



November 12, 2004

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

Dear Dr. de Ruyter van Steveninck,

I am very happy to recommend **Steve Proulx** for the biocomplexity position in your department. Steve has been a postdoc in my lab for about three years, and it has been tremendous to have Steve around. He is a very energetic and interactive person, who makes every research environment better (as well as moving full speed ahead with his own research ideas).

Steve is clearly one of the top young theoretical population biologists/geneticists in the field today. He is one of a handful of people in the US who have been fully trained in both mathematics and biology. More importantly, his insights and natural instincts in both of these fields are extremely well developed. Steve's work is very diverse, and I am working hard to make it even more diverse. First, Steve must be viewed as one of the top theoretical behavioral ecologists in the country. Before coming to my lab, most of Steve's work was concentrated on population and quantitative genetic models of organismal communication and sexual selection. He has developed sophisticated models that span fields such as ecology, behavior and evolutionary genetics. In all of his work he has used both analytical and computational approaches to solve complex problems. Steve's work to date has been distinguished by sophisticated insights into subtle interactions generated by different ecological and evolutionary processes. His creativity lies in working right at the interface between fields and approaches—gleaning new insights from the tension generated by the juxtaposition of ideas that had previously not be connected. His knowledge of the field is extremely sophisticated, and I would expect him to continue making significant contributions in this area for years to come. He has already received international attention for much of this work, including unexpected interest from the popular press.

Since his arrival in Oregon, Steve and I have been sorting through a wide set of ideas for understanding the structure and function of genetic networks from an evolutionary perspective. There is already a huge amount of data about gene regulatory pathways in the literature, but this pales in comparison to what will be forthcoming over the next five or so years. We are interested in addressing this problem from both the perspectives of molecular genetics (e.g., what are properties of the networks are the most important to study?) and evolutionary genetics (e.g., are there properties of the networks that will require us to think differently about how complex systems evolve?). This is an

CENTER FOR ECOLOGY AND EVOLUTIONARY BIOLOGY

5289 University of Oregon, Eugene OR 97403-5289 T (541) 346-4532 F (541) 346-2364 www.uoregon.edu

intellectually stimulating area and one that I feel will be very important in biology for the next few decades. The trick is to balance theoretical practicalities with biological relevance, and that is one of the training opportunities that Steve has had during his time here. Since his arrival, I have been struck by Steve's ability to grasp complex genetic relationships in developmental data as well as with his obvious quantitative gifts. Within his first week here he presented a full analysis of recent work modeling the genetic network underlying embryonic development in *Drosophila*. He immediately grasped and clearly presented both the mathematical and genetic details of the system. His insights during things like lab meetings and journal clubs are always right on and span a broad range of biological processes. Our personal interactions have been wonderful and extremely productive. We still have a long way to go in this project, as our aim is nothing less than to help create a new, vital point of intersection between molecular genetics and evolutionary biology. This is a field ripe for synthesis. Thus far Steve has focused his efforts on obtaining general results that are applicable to all networks, rather than getting bogged down in particular networks (indeed deciding which approach to take involved much of our time early in his postdoc). This has resulted in a soon to be published paper in the *American Naturalist* on the evolution of robustness in genetic networks and what I think will be a very important paper on divergence and selection of gene duplicates. In each of these cases, the vast majority of the work is Steve's.

You will find Steve to be extremely personable and friendly, with a good sense of humor and an outgoing nature (attributes not always common in theoreticians). One thing that many non-theoretical colleagues look for in a theoretical candidate is an ability to communicate and collaborate. I think that Steve will excel in both of these capacities. He is really grounded in the realities of biological data and has struck up several collaborations with people here outside of the lab. I think that he will be an excellent colleague to have in a broad department, as he will have something substantial contribute to ecologists, behavioral ecologists, evolutionary biologists, geneticists, and developmental biologists. Every member of your department will see something of their own work reflected in Steve's interests. He has nearly limitless potential for future growth. The entire Ecology and Evolution group here has benefited from his presence and I know that he will fit in well to your program too. Please feel free to contact me at (541) 346-0916 or pphil@uoregon.edu if I can be of any more help.

Sincerely,



Patrick C. Phillips, Ph.D.
Associate Professor of Biology
W. Taylor Fithian Faculty Fellow
pphil@uoregon.edu

CENTER FOR ECOLOGY AND EVOLUTIONARY BIOLOGY

5289 University of Oregon · Eugene OR 97403-5289 · (541) 346-0916 · Fax (541) 346-2364 · evolution.uoregon.edu