We encourage you to review the Caltech faculty and JPL web sites to learn what research is carried out here and to read some articles about work that you find interesting. Please identify at least three (3) potential faculty members/research groups in which you would like to carry out your MURF research this summer.

There are four professors I would like to carry out my MURF research under this summer: Steven Quartz, Yaser Abu-Mostafa, Shinsuke Shimojo, and Ralph Adolphs. Each faculty member is doing research related to how the brain recognizes and takes in information from the environment. I was most interested in working with Steven Quartz because of his interest in the emergence of consciousness in the developing brain; however, I have already contacted him and he has told me that he is not accepting any mentees this summer as he is working on a book manuscript. Working under any of the other professors would still give me the chance to develop analytical techniques for studying the brain and its relation to consciousness and the psyche.

I am most interested in working with Yaser Abu-Mostafa. His research focuses on advancing computer science to give computers the ability to "learn". I am fascinated by the possibility of giving something that is not "sentient" the ability to learn. Hilary Putnam proposed the theory that the human mind is an information processing system, with thought being a form of computing. With this in mind, advances made by Abu-Mostafa in machine learning, may indeed be applicable towards better understanding how the human mind learns. This holds especially true if the human mind is conceptualized as malleable machine, continuously changing as a person interacts with the environment. Abu-Mostafa in "Machines that think for themselves," argues that with adequate data, a machine can be developed to learn anything. Of course the question may be asked: will this dependency on data not allow advancement in machine learning to translate into advancement in understanding how the mind may learn? Indeed, there seems to be a convergence in attempting to get machines to think for themselves and understanding how the human mind thinks. I would like to work with Abu-Mostafa this summer to learn more about machine learning in hopes that this will push me further along my path toward studying consciousness and the psyche through theoretical neuroscience.

Shinsuke Shimojo recently launched a new project aimed at exploring the behavioral and neural bases for cognitive preference in his lab. A lot of work done in this laboratory explores issues related to implicit emotional processes and implicit social interactions. Both of these relate heavily to one's psyche – they are results of it. The goal of Shimojo is to predict conscious emotional decision such as preference by understanding the implicit somatic and neural processes that lead to it. I want to understand how the psyche works and how it is developed. This lab would also provide a strong foundation to further pursue this interest.

The last laboratory I am interested in is the emotion and social cognition laboratory under Ralph Adolphs. They research the neural workings of human social behavior through psychological and neurological investigations of human emotion and social cognition, which is also very relevant to the psyche. Some questions that have been raised and pursued include, "How do we make moral judgments about what is right and wrong?," "How do we recognize emotion from facial expressions?," and "How do we remember emotional events in our lives?" These are all questions that I am interested in pursuing. My interests relate to this laboratory's work most heavily in that they use neuroimaging to construct

probabilistic maps of the structural connectivity in the brain and I want to understand the structure of the brain. I also want to learn the way in which they construct these maps of the brain.

There are not many laboratories doing research so related to my own interests and to work in one of them will be extremely helpful in my academic career. I hope to utilize my time this summer to learn as much as I can about the structure of the human brain and its relation to consciousness and the psyche. Not only will research in these labs give me experience within the field, but it will also help me pursue this interest in the future. It will both strengthen my foundations and chances of getting into a PHD program in theoretical neuroscience.