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Biocomplexity Faculty Search Committee
c/o Prof. Rob de Ruyter van Steveninck
Biocomplexity Institute
Indiana University
Swain Hall West 117
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To whom it may concern:

It is a pleasure to recommend Stephen Proulx for a position in Biocomplexity at the University of Indiana. I worked with Stephen as chair of his Thesis Advisory Committee in the Department of Biology at the University of Utah for six years, and have followed his work during his subsequent post-docs at the University of Toronto and the University of Oregon. Building on his extraordinary natural intelligence and enthusiasm, Stephen has become a fine researcher, scientist, and colleague.

Students in my lab receive little guidance regarding specific topics for research. Quite early in his career, Stephen came up with the original idea that has formed the basis of his thesis, and which has motivated his ever-broadening interest in the genetics of subdivided populations. Stephen's thesis develops mathematical models that verify his intuition that sexual selection can promote the evolution of niche breadth in spatially subdivided populations. The second part of his thesis turns the question around, showing that environmental heterogeneity is sufficient to maintain potentially costly female choice. It is typical of Stephen's work that he comfortably unites thinking about ecology, evolution, and behavior.

Stephen worked on one other major problem during his graduate career: the "cost of variance". Based on an idea of Eric Charnov's, he has shown that a plant will be favored to invest less energy in the gametes with more variable success (generally males or pollen). To solve this problem, he learned methods from stochastic processes, and used them to correct a long-standing error in the literature. Unlike many theorists, Stephen always seeks to understand how mechanisms will operate in the real world. In this case, he has identified the population structure necessary for this mechanism to be effective in realistically large populations.

His work has begun to make some links in what I have found to be a frustrating gap in the literature; the gap between complex but realistic models of population genetics, and messy but real measurements of populations. Large quantities of genetic data demand

a combination of genetically sophisticated mathematical models, computer confidence, statistical insight, and (most importantly) substantive biological questions. Stephen is a rare individual who brings together these four qualities. His post-doctoral research into the realities of evolution in stochastic environments has the promise of building one important bridge across this gap.

I have been consistently impressed with Stephen's knowledge of the broad range of areas in biology and mathematics relevant to his research, and even more impressed with his ability to distinguish wheat from chaff in papers and talks. His abilities make him very independent, capable of learning whatever he needs to address problems, and his enthusiasm for biology keeps him from becoming narrow.

Personally, Stephen is completely open to others and is the kind of person who brings people together both socially and intellectually. Students feel comfortable with his relaxed manner, and he is a fine and patient one-on-one teacher.

Stephen is developing into a truly integrative modern biologist, uniting empirical, theoretical and computational aspects of genetics, population dynamics, and behavior. Stephen is only beginning to capitalize on his tremendous promise over the past years. We have been working together on making sense of the evolution of mutational repair mechanisms, and he has truly become an independent researcher. His combination of talents rank him among the best young theoretical evolutionary biologists in the country.

I am delighted to work with this young scientist and give him my highest recommendation for this position.

Sincerely,

Fred R Adler

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and Mathematics
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