



CIRM COMPASS Program Application Form

Creating Opportunities through Mentorship and Partnership Across Stem Cell Science



Submit completed applications to bop@ucsb.edu by August 27, 2023, 11:59pm
Selected students will start the COMPASS internship on September 18, 2023

Applicant's Name: _____
First *Last*

Applicant's UCSB email: _____

Current Major: _____

Can you commit to twenty-four (24) consecutive months of participating in the COMPASS internship, including ≥ 10 hrs/week/quarter during the academic year and ≥ 40 hrs/week during the summer months? Note: personal time off will be negotiated directly with your lab mentor.

Yes: No:

What time frame will you commit towards the 24 consecutive months of the program?
(ex: Start: junior year, Sept 2023 | End: senior year, after graduation Aug 2025)

Start *End*

Please indicate all that apply to you:

Black / African American

Hispanic / Latinx

Native American

Pacific Islander

Asian

Other (please specify): _____

Gender:

Male

Female

Other: _____

Please indicate which of the following apply to you. (Check all that apply.)

	Yes	No
Were or currently are in the foster care system, as defined by the Administration for Children and Families (Definition: https://www.acf.hhs.gov/cb/focus-areas/foster-care)		
Were eligible for the Federal Free and Reduced Lunch Program for two or more years (Definition: https://www.fns.usda.gov/school-meals/income-eligibility-guidelines)		
Have/had no parents or legal guardians who completed a bachelor's degree (see https://nces.ed.gov/pubs2018/2018009.pdf)		
Were or currently are eligible for Federal Pell grants (Definition: https://www2.ed.gov/programs/fpg/eligibility.html)		
Received support from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) as a parent or child (Definition: https://www.fns.usda.gov/wic/wic-eligibility-requirements)		
Grew up in one of the following areas: a) a U.S. rural area, as designated by the Health Resources and Services Administration (HRSA) Rural Health Grants Eligibility Analyzer (https://data.hrsa.gov/tools/rural-health) b) Centers for Medicare and Medicaid Services-designated Low-Income and Health Professional Shortage Areas (qualifying zip codes)		
Have a disability (Please refer to the Americans with Disabilities Act of 1990, section 12102 for the definition of disability http://www.ada.gov/pubs/adastatute08.htm)		
Is your first / primary language one other than English?		
Are you a single mother?		
Are you a veteran of the United States military? If so, in which branch did you serve? _____		
Are there any other ways not listed above in which you would contribute to the diversity, equity, and inclusion of the COMPASS program? If so, please briefly describe: _____		

Refer to the list of participating faculty members on page 7 and rank your top 5 choices for Mentor / Lab Preferences:

1st choice: _____

2nd choice: _____

3rd choice: _____

4th choice: _____

5th choice: _____

Do you already have an undergraduate research position in one of the labs you listed above?

Yes:

No:

If yes, which lab: _____

If you have previous research experience, describe your role in the project, state your project's hypothesis, and how you tested that hypothesis. What was your main finding? If you don't have previous experience, write N/A. *Note: previous research experience is not required for the COMPASS internship. 1,850 characters max*

Why do you want to do research? *750 characters max*

Provide a brief statement of your long-term career goals in regenerative medicine (research-based, clinical application, other sector, etc.) *750 characters max*

How will two years in the COMPASS program help you to achieve your long-term career goals? What do you aim to accomplish in the COMPASS program? How will your choices of host lab listed on page 3 help you achieve those goals? *750 characters max*

Lab work requires meticulous attention to detail over extremely long periods. Provide any example of when you used attention to detail over a prolonged period to accomplish a goal. 750 characters max

How has your background shaped your interest in regenerative medicine? How can it contribute to diversity, equity, and inclusion within the field? 750 characters max

Please write your initials as your digital signature to indicate that you accept the following statements regarding the program's expectations of COMPASS scholars. If you disagree with the given statement, then do not sign.

_____ I agree to participate in a follow-up Zoom interview as part of the application process.

_____ I acknowledge that, if selected, my appointment to the COMPASS program is a privilege and my status will be reviewed and evaluated each quarter by the COMPASS Mentorship Facilitator.

_____ I acknowledge that this internship will be a top priority, and I will keep my schedule flexible to accommodate my lab mentor's schedule.

_____ I meet the eligibility requirements listed on page 8.

_____ If selected as a COMPASS trainee, I agree to do the program requirements listed on page 8.

_____ Everything I have written in this application is true to the best of my knowledge.



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Guidelines for Letters of Recommendation

- Two letters of recommendation are required
- Letters should be written on letterhead
- Recommenders should submit the letter confidentially (i.e. emailed directly) to Dr. Britney Pennington at bop@ucsb.edu by 11:59pm August 27, 2023 with the email subject heading "COMPASS 2023 Letter of Rec - <Applicant's Full Name>"
- Topics to discuss in the letter include:
 - How long and in what capacity have you known the applicant?
 - The applicant's potential to succeed in a rigorous research environment
 - The candidate's motivation, persistence, resilience, curiosity, maturity, as well as research experience and academic excellence

The following selection criteria will be used to identify students who are deemed suitable award recipients:

- **Motivation.** Genuine interest in the biomedical sciences and for new and independent learning opportunities. Evidence of persistence, dedication and resilience, and the ability to overcome obstacles.
- **Student Impact.** The potential for the student to benefit substantially from the additional support and opportunities this program will offer.
- **Potential.** Ability to perform successfully in the rigorous coursework required to complete a science, engineering or mathematics degree at UCSB and participate in COMPASS activities.
- **Professionalism.** Evidence of non-technical skills needed such as maturity, responsibility, personal initiative and the ability to work and communicate well with others.



