STANFORD
UNIVERSITY

Miriam B. Goodman
Associate Professor

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Mr. Josh Greenberg
Sloan Foundation
630 Fifth Avenue
Suite 2550
New York, NY, 10111

Dear Mr. Greenberg:

I am pleased and honored to write this letter relating my experience with 'Software Carpentry', its excellence, and potential for improving and enhance the practice of science across disciplines. I participated in a two-day workshop in March 2012 and on-line tutorials, together with three trainees from my research group who had little prior experience in writing software. My research group seeks to understand the molecular and physical basis for touch sensation and we use a combination of techniques to achieve our goals. Much of our daily work involves analysis of both times-series and image data. I have been on faculty at Stanford since 2002, when I also named an Alfred P. Sloan Fellow. Support from this fellowship was instrumental in launching new research directions in my laboratory, including work that culminated in the development of software for quantitative behavioral studies (Ramot et al, PloS ONE, e2208, 2008). This software, which we have made freely available on our laboratory website (http://wormsense.stanford.edu/tracker/), has been extended and modified by many others, enabling quantitative studies of behavior in small animals such as roundworms and fruit flies.

Many students and postdoctoral researchers in my field (Neuroscience) are unlikely to have received any training in computer science or software design. Despite this, much of our time is spent extracting information from databases, analyzing time series data, and images. Often, the processes that we use for data analysis are *ad hoc* and depend on workflows being communicated from researcher to researcher. Here is the bottom line: 'Software Carpentry' fills a tremendous need in research and has the potential to enhance and expand the scientific enterprise. In my view, its promise in this realm extends beyond instilling good programming practices. Emphasis was placed on version control and provenance, principles that are as

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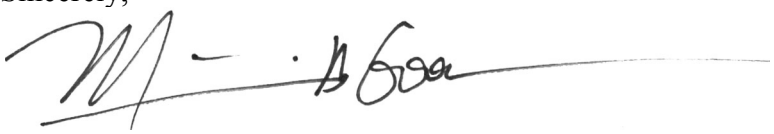
important to laboratory procedures as they are to software development. Additional concepts that apply to the practice of scientific research include the value of dividing problems into manageable pieces and determining what tests are needed to verify success in advance of beginning.

Finally, I am energized by 'Software Carpentry' to renew my skills and to enable my students to engage more fully and more efficiently as more data become publically available. I am also energized by the possibility of collaborating with 'Software Carpentry' to make training in software design part of the curriculum for all predoctoral students in the Biosciences at Stanford. With this letter I extend my strong support for this program and the team of instructors that make it happen.

Sincerely,



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