

## Alexus Roberts Huggis, Ph.D.

### CURRENT APPOINTMENT

Postdoctoral Researcher, Institute of Ecology and Evolution, University of Bern, Bern, Switzerland and Fish Ecology and Evolution, EAWAG, Kastanienbaum, Switzerland

### EDUCATION & PREVIOUS APPOINTMENTS

B.Sc. Ecology, Evolution, & Environmental Sciences, Purdue University, West Lafayette, Indiana

Ph.D. Population Biology, University of California, Davis, Davis, California

**Tell us a little about your research.**—Tens of thousands of fish species inhabit diverse aquatic settings, partly due to the evolution of functional innovations. Such traits enable new interactions with the environment and enhanced access to resources, often promoting increased diversification. My research combines functional morphology, kinematics, and phylogenetic comparative methods to explore how key innovations impact patterns of disparity, integration, and rates of evolution within musculoskeletal systems. My work primarily focuses on key innovations within the oral and pharyngeal jaws of fishes with the ultimate goal of understanding how major trait changes contribute to the incredible morphological, functional, and even lineage diversification seen across this vertebrate group.

**How do you identify as a scientist?**—Evolutionary biologist; functional morphologist; and diversity, equity, & inclusion (DEI) practitioner.

**What personal identity/ies do you hold that are underrepresented/marginalized in ichthyology or herpetology? How do these identities and experiences enrich your relationship with your science?**—As a Black woman, I am no stranger to systemic obstacles faced by historically marginalized individuals in ichthyology and STEM more broadly. My own challenges motivate my efforts to support the educational and professional success of women and students of color in STEM fields. As a person raised in faith-based communities in the Midwest, I am often one of the few, if not the only, Christian evolutionary biologists in most of my circles. This has led to many conversations with my professional and personal peers that have deepened my appreciation for science and my faith.

**Of your scientific experiences: What do you wish others of your identity knew? What do you wish ichthyologists/herpetologists not of your identity knew?**—To people who share some or all of my identities—Always remember that there is a place for you in this field! There may be times when you feel like you shouldn't be in academia because your path doesn't match that of your peers. In those moments of doubt, remind yourself (1) that you contribute a unique perspective to this field, (2) to protect your mental health, and (3) that you are more successful overall when you are true to yourself. I also encourage you to stay rooted in a support network that will guide and uplift



**Fig. 1.** Alexis Roberts Huggis, Ph.D. Photo credit: <https://fatyeti.com/>.

you throughout your academic journey in a way that is sensitive to your priorities. I hope you never forget that your passion for and approach to understanding the natural world and training the next generation of scientists is needed and valuable!

To people who do not share any of my identities—Please understand that, for many women and scientists of color, it is almost impossible for us to conduct our research in a vacuum. By this, I mean that social and systemic injustices can have a profound, daily impact on us and often take up mental and emotional space. Although it is not our sole responsibility to address these issues, know that it may be important to or even healing for your mentees and colleagues to take time away from research to engage with their communities through outreach, teaching, and service. You should not just accept this potential difference in priorities, but celebrate it and consider how you might better support your students and colleagues. Whether getting trained to be a culturally sensitive mentor and educator or participating in an ongoing outreach program—your efforts are also needed to dismantle obstacles to the recruitment, development, and retention of historically marginalized individuals in our fields.

**What research (or other accomplishment) are you most proud of?**—In this moment, I am most proud of completing my Ph.D. because I just finished it up! I am really proud of my collaborative contributions to the fields of fish functional

morphology and evolutionary biology. My efforts to pioneer and lead several equity and inclusion programs have also been incredibly rewarding! Of note, I supported the longevity and impact of student-led, grassroots initiatives that enhanced DEI within the UC Davis College of Biological Sciences by founding and facilitating a graduate student DEI leadership program and a small grants program during the 2022–23 academic year. I am excited to keep building on my skills and knowledge in both of these areas for years to come!

