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### Letter of Recommendation for Astrid Prinz

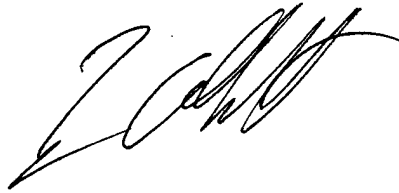
Astrid Prinz is a postdoc working in Eve Marder's laboratory, and I have gotten to know her very well over the past few years. She is a wonderful presence in the lab, with many intelligent things to add to discussions and at seminars. Her work has taken Eve's research in interesting and creative new directions. She is a hard worker, and she knows both how to get things started and done.

Astrid initially worked on some phase-resetting models to account for data taken by a graduate student in Eve's lab. The work was an excellent example of theory being applied to illuminate what the data is telling us. After this work, Astrid began a highly original project that is still the subject of her research. Eve has been interested in the range of dynamics exhibited by model neurons and networks and in how the parameter space of these models breaks up into regions exhibiting different patterns of activity. Astrid, in an approach very typical of her style, went straight at this problem by simulating and categorizing over a million instantiations of a burster model with different parameter values. Although this is a brute force approach, it required the development of both efficient simulation methods and sophisticated analysis software to determine what was going on in these simulations (since it is not feasible to analyze over a million models by hand). Astrid did all this very cleverly and effectively, and she came up with some interesting observations about the global structure of conductance-based neuron models.

Astrid has gone on to construct model networks using a similar approach. The basic question being asked is one that has puzzled us and other researchers for many years: how precisely does a neural circuit like the stomatogastric ganglion have to be tuned to function properly. In other words, is the reliable activity of such a circuit the result of highly tuned and regulated parameters, or is it a product of the inherent robustness of the circuit, independent of precise parameter values. Astrid realized that answering this question requires an unbiased examination of how circuits constructed on the basis of known architecture and electrophysiology function when their parameters are varied. She constructed something like 20 million models, again developing the automated analysis software needed to figure out what they were doing. Her results are still being analyzed, but they seem to suggest a robustness of the basic circuit design that buffers against large fluctuations in parameter values.

Astrid's work is highly original, both in its techniques and in the questions she is exploring. I can't imagine a person more suited for this work than Astrid. She combines the right proportions of determination, organization, cleverness, and perseverance to get the details right without losing sight of the overall questions being addressed. Astrid is a strong candidate for a faculty position. She knows how to ask and answer important research questions and, once she starts on a problem, she is virtually unstoppable. I have enjoyed interacting with her scientifically and collaborating with her. She will be an excellent colleague, teacher, research supervisor, and scientist in any department she joins.

Sincerely,

A handwritten signature in black ink, appearing to be 'J. C. M.', written in a cursive style.