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December 8, 2003

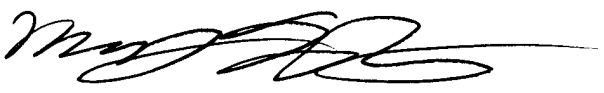
Letter of Reference for **Peter Thomas**

Peter Thomas is an articulate and talented young mathematical neuroscientist. In Fall 1999, Jack Cowan invited me to spend a week in Chicago to discuss extensions of the Ermentrout/Cowan theory of geometric visual hallucinations based on symmetry inspired pattern formation in the visual cortex. During that week I met Peter Thomas, then in his last year as a graduate student, and Paul Bressloff. Together the four of us began a cooperative research program to include more of the known connectivity structure of neurons in the visual cortex (in particular the hypercolumn structure of local and lateral coupling of orientation tuned neurons) in a class of models and to study these models using symmetry and bifurcation. I knew little about the structure of the primary visual cortex and it fell to Peter to explain to me both the necessary neuroscience and how extensions of theorems in equivariant bifurcation theory could help in the analysis of this class of models.

During the next two years we produced a series of three papers. During this collaboration Peter demonstrated clearly that he is an independent researcher. We worked together on several aspects of this project, including the details of the needed bifurcation theory. I was very impressed with his ability to understand both the mathematical theory and the neuroscience. For example, a recent publication from Peter's thesis, to appear in *Physical Review Letters*, contains a clever use of symmetry to show why coupling in cortical feature maps should be expected (the analysis is based on observing that certain irreducible representations must be isomorphic).

During the past three years Peter has gone on to work on new projects; I am sure that others will be able to comment on the potential neuroscience impact of these projects. I can say, however, that Peter will surely continue his development into a first-rate researcher in mathematical neuroscience. It is with pleasure and confidence that I recommend him to you both as a researcher and a colleague.

Yours sincerely,



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