

Meghan A. Forsythe

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Education:

BACHELOR OF SCIENCE, MOLECULAR AND CELLULAR BIOLOGY WITH A MICROBIOLOGY EMPHASIS | EXPECTED JUNE 2026 | UNIVERSITY OF CALIFORNIA, SANTA BARBARA

GPA: 3.99, Science Communication minor, with honors.

Research Experience:

RESEARCH ASSISTANT | THE BODDY LAB AT UC SANTA BARBARA | GOLETA, CA | DECEMBER 2024 – PRESENT | *Part-time*

- Curated large comparative dataset of placental types across hundreds of mammalian species.
- Developed and implemented MATLAB scripts to analyze and visualize links between placental morphology and life history traits.
- Identified evolutionary trade-offs between placental invasiveness and gestation length, contributing novel findings to the field.
- Co-authoring and drafting forthcoming publication based on project results.
- Advisors: Dr. Amy Boddy, Ph.D., and Cristiano Parmeggiani, Ph.D. student.

RESEARCH BIOLOGY INTERN | BIOCRYST PHARMACEUTICALS INC. | BIRMINGHAM, AL | JUNE 2025 – AUGUST 2025 | *Full-time*

- Designed and executed AP ELISA, ZMAC30, and luminescent toxicity assays to evaluate C5 drug candidates; quantified potency by calculating IC50 values in GraphPad Prism.
- Cultured, maintained, and imaged HepG2 cells; assessed cell viability with CellTiter-Glo® assays.
- Prepared and optimized experimental reagents (serial drug dilutions, zymosan-coated plates, human serum) to ensure reproducible IC50 curves.
- Performed intravenous rat dosing and plasma isolation for pharmacokinetic and safety studies.
- Purified proteins using magnetic bead separation; confirmed purity with SDS-PAGE.
- Presented findings at company-wide Poster Day and contributed regularly to biology team meetings, gaining broad exposure to the drug development pipeline.
- Advisors: Dr. Juan Wang, Ph.D., Dr. Y.S. Babu, Ph.D., and Dr. Xilin Chen, Ph.D.

RESEARCH BIOLOGY INTERN | THE LAL LAB | CENTER FOR CANCER RESEARCH (CCR), NATIONAL CANCER INSTITUTE (NCI), THE NATIONAL INSTITUTES OF HEALTH (NIH) | BETHESDA, MD | JUNE 2024 – SEPTEMBER 2024 | *Full-time*

- Investigated functions of Regulatory RNAs in colorectal cancer differentiation using the HCT116 cell line.
- Applied CRISPRi-dCas9-ZIM3 technology alongside Western blotting, qPCR/RT-PCR, and mammalian cell culture in HCT116 and 293T cells to assess gene function.
- Designed/cloned gRNAs targeting *ZMAT2*, *PELO*, and *RBM22* into lentiviral vectors for functional studies.
- Synthesized cDNA, sonicated cells, and prepared cell media, trypsin, and freezing media.
- Updated daily and maintained a detailed lab notebook of my experimental procedures and data.
- Presented my data and future research goals at The Natcher Conference Center and in weekly team lab meetings.
- Advisors: Dr. Ashish Lal, Ph.D., and Dr. Ioannis Grammatikakis, Ph.D.

Manuscripts in Preparation:

Parmeggiani, C., **Forsythe, M.**, Boddy, M., et al. (2025). Life-History Tradeoffs and Placental Evolution in Mammals: Maternal Investment Across the Tree of Life.

Conference Presentations:

BIOCRYST SUMMER POSTER DAY | VULCAN CONFERENCE CENTER | BIOCRYST PHARMACEUTICALS INC. | BIRMINGHAM, AL | AUGUST 2025

- Poster Title: *Evaluating C5 BCX Drug Candidates For Efficacy & Toxicity.*

NIH SUMMER POSTER DAY | NATCHER CONFERENCE CENTER | NATIONAL INSTITUTES OF HEALTH (NIH) | BETHESDA, MD | AUGUST 2024

- Poster Title: *A CRISPRi screen to identify RNA Binding Proteins with oncogenic functions in colorectal cancer.*

Honors:

HONORS COLLEGE MEMBER AND ADVISOR | LETTERS AND SCIENCE | UC SANTA BARBARA | JULY 2023 – PRESENT

- Mentoring first-year students in the program, guiding them in engaging with courses, professors, research, and pursuing special interests in academia.
- Taking honors-only coursework in subtractive manufacturing, biochemistry structure and function, molecular genetics, oncology, and microbiology.

DEAN'S HONORS | LETTERS AND SCIENCE | UC SANTA BARBARA | SEPTEMBER 2022 – PRESENT

Leadership and Work Experience:

UNDERGRADUATE LEARNING ASSISTANT, MOLECULAR GENETICS | UC SANTA BARBARA | GOLETA, CA | SEPTEMBER 2025 – PRESENT | Part-time

- Guide small-group problem-solving sessions, promoting critical thinking and collaborative reasoning.
- Model effective study strategies, including note-taking, problem-solving heuristics, and exam preparation.
- Coordinate with instructors to refine teaching approaches and optimize student learning outcomes.

BREACHING BIOTECH. MENTOR | UC SANTA BARBARA | GOLETA, CA | SEPTEMBER 2023 - PRESENT

- Mentor club members on coursework and connect them with professors as needed.
- Maintain professional contacts with scientists from biotechnology companies such as Amgen and Genentech.
- Attend weekly scientific panels to learn new biotechnological techniques and latest research.

CAMPUS TOUR GUIDE | UC SANTA BARBARA GUACHO TOUR ASSOCIATION | GOLETA, CA | NOVEMBER 2022 – JUNE 2024 | Part-time

- Provide prospective students with tours of the campus, share school information, and answer questions.
- Act as an ambassador of UC Santa Barbara by representing the university's goal of inclusive, positive, creative learning, as well as promoting research.
- Attend collaborative weekly meetings and bimonthly weekend retreats to constantly learn and deliver updated statistics to visitors.

Volunteering:

K-9 CAREGIVER | GREATER BHAM. HUMANE SOCIETY| BIRMINGHAM, AL | JUNE 2025 – AUGUST 2025

- 40 hours completed; kept log of animal's behavior; walked, bathed, and trained dogs; cleaned kennels.

Skills:

CRISPRi-dCas9 technology | Western Blotting | RNA/protein extraction | Protein purification | qPCR | RT-PCR | Mammalian cell culture work | Cell harvesting | Cell plating | Cell freezing/thawing | Luminescent Toxicity assays | Sonication | GFP/Trans Microscope use| Bacteria/lentiviral use | Bacterial Transformation | Bacterial cloning | Cell counting | Multichannel and micro pipetting | AP ELISA assay | ZMAC30 assay | Plasma isolation from rats/mice | Intravenous dosing of rats/mice | IR Spectroscopy | NMR Spectroscopy | Mass Spectrometry | Agarose gel electrophoresis | SDS-PAGE | Immunoassays | Organic chemistry synthesis and purification| Microsoft Excel/PowerPoint/Word | GraphPad Prism | MATLAB| R-Studio.