March 30, 2011

Dear Editorial Board:

On behalf of myself and my coauthors, I submit for your review a copy of our manuscript entitled, "Are mental properties supervenient on brain properties?" We hope that you will consider publishing this manuscript in Nature Scientific Reports.

At the core of this paper is a thought experiment in which we mathematically prove that if the graph corresponding to brain connectivity (i.e., the *connectome*) is statistically related to a particular mental property (e.g., propensity for mathematics), one could build a classifier to determine whether any individual's brain exhibits that property with an arbitrarily small misclassification rate. The proof follows directly from the probabilistic theory of pattern recognition and is made possible by our novel exposition of universal consistency for a k_n-nearest neighbor classifer on graphs. In addition to these theoretical results, the manuscript describes a simulation that suggests how one could actually build such a classifier for the "brain" of *Caenorhabditis elegans* using today's technology.

We believe that the work described in this manuscript makes significant contributions in several contemporary fields of inquiry, including neuroscience, philosophy, and statistics. It is for these reasons that we believe it is particularly well suited for Nature Scientific Reports.

As a scientific reviewer, we suggest Prof. Giorgio Ascoli (ascoli@gmu.edu), as he is a scholar in neuroscience and neuroinformatics, with a solid background in quantitative studies, with interests in whole brain analysis. Please exclude Prof. Olaf Sporns, as our work and his closely overlap, and he has seen previous versions of this manuscript.

Please do not hesitate to contact us with any questions or comments.

Respectfully,

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