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Biocomplexity Faculty Search Committee,
c/o Professor Rob de Ruyter van Steveninck,
Biocomplexity Institute,
Indiana University,
Swain Hall West 117,
Bloomington, IN 47405-7105

Re: Recommendation of Dr. Qihong Huang

Dear Professor de Ruyter van Steveninck:

I strongly recommend Dr. Qihong Huang for a position in your department. Simplistically, Qihong was one of the two best people in a laboratory of over 25 scientists when he was a student and a brief postdoctoral fellow in my laboratory. I am comparing Qihong not only to other graduate students, but also to postdoctorals and visiting professors. My confidence in him is seconded by the University in awarding him the Kinsella Prize for his Ph.D. work. This prize translates as the best Ph.D. candidate in the College for the entire year. As evidenced by his excellent paper in PNAS, his work is of the very highest quality. He has done an excellent job with the molecular biology of apoptosis in the laboratory, and this was his specialty. However, he is training himself very broadly in a variety of approaches and techniques in modern biology that I will outline below. I will expand on his strengths below, but I want to emphasize initially that in my laboratory he used very sophisticated approaches in molecular and cell biology to tell a very fundamental and exciting story in general biology. Many viruses overcome host's defenses by clever biochemical games. The baculovirus, for example, does this by blocking the cascade of events leading to cell suicide and thus, preserving the infected cell for virus replication. Among many other things Qihong demonstrated that the baculovirus actually 'stole' the anti-suicide genes from its host. This is one of the prettiest stories ever to come from my laboratory. This work has implications to fields as diverse as treating human cancer and treating plant diseases. For example, when Qihong's genes from insects are cloned into tomatoes, the plants resist fungal infection. This work is continuing here and in several other laboratories. Qihong's IAP gene may, in fact, be used in practical agriculture to alter fruiting and to make plants resistant to disease.

Qihong received his B.S. in medicine from Shanghai Medical University in 1993 and then entered graduate school at U.C. Davis in the microbiology graduate group. He studied with Professor Susumu Maeda in the Entomology Department. Susumu was a rather 'high roller' running a large laboratory both

at UC Davis and at RIKEN in Japan. He and Susumu agreed on testing an exciting hypothesis that there is an interaction among a number of proteins in the apoptotic cascade leading to cell death caused by baculoviruses in insect cells. I was on his thesis committee and followed Qihong's work closely. Qihong appeared to be the hardest working student in the department of entomology and to be very quick at understanding new concepts. Qihong was well into this project when Dr. Maeda died unexpectedly. Qihong had excellent preliminary results on his project, and did not want to change projects. At this point I began to support him and his research. However, in several months he and I were unable to find a surrogate major professor willing to take Qihong with his project. Thus, in April of 1998, I requested permission to join the Microbiology Graduate Group as his mentor. Qihong soon thereafter took his qualifying examination. The report back from his committee was that his was among the best presentations that they had ever heard. I do not have grants in the apoptosis nor expertise area so it has been a struggle for Qihong to teach me the field, and a struggle for me to find funding for him. There was never a question thought that any investment in Qihong was a good investment.

I could not imagine acquiring a better graduate student in terms of communication, creativity and hard work. However, the apoptosis field is highly competitive and it is not my primary research area. I was very concerned that Qihong would fail to obtain critical advice from me. Thus, I funded him to spend 6 months in the laboratory of Dr. John Reed (one of the leaders in apoptosis research) at La Jolla. The feedback from John on Qihong's progress was very positive. John was the most quoted biologist in the peer-reviewed literature last year. On a visit to the lab this month he said that Qihong was the brightest and hardest working student ever to be in his laboratory. All of the cloning work was done before he went to San Diego, but John's laboratory permitted Qihong to accomplish many biological experiments that would have been very time consuming here. While at Davis he cloned and expressed an IAP homologue and a potential Bcl family member from cells of *Spodoptera frugiperda*. He has proven that the IAP homolog is a caspase inhibitor and that the Bcl family member is a human saposin homologue. This is a huge amount of work considering that Qihong was essentially working alone. In John's laboratory, he has done an excellent job of elucidating the role of these enzymes. Qihong and I have discussed the fact that his career options will be much wider if he has some publications in the mammalian area and the gene chip area. He has taken on several projects in these areas both independently and collaboratively. We have advanced a hypothesis that there is a linoleic acid cascade analogous to the arachidonate cascade, and we have been following the biological activity of both the linoleate epoxides and diols and the corresponding arachidonates. Qihong has taken on a 5'-RACE project to find variants of a key enzyme in this cascade that we previously cloned. We have found that by inhibiting the enzyme we can block both hypertension and inflammation. Qihong has been collaborating with another group using combinatorial chemistry to find new types of inhibitors. He has screened over 150,000 chemicals to find several unique peptide inhibitors. In doing this work he has learned how to run a gas phase peptide sequencer and is collaborating on electrospray MS. He also is collaborating on a project to monitor the expression of two viruses using a gene chip system. He is doing an excellent job of collaborating with several scientists in the laboratory on this project. This project and his gene chip project illustrate that Qihong is an excellent independent scientist, that he can lead a team of scientists and that he is a willing collaborator and member of a team.

After getting his Ph.D. Qihong indicated that he wanted to do some mammalian research. In a very brief time he cloned and expressed the soluble epoxide hydrolase from porcine ovary. This will be published as part of a collaborative study where we demonstrate that a new branch of the arachidonate cascade regulates estrogen production in porcine and human ovary. In addition he undertook a combinatorial chemistry project to find the first water soluble epoxide hydrolase inhibitors. This is part of a U.C. patent and will also be published with Qihong as a co-author.

Qihong's writing is excellent, and he writes his papers in a timely fashion. English is not his native language, but his ability to communicate in two laboratory meetings each week improved dramatically. When he left the laboratory, he could present a seminar better than most of my American students. I would like to see him in U.S. academics. As a teaching assistant in microbiology he received the highest recommendations from students indicating that he communicates very well on a personal as well as a formal basis. Simply, Qihong is one of my favorites. He is hard working, creative, interactive, supportive and very nice. I see him as one of the top UCD students who should soon be running his own laboratory and making major contributions. He has now worked as a postgraduate at one of the very top modern biology laboratories in the world. Qihong is well poised to succeed as a highly motivated biologist who is equipped with some of the most modern and powerful tools in the field.

If you have any additional questions, I hope that you will contact me.

Sincerely yours,

A handwritten signature in black ink that reads "Bruce D. Hammock". The signature is written in a cursive, flowing style.

Bruce D. Hammock
Distinguished Professor of Entomology &
UCD Cancer Research Center
Director, NIEHS-UCD Superfund Basic Research Program
PI NIH Biotechnology Training Program