**What sparked your interest in fishes and/or herps? When was this in your life?**—The idea of seas teeming with intriguing creatures piqued my interest in marine biology at a really young age! My interests developed through my undergraduate coursework at Purdue and volunteer work at the Fort Wayne Children's Zoo, but I still had little understanding of potential career paths. My trajectory was especially influenced by my NSF Research Experience for Undergraduates at Friday Harbor Laboratories (FHL) in 2015. At FHL, I was introduced to the concepts of functional morphology, biomechanics, and phylogenetics. The program provided funding to attend my first national scientific conference where I met my Ph.D. advisor, and the project I completed resulted in my first scientific publication. Without the REU program and my research mentors during that experience—Professor Nicholas Gidmark and Professor Stacy Farina—I would not be where I am today!

**What is your favorite publication in an ASIH journal or memorable JMIH presentation/interaction?**—There is so much great research published in ASIH journals, it is hard to pick a favorite. One article that I consider an “oldie, but a goodie” is “Evolution of the feeding mechanism in primitive actinopterygian fishes: A functional anatomical analysis of *Polypterus*, *Lepisosteus* and *Amia*” (Lauder, 1980, *Journal of Morphology* 163:283–317). This is a paper that I refer to often as I work to further understand the intricacies of fish feeding.

**Who has had the most impactful influence on you?**—So many people have contributed to my personal and professional success! I would not be who or where I am today without the support and love from all of my mentors, colleagues, friends, and family. A few folks/groups of people who have had a particularly impactful influence include: (1) My Ph.D. advisor—Professor Peter Wainwright. Under Peter's guidance, I became a collaborator, science community member, and educator who is respectful, teachable, intentional, and who works with the utmost integrity. He pushed me to my limits because he could see what I was capable of even when I couldn't. Most of all, Peter continuously reminded me to stay excited about the fishes—the stories they have to tell us are endless! (2) My research and DEI collaborators. I am so thankful for all of my current and former lab

mates as well as countless colleagues for teaching me so much about our study systems and research topics on a daily basis. I am especially grateful to Professor Katherine Corn who I've been learning alongside since the 2015 Friday Harbor REU and other co-authors on my dissertation work—Dr. Jennifer Hodge, Professor Edward Burress, and Professor Christopher Martinez—whose collaborative efforts and shared knowledge were invaluable. I am also inspired by the thoughtfulness, organization, and dedication shown by Hannah Higuera, Carmen Banks, and Elena Suglia, each of whom I had the pleasure of co-founding and facilitating multiple DEI initiatives with. (3) And of course, all of my family and friends, but especially my parents, sister, and husband—Tony and Constance Roberts, Tiffany Pollard, and Eli Huggis. These four are my joy in this world and the *wind beneath my wings*. There is no greater feeling than knowing that I have made them proud.

**How do you balance personal life and work? What is (are) the major challenge(s) for balancing personal and professional life?**—My biggest challenge in creating balance is perfectionism. I give my all to my research, service, relationships, etc. Though this work ethic can be rewarding, it can also be very draining when I continuously ignore my own needs. To combat this, I make daily, weekly, and even monthly goals to help manage my time. Even with these goals though, I give myself a lot of grace and try to take things one day at a time. Small progress on any task is better than nothing, and if I don't let myself rest, burnout will keep me from accomplishing anything at all. Another tactic I use is scheduling non-work activities—walks with friends, date nights, potlucks, short vacations/staycations, etc. By building in breaks, I set hard deadlines for myself and I get the opportunity to look forward to times of rest and recharging.

#### TO LEARN MORE

<https://www.linkedin.com/in/alexus-rh>  
<https://www.aqua.iee.unibe.ch>  
<https://biology.ucdavis.edu/about/dei>  
<https://eeegradpreview.weebly.com>

Roberts, A. S., J. R. Hodge, P. Chakrabarty, and P. C. Wainwright. 2021. Anatomical basis of diverse jaw protrusion directionality in ponyfishes (family Leionathidae). *Journal of Morphology* 282:427–437.

Roberts-Huggis, A. S., E. D. Burress, B. Lam, and P. C. Wainwright. 2023. The cichlid pharyngeal jaw novelty enhances evolutionary integration in the feeding apparatus. *Evolution* 77:1917–1929.