NAME:

I receive many more requests than I could ever host in my lab. This questionnaire helps me identify undergraduates who are likely to be successful in an undergraduate research project and is based on years of experience with over 100 undergraduate researchers. Please reply within 14 calendar days of receiving this email. Even if you may be perfectly suited for undergraduate research, I may not have a project or a good match available, but I will keep you in mind! I am often willing to create a project for someone who seems to be an ideal undergraduate researcher. These questions can be answered in an email.

1) What is your major? Why did you choose it? What is your career goal?

2) What is your GPA? Where are you in your undergraduate curriculum? What courses have you particular liked? Disliked? Be honest on both. Critically analyze what you have and have not learned in your coursework to date that you think may be relevant. What have you not learned that you would like to?

3) Describe both your *aptitude* (if any) or *interest* in: electronics, computing hardware, software, other forms of tech/science/engineering, laboratory experiment design and interpretation.

4) Have you ever done a serious literature search on a topic in the research literature? If so, provide an example. Outline your process for searching the scientific literature to learn about a particular topic.

5) One key characteristic of successful students is discipline. This means sticking to your schedule, getting things done on time, and being proactive about deadlines rather than reactive. Describe how you stay on schedule, meet deadlines, and get things done. Are you capable of self-scheduling and sticking with it all semester? Convince me that you will not be among thosef undergraduate researchers who start slacking off around week 8 in the semester as class workload intensifies.

6) Research is frustrating, and results are often ambiguous or take time to interpret. You can't google the answer. How do you deal with such challenges?

7) Almost any project in my lab will require a significant amount of learning some basic neuroscience or physiology and researching a particular aspect of the scientific literature. Are you willing to do this? It will not be just "here are the specs - design something for me."

8) Have you engaged in any previous research projects outside of class? If so, describe the project, your role in the project, and the team that you worked with. If you have no prior experience, just say so.

9) Describe any projects that you have been *personally* responsible for initiating, conceptualizing, and completing. Describe situations where you have taken a basic idea and demonstrated the initiative to "find what you need to know" to create a working (not just theoretical) solution. This could be from a job, class projects, research, hobby projects, etc.

10) Please provide a resume and a transcript.

11) At the link below is a file with two columns of numbers. The first column is time (seconds), and the second column is voltage (mV). Each row is a single measurement of the membrane voltage of a neuron. a) Plot the time series. Notice the "spikes" (vertical deflections) in the waveform. b) Write a program that can extract each and every interspike interval (ISI) - the duration of time between the occurrence of each spike. c) Calculate the median, mean, and standard deviation of the collected ISIs. d) Plot a histogram of the ISIs. Present this project in a single document, clearly written and explained.You should clearly and thoroughly explain your methods and how you validated (know they are true) the ISI calculations. **http://robert.butera.org/gt/ap.dat**