and Herpetologists, *awarded for best student presentation in conservation*

The genetics of persistence in the Panamanian Golden Frog. (talk) 2019
Evolution Meeting

**Surviving chytrid: Dynamics of a globalized amphibian pathogen and how some frogs are fighting back.* (talk) 2019
Wildlife & Conservation Biology Seminar Series, UC Berkeley

Using whole exome sequencing to reveal genetic mechanisms of persistence in the critically endangered Panamanian golden frogs. (talk) 2018-2019
Ecological Society of America Meeting
Museum of Vertebrate Zoology Research Symposium, *awarded best student presentation*

Unlocking the story in the swab: A new genotyping assay for the amphibian chytrid fungus. (talk) 2017
Evolution Meeting

Hitching a Ride: Did Herpetologists Introduce the Deadly Chytrid Fungus to Southern Mexico? (talk) 2013
Museum of Vertebrate Zoology Lunch Seminar Series, UC Berkeley

Morphological Variation Along an Elevation Gradient in Two Amphibian Species from Bioko Island, Equatorial Guinea. (poster) 2013
Drexel University College of Arts & Sciences Research Day

Distribution and Abundance of Frogs at Moka Wildlife Center, Bioko Island, Equatorial Guinea. (poster) 2012
Drexel University College of Arts & Sciences Research Day

Vegetation Survey of Southeastern Pennsylvania Wetlands to Assess Habitat Quality. (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.

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

Expert advisor for conservation breeding strategies 2023
Mountain Yellow Legged Frog breeding program at the San Diego Zoo

Graduate Student Representative for faculty search committee 2019
ESPM department at UC Berkeley

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, Microbiology, Phytopathology

Member of Amphibiaweb guiding committee 2017-2023

RELEVANT WORK EXPERIENCE

Lab Manager Rosenblum Lab. UC Berkeley 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. Egg Harbor City, NJ 2010
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