There are lots of ways to contribute to and learn about research in the BRaINlab

We have a diverse, multidisciplinary group of researchers, so it is impossible to describe the “typical” project. For a survey of past projects, take a look at our publications, keeping in mind that our most current work is not yet published and ongoing and future work expands from current and previous publications. It may also be helpful to reference the current studies listed on the lab’s website.

In short, we are interested in all aspects of neuromechanics — that is, how the nervous system controls movement, the interactions between the neural and musculoskeletal systems that influence the way we move, and how these interactions are affected by neuropathology. Some of us do experimental work, in humans, using biomechanical and/or neurophysiological methods, some bring a clinical perspective performing human performance assessments, others perform computational studies, still others build things or work on instrumentation. Everyone does a good deal of data analysis and programming, mostly in Matlab. We use gripping/grasping/reaching and gait/locomotion as paradigms for studying principles of neuromechanics related to human movement. The lab’s ongoing research projects serve as a jumping-off point for future research directions — what you bring to the table in terms of enthusiasm and skills is equally important to what we provide.

Before you contact anyone, please take a few minutes to think about what kind of research would excite you, both on a day-to-day basis (e.g., deriving equations, programming, analyzing data, working with people, building circuits or devices) and on a long-term basis (e.g., helping patients, figuring out how the brain works, building devices). Also, why should we be excited about you joining the lab?

Guidelines for Undergraduate Research

- Highly motivated, curious, and independent individuals will be recruited. You must be persevering, tenacious, resourceful, responsible, attentive to detail, and responsive to guidance. You will not be told exactly what to do on a day-to-day basis, but you are expected to follow advice that is given and maintain a reasonable rate of progress. You are not expected to know anything coming in to the lab, but you are expected to learn what you need to know.

- Freshmen and sophomores preferred, juniors considered. Seniors need to do some serious convincing that senior projects, grad/med school applications, job searches, and senioritis, will not be impediments to research progress.

- Research is not like a class; it usually takes at least 2 quarters to get oriented to the ways of the lab, and acquire basic knowledge and skills to finish a project. Therefore: a minimum of 2 quarters of participation and/or 3 credit hours of class registration is required. A commitment of !10 hours/week is a good guideline. Summer work is encouraged. The first quarter is probationary; if things are not working well after 1 quarter, I reserve the right to terminate the project.

You can volunteer, receive academic credit, or receive a fellowship to work in the lab. Check the UC Davis undergraduate research programs website and the Sponsored Undergraduate Research Programs Information Matrix for opportunities. Also, look for the College of Biological Sciences Undergraduate Research opportunities website.

Please keep in mind deadlines for award/fellowship/grant funding are usually due well in advance of actually participating in lab activities. Some funding opportunities can be applied for only once per year. You may be considered for paid work in the lab only after 2 exemplary quarters working in the lab.

- If you register for credit, your grade will be based on: your final presentation at a lab meeting, your weekly presentation at lab meetings, contributions to discussion of lab meetings, net results of your quarter’s work, and the usefulness and clarity of your final report. Consistent progress over the quarter is more highly regarded than heroic efforts at the end of the term.

- You will be assigned a lab mentor who might be a graduate student, postdoctoral fellow, or senior lab member to whom you will report directly and receive guidance. In return for their mentorship, you will help...
the lab mentor with their research. Doing so will allow you to familiarize yourself with the lab and gain a background to pursue your individual projects.

**How to Apply**

Read through the projects presented on the pages linked above. Most are ongoing projects that will take at least two or three quarters for you to make a contribution.

- Your name and contact information
- Your major, GPA (min 3.0 required, >3.5 preferred), and expected graduation date
- Courses taken and grades (or attach an unofficial transcript)
- A short essay (1-2 pages) on why you want to do research and some information on what kind of research you would like to do. For example, do you like building things, programming, writing, electronics, any previous research experience or projects, any work or volunteer activities you have had. If you could do anything in physiology, biomedical engineering, medicine, or another field, what would it be, (i.e., what would be the coolest project you could think of)? Give us an idea of something scientific that you read about and thought was interesting.
- Which projects are interesting to you? Why? Any comments or questions you have about the projects.
- Name of some references and contact information
- Anything else you would like to tell us about yourself
- Now you are ready to email Dr. Patten

Please forward this information via e-mail to Dr. Patten at hs-brainlab@ucdavis.edu.