

ALYSSA BENJAMIN

(916) 284-0558 • alyssabenjamin15@gmail.com

<http://gvl.ucdavis.edu/people/alyssa-benjamin/>

EDUCATION

B.S. *summa cum laude* Biochemistry and Molecular Biology 2011-2015
University of California, Davis
GPA: 3.98

RESEARCH EXPERIENCE

Laboratory Technician, Genomic Variation Laboratory 2015-present
University of California, Davis, CA

- Developing a SNP panel to detect hybridization of delta smelt, longfin smelt, and wakasagi
- Using RADseq to investigate the population genetics of relict dace
- Performing DNA extractions, PCR, and genotyping of captive delta smelt population to determine parentage and recommend mates with minimal relatedness for spawning
- Preparing RAD-seq libraries for sequencing (various species i.e. cutthroat trout)
- Conducting experiments and analysis for lab projects and drafting manuscripts for publication

Undergraduate Research Assistant, Genomic Variation Laboratory 2012-2015
University of California, Davis, CA

- Honors Thesis: *Genetic Analysis of Arroyo Chub Populations*
- Investigated the population structure and genetic diversity of arroyo chub, a fish species of high concern, in order to inform management strategies and prevent further species loss
- Genotyped 259 individuals at 10 microsatellite loci and analyzed Hardy-Weinberg equilibrium, linkage disequilibrium, population bottlenecks, and F_{ST} values to characterize population genetic relationships

EPFL Summer Research Program Intern Summer 2014
École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

- Developed a 3xHA/LoxP construct for the endogenous tagging and conditional knockout of CEP170 via the CRISPR/Cas9 system
- Designed and cloned guide RNA and DNA donor expression vectors
- Used sterile technique to maintain and transfect HEK293T and HeLa cells

Hugh Edmondson Summer Research Fellow Summer 2013
University of California, Davis Medical Center, Sacramento, CA

- Investigated high abundance protein depletion techniques of effluent collected from burn wounds for use in developing a biomarker panel to predict burn wound healing
- Analyzed differential visualization of protein spots on 2D-DIGE gels after depleting burn wound effluent samples with the Agilent Multiple Affinity Column Human-6 and Human-14
- Identified 27 additional protein spots after depleting samples with the Human-14 Column

PUBLICATIONS

Finger AJ, Fisch K, Mahardja B, **Benjamin A**, Lindberg J, Ghebremariam T, Hung T, May B. A managed conservation hatchery for Delta Smelt shows evidence of genetic adaptation to captivity after 9 generations. *Submitted*.

Mahardja B, Hobbs JA, Ikemiyagi N, **Benjamin A**, Finger AJ. Role of freshwater floodplain-tidal slough complex in the persistence of the endangered delta smelt. *Submitted*.

Benjamin A, Saglam IK, Mahardja B, Hobbs J, Hung T, Finger AJ (2018) Use of single nucleotide polymorphisms identifies backcrossing and species misidentifications among three San Francisco Estuary osmerids. *Conservation Genetics*.

Finger AJ, Schumer G, **Benjamin A**, Blankenship S (2017) Evaluation and Interpretation of Genetic Effective Population Size of Delta Smelt from 2011-2014. *San Francisco Estuary and Watershed Science Journal* 15(2):1-11.

Benjamin A, May BP, O'Brien J, Finger AJ (2016) Conservation Genetics of an Urban Desert Fish, the Arroyo Chub. *Transactions of the American Fisheries Society* 145(2):277-286.

TECHNICAL REPORTS

Benjamin A, Finger AJ (2016) Genetic Status of Owens Tui Chub at Hot Creek Hatchery. Report to California Department of Fish and Wildlife.

Benjamin A, May BP, O'Brien J, Finger AJ (2015) Population Structure and Genetic Diversity of Endemic Arroyo Chub Populations. Report to California Department of Fish and Wildlife.

PRESENTATIONS

Benjamin A, Saglam IK, Mahardja B, Hobbs J, Hung T, Finger AJ (2017) Genetic identification of Yolo Bypass osmerids and their hybrids using a new SNP assay panel. Interagency Ecological Panel Project Work Team Meeting, West Sacramento, CA. Oral Presentation.

Benjamin A, May BP, O'Brien J, Finger AJ (2016) Conservation genetics of an urban desert fish: the Arroyo Chub. Western Division of the American Fisheries Society Annual Meeting, Reno, NV. Oral Presentation.

Benjamin A, May BP, O'Brien J, Finger AJ (2015) Population Structure and Genetic Diversity of Endemic Arroyo Chub Populations. UC Davis Undergraduate Research Conference, Davis, CA. Oral Presentation.

Benjamin A, Aeby E, Majerská J, Lingner J (2014) Validation of CEP170 as a telomere-binding protein. EPFL SRP Student Symposium Poster Session, Lausanne, Switzerland. Poster Presentation.

Benjamin A, Chromy B (2013) Proteomic Characterization of Burn Wounds. 2013 Hugh Edmondson Fellowship Final Presentations, Sacramento, CA. Oral Presentation.

SKILLS

- **Molecular Biology:** PCR, qPCR, DNA extractions, gel electrophoresis, microsatellite genotyping using ABI 3730, RAD-seq library preparation, SNP genotyping, DNA cloning, CRISPR/Cas9 genome editing
- **Biochemistry:** SDS-PAGE, 2D-DIGE, western blotting, HPLC, UV/Vis spectrophotometry, Bradford assay, buffer preparation, solution preparation
- **Software:** ggplot2, Rstudio, Sequencher, ArcGIS, GeneMapper, Microsoft Office
- **Languages:** familiarity with Python, R, and Unix shell scripting

TEACHING EXPERIENCE

Davis High School Biotechnology Internship Mentor 2015-2017

Genomic Variation Laboratory, University of California, Davis, CA

- Trained high school interns in laboratory techniques and genetic management of captive Delta Smelt population
- Students: Valerie Chu (2017), Kyra Lee (2017), Ben Hedman (2016), Alex Asera (2015)

AP Biology, Transitions Math, and Elementary Language Arts Tutor 2013-2015

Partners in Learning, Davis, CA

- Designed personalized lessons for elementary through high school students
- Explained fundamental concepts to encourage student growth and learning

Math Tutor 2011

Sacramento Regional Conservation Corps, Sacramento, CA

- Tutored young adults (ages 18-25) who had previously dropped out of high school to help them earn their GED or high school diploma
- Communicated effectively to motivate and guide students to better understanding of mathematical principles

HONORS AND AWARDS

College of Biological Sciences (CBS) Citation for Outstanding Performance	2015
CBS Department of Molecular and Cellular Biology Departmental Citation	2015
UC Davis CBS Dean's Honor List	2011-2015
UC Davis Regents Scholar	2011-2015
Integrated Studies Honors Program	2011-2012
National Merit Finalist	2011

SCHOLARSHIPS AND GRANTS

Travel Grant, Western Division American Fisheries Society \$495	2016
UC Davis Regents Scholarship \$30,000	2011-2015
École Polytechnique Fédérale de Lausanne Summer Research Fellowship \$4,922	2014
Hugh Edmondson Summer Research Fellowship \$2,000	2013
National Merit Scholarship \$2,500	2011

ORGANIZATIONS

Prytanean Alumni Association, <i>Alumni-Active Liaison</i>	2015-present
American Society for Biochemistry and Molecular Biology	2014-present
Phi Beta Kappa Society	2014-present
American Fisheries Society	2015-2016
Prytanean Women's Honor Society, <i>Social Vice President</i>	2013-2015
Regents Scholars Society	2011-2015

SERVICE

Professional Service

- Manuscript Review, *Ecology of Freshwater Fish* 2016
- Western Division of the American Fisheries Society Annual Meeting Volunteer 2016

Community Service

- *Opening Doors Inc*: Aiding with refugee resettlement in the Greater Sacramento Area 2017-present
- *Empower Yolo*: Raised over \$3000 for the sexual assault and domestic violence shelter as lead organizer (2015) and committee head (2014) for the annual Prytanean Benefit Ball event. Decorated and filled holiday stockings with gifts for children at the shelter 2013-present
- *American Cancer Society*: Raised money by participating in Relay for Life 2014-2015
- *Yolo County SPCA*: Assisted with dog adoptions 2013-2015
- *Chow Night at St. Martin's Church*: Made dinner for the homeless 2013-2015