

## Student Stories

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### Student Mini Grants: Perch: Equalizing STEM Research Opportunities

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The Perch project has grown to over 30 students with several advisors.

Perch's mission is to make research more accessible to undergraduates.

UROP, the Undergraduate Research Opportunity Program, does a great job at its mission: helping underrepresented and first-generation students gain their first research experience and make the most of it. When UROP started 25 years ago, it was able to accommodate every eligible student who applied.

That's no longer true. The number of undergraduates seeking research experience has grown tremendously in the last decade. Why?

For many students, undergraduate research is their first experience working on real-world problems that may provide widespread impact and help people in the future. Through research, students gain

valuable critical thinking skills, a new way of asking questions. Research is a chance for students to apply what they've learned in class to the real world, to venture boldly beyond the maps of the known. Research is a chance to improve people's lives, it's the chance to get a law of nature named after you, it's the universe trying to understand itself. Not to mention that undergraduate research experience is now necessary rather than an added bonus when applying to graduate school, industrial R&D jobs, and numerous other career paths.

So it's no surprise that applications to UROP have ballooned and they now waitlist more students than they can accept.

Perch offers a two-part solution to this issue. First, we're building an online platform to centralize lab information and effectively connect students to labs. Currently, outside of programs like UROP, the two dominant methods of applying to labs are knowing professors from clubs or classes and cold-emailing professors. These methods aren't conducive to matching students to a lab they're truly passionate about. Students may not even know about a lab they'd love to work in. Through our online platform, we can connect students to labs they'd best suited for. More passionate students mean more enthusiasm in lab and a better chance for a multi-year commitment, which are the top two factors professors have told us determine how positively they view undergraduate researchers. Over time, we hope that Perch's more enthusiastic and committed undergraduate applicants will encourage professors to open more positions for undergraduates.

We don't want to rely on just one angle of attack, though. Simultaneously, we're developing lab training classes. These classes are undergraduate-led, practical-lab-technique-focused, field-specific laboratory classes. Our first class will be in Chemistry, CHEM 211H, in Fall 2018, a section of Organic Lab 1.

Our classes, starting with our Chemistry class, are focused on preparing students with useful lab experience. This includes specific lab techniques, recent literature comprehension, and being comfortable in a lab setting. More specifically, the chemistry class will expose students to different sub-disciplines within chemistry (including biochemistry, inorganic chemistry, analytical chemistry,

organic chemistry) and the techniques commonly used in the fields. The program will end with a hands-on lab assessment that will certify students in fundamental research techniques. The certification will be uploaded to our online platform to bolster student applications when they are applying to laboratories.

We're developing curricula in collaboration with professors and graduate student instructors. We also have teams in the Biology and Chemical Engineering departments working on classes for Winter 2018. The biology curriculum is currently under revision by the MCDB curriculum committee and the chemical engineering curriculum is currently under construction.

More updates:

We're in collaboration with UROP. Ideally, we'd like to incorporate the UROP application in our platform. The Assistant Director of UROP, Luciana Aenasoaie, is one of our advisors.

We've interviewed over 30 professors to receive their insight on what they look for in undergraduates applying to labs. We've gained great feedback. We have also interviewed and received support from a wide variety of people from various departments and organizations, including the Center for Entrepreneurship (the Entrepreneurship Law Clinic), Gwydion, FindYourDitto, Academic Innovation, the Molecular and Integrative Physiology Department, the Chemistry Department, the Biology Department, the Chemical Engineering Department, and the Department for Social Innovation (Optimize).

We're nearing completion of our minimum viable product for our platform. We plan to start a beta test on March 10th, and we've begun sending out invitations to professors and students (just to test the platform and give feedback; they won't actually be applying to research positions). We plan to launch fully by Fall 2018.

Our team has grown to about 30 students.

Feel free to check out our current website at <http://perch.research.umich.edu>. For those curious, the backend is in PHP (Laravel) and the frontend is in (React). It's hosted on AWS through the UM Enterprise Agreement. We have a few high quality

photos of our team members, mostly the software development and chemistry subteams. Our mascot, the penguin in a lab coat, is named Rodriguez.

Our advisor Jo Angela Oehrli gave us feedback on the direction of our curriculum at a critical juncture when we were deciding how to structure the classes, whether to host them online, whether to make them MOOCs. She met with our chemistry subteam to provide valuable advice on curriculum construction. Her mentorship has been very important in helping us construct a teaching curriculum from scratch. She also put us in contact with Paul Barrow, who advised us on possible funding methods and related software we could learn from. Angie also helped us explore various resources available at the University of Michigan, including the Shapiro Design lab and the Wolverine Pathways program. Angie's expertise in research and teaching has been a tremendous help for the team. She has been a fantastic mentor and we are extremely thankful for the help she has provided us with.

The UM Mini-grant will be used to fund our high school outreach program. We are teaching biology techniques to local high school students (from Ann Arbor Pioneer High School). The funds will cover equipment and reagent costs for the program. By the end of the program, we will try to connect students with professors using our online application platform. The high school outreach program is conducted in collaboration with the UM Chapter of Tau Beta Pi (Michigan Engineering Honors Society) and the Michigan Synthetic Biology Team (MSBT).

For more information, please visit our website:

<http://perch.research.umich.edu/>

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