Center for Theoretical Biological Physics
Encompassing a broad spectrum of research and training activities
at the forefront of the biology-physics interface.

UCSD MC 0374
9500 Gilman Drive
La Jolla, CA 92093-0374

phone 858-822-1296
FAX 858-534-7697
ctbp@ucsd.edu

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

Dear Faculty Search Committee,

It is my pleasure to recommend Weiqun Peng for a junior faculty position at your institution.

Weiqun is one of a growing number of physicists who have taken the tools of condensed matter theory and statistical physics and made the transition to successfully attacking meaningful problems in biological physics. When he came to UCSD from Urbana, his interest in biological problems was much more advanced than his knowledge base. Undaunted, Weiqun set out to pick a set of topics, educate himself thoroughly, and then attack interesting unsolved problems.

The first such problem that he worked on, together with Terry Hwa and myself, concerned a molecular in-vitro evolution experiment carried out by Libchaber's lab. Weiqun was able to help formulate a relevant theoretical model and was able to bring to fruition various ideas (both analytical and computational) for understanding the model's behavior. This work was published in PRL. On his own, he realized that one could extend these ideas to formulate what is probably one of the first solvable multi-locus models that include recombination. This work has been accepted in PRE and should have important implications for the use of DNA shuffling in the biotechnology industry. In this entire effort, Weiqun has become the expert on the state of knowledge in the evolutionary biology field and has taken upon himself the task of communicating directly with the experimental evolution community. This work is continuing, as we focus on recent experiments regarding mutator strains, and on a new approach to finite population site effects.

While carrying out this research, Weiqun also embarked under the supervision of Terry Hwa on a project designed to develop skills in bioinformatics. This makes sense as a complementary activity, as various tasks in bioinformatics require better evolution modeling and conversely most of the data for testing evolutionary hypothesis will have to be obtained by comparative genomics. He is finishing some work on searching for promoters in the human genome, but I will leave it to Terry to describe the details of this project.

In short, Weiqun has been a successful postdoc here, making progress on some technically challenging problems. His strengths are his careful attention to analytical and computational detail, his thoroughness, and his ability and willingness to wade through complex literature and extract the crux of what a subject such as laboratory-scale evolution understands and what needs to be better understood. His English (both spoken and written) is quite good and should be of no concern. He will probably need to develop a bit more of an aggressive streak in that self-promotion seems to be a necessary art of survival, but this should come naturally as he becomes more comfortable in the biological physics area. He is ready to become part of an existing effort in biophysics, where he can play the crucial role of formulating and solving hard theoretical problems which need to be solved to further our biological understanding.

Sincerely,

Herbert Levine

Herbert Levine, Professor of Physics and Co-Chair,
Center for Theoretical Biological Physics