	<p>Dennis Clegg, Co-Director, Center for Stem Cell Biology and Engineering, Distinguished Professor, Molecular, Cellular and Developmental Biology; Biomolecular Science and Engineering</p> <p>The Clegg Group studies stem cell biology and neuroscience, with a focus on understanding the visual system and ocular disease. Interests include developing cellular therapies for age-related macular degeneration, retinitis pigmentosa, glaucoma, and other blinding conditions. We collaborate with engineers, retinal biologists, biotechnologists, and retinal surgeons to tackle unmet medical needs.</p>
	<p>Peter Coffey, Research Biologist, Neuroscience Research Institute</p> <p>Peter Coffey's work aims at finding the best conditions for transplantation of cells to slow the degeneration of photoreceptors, identifying events that might compromise transplant efficacy, and finding solutions to their deleterious effects. Interests include development of cellular therapies of blinding eye disease.</p>
	<p>Anthony De Tomaso, Professor, Molecular, Cellular and Developmental Biology</p> <p>The De Tomaso Group uses a combination of in vitro, in vivo and live imaging assays to study stem cell migratory behavior and directly measure mechanical forces on cells during vascular regeneration and remodeling.</p>
	<p>Sid Dey, Assistant Professor, Chemical Engineering; Biomolecular Science and Engineering</p> <p>The Dey Group develops single-cell sequencing technologies to study how chemical and mechanical cues regulate cell-to-cell variability in the epigenome and its role in tuning gene expression heterogeneity and cell fate decisions during differentiation of pluripotent stem cells.</p>
	<p>Kenneth Kosik, Distinguished Professor, Molecular, Cellular and Developmental Biology; Dynamical Neurosystems</p> <p>The Kosik lab neural studies plasticity including the molecular basis of plasticity, the evolution of synapses, and disease-related impairments of plasticity. One theme in the lab is how cells acquire and lose their identities. Contributions include significant discoveries in understanding the way human embryonic stem cells function.</p>
	<p>Skirmantas Janusonis, Professor, Psychological and Brain Sciences</p> <p>The Janusonis laboratory investigates the self-organization of the brain serotonergic matrix, a massive meshwork of thin axons that modulates the activity of nearly all neural processes. Our research focuses on the biological factors and computational structure of the trajectories of individual serotonergic axons.</p>
	<p>Zach Ma, Associate Professor, Molecular, Cellular and Developmental Biology</p> <p>Zach Ma's lab studies the epigenetic machinery and transcription factors that are essential for cell fate determination. The lab also studies the host and viral factors involved in the replication of measles virus and other RNA viruses, which may open the door to novel treatments.</p>
	<p>Denise Montell, Distinguished Professor, Molecular, Cellular and Developmental Biology; Biomolecular Science and Engineering</p> <p>Denise Montell's lab focuses on identifying fundamental cellular behaviors that cells use to build, maintain, and regenerate normal adult tissues. We then uncover the underlying molecular mechanisms and establish the physiological significance. Interests include the biology of germline stem cells and cellular recovery from near death.</p>
	<p>Meghan Morrissey, Assistant Professor, Molecular, Cellular and Developmental Biology</p> <p>The Morrissey Lab wants to understand how macrophages measure, add and subtract all the signals they receive to calculate their response to a target. We are motivated by re-wiring macrophage signaling pathways to generate new cancer immunotherapies. Such rewired macrophages may also have applications in regenerative medicine.</p>
	<p>Angela Pitenis, Assistant Professor, Materials Science Engineering; Biomolecular Science and Engineering</p> <p>The Pitenis Group works at the intersection of materials science, physics, chemistry, and biology. Our lab is developing dynamic ECM-based substrates to understand stem cell mechanical memory and control mechanosensing behavior, which will have applications in treating heart disease.</p>
	<p>Beth Pruitt, Professor, Mechanical Engineering; Biomolecular Science and Engineering; Molecular, Cellular and Developmental Biology.</p> <p>The Pruitt Group is interested in the biophysics and mechanisms of mechanobiology, i.e., the role of mechanical force in the evolution of structure and function in human pluripotent stem cell derived cardiomyocytes.</p>
	<p>Norbert Reich, Professor, Chemistry and Biochemistry</p> <p>The Reich's lab is interested in the study of enzyme function, primarily at the levels of catalytic and specificity mechanisms, with a long term goal of developing enzyme inhibitors with potential therapeutic application. The current focus is on both bacterial and mammalian enzymes involved in the epigenetic process of DNA methylation, which plays key roles in stem cell differentiation</p>
	<p>Chris Richardson, Assistant Professor, Molecular, Cellular and Developmental Biology</p> <p>The Richardson's lab investigates how cells repair double strand breaks in their DNA (DSBs). Our approach is to understand the basic biology behind DSB repair and then leverage this knowledge to develop techniques that boost the effectiveness of gene therapy and regenerative medicine, especially in stem cells and other challenging contexts.</p>
	<p>Joel Rothman, Professor, Molecular, Cellular and Developmental Biology; Biomolecular Science and Engineering</p> <p>The Rothman's lab explores the molecular genetic, cellular, and evolutionary mechanisms of development using <i>C. elegans</i>. Researchers apply an array of advanced genetic, genomic, and cell biological tools to tackle these problems. These studies are directed at understanding the regulatory processes that control cellular plasticity and reprogramming.</p>
	<p>Ryan Stowers, Assistant Professor, Mechanical Engineering</p> <p>The Stowers Group develops 3D hydrogel cell culture platforms to mimic mechanical, structural, and compositional elements of native extracellular matrices and uses this system to investigate mechanical contributions to regulating stem cell state and to develop functional organoids with high reproducibility.</p>
	<p>Thomas Weimbs, Professor, Molecular, Cellular and Developmental Biology</p> <p>Research in the Weimbs's lab focuses on understanding the molecular pathways involved in the rapid activation of injury responses in the kidney, and how these pathways could be exploited for therapeutics that regenerate the kidney.</p>
	<p>Max Wilson, Assistant Professor, Molecular, Cellular and Developmental Biology; Biomolecular Science and Engineering</p> <p>The Wilson Lab combines tools from Biology, Engineering, and Physics to understand the cell's perceptual field. What can cells perceive? How do they perceive it? How do they make complex decisions? The lab uses optogenetic tools to dissect germ layer specification in embryonic stem cells.</p>



CIRM COMPASS – Paid Internship for Regenerative Medicine Research at UCSB

The CIRM COMPASS Program is a robust, two-year research internship that aims to train undergraduate scholars in stem cell biology and engineering, with the goal of preparing the next generation of diverse leaders in regenerative medicine. Areas of research include stem cell biology, cellular and tissue engineering, regenerative medicine, and gene therapy. The COMPASS program will span twenty-four (24) consecutive months during the student's junior and senior years.

Stipend & Research Funds Provided by COMPASS

- **Trainee Stipend** – Up to \$18,000 per year (to the student)
- **Tuition and Fees** – Up to \$9,600 (to the institution)
- **Research Related Funds** – Up to \$2,200 for research project costs (to the internship host laboratory)
- **Program Related Travel expenses** – Up to \$1,000

Eligibility Requirements

- Commitment to complete the program requirements within two (2) years
- Ability to dedicate an appropriate amount of time to the internship and program-related activities
 - ≥ 10 hrs/week/quarter during the academic year
 - ≥ 40 hrs/week during the summer
- Current UCSB undergraduates or transfer students starting their junior year in good academic standing
- Interest in a career in biotech or regenerative medicine, whether research or clinical application or other sector
- Strong interest in project research and readiness to train and succeed in a laboratory setting
- Although not required, students from backgrounds historically underrepresented in STEM are especially encouraged to apply. These include but are not limited to: 1st generation college students, veterans, single mothers, amputees, students with disabilities, under-represented ethnicities, gender preferences, etc.

Program Requirements Once the Student is Accepted

- Two years (24 consecutive months) of hands-on research in the laboratory
- Completion of required coursework
 - Stem Cell Biology – MCDB 146
 - Stem Cell Ethics – MCDB 147
 - Responsible Conduct of Research – Seminar Course
 - Translational Research and Drug Design – Chem 162
 - Electives – select from a variety of courses in Oncology, Developmental Biology, Bioengineering, Computational Biology, and Quantitative Biology
- Participation in professional growth and development workshops
- Present a formal lecture to finalize the trainee's Capstone Project in the spring quarter of senior year
- Present status updates of research project during the quarterly COMPASS Conferences
- Participation in Patient, Healthcare, & Community Engagement and Outreach Activities
- Engage in regular meetings with a team of mentors from academia and industry
- Participation in science communication activities through UCSB

Application Materials

- An application form
- CV
- Two (2) letters of recommendation on letterhead (*submitted confidentially*)
 - See page 6 of the COMPASS Application Form regarding topics that the recommender should address
- Submit all application materials by 11:59pm August 27, 2023 to Dr. Britney Pennington at bop@ucsb.edu with the email subject heading: "COMPASS 2023 Application – <applicant's full name>". Candidates will be notified by September 15, and they will begin the COMPASS program remotely on September 18, and in-person on September 25, 2023.