

Review of Phil Kyles Honors Thesis:

The Effects of Hyperhomocysteinemia on Vascular Disease

Reviewed by Dr Martin Brock

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This is an outstanding piece of scholarship, easily the most sophisticated and best written report I have seen since arriving at ECU some 23 years ago. He clearly should receive an A for this work. His research is a consequence of the REU program he participated in at the University of Louisville during the Summer of 2013, but the bulk of this writing is the literature background he carried out while at ECU using our libraries and other facilities. He also presented this work at regional and national science conferences and will present it again in the spring at the national conference on undergraduate research. With a different and more focused writing format, this work would be considered publishable in a peer-reviewed journal, and he has plans on submitting to a journal specializing in student research.

The work described in this dissertation is of a highly timely material: we have learned that much vascular disease is associated with elevated levels of the compound homocysteine, related to common amino acids found in most proteins, but also related to components of the critical methyl cycle, an important method most living systems use to shuttle one-carbon groups around. Other components of this cycle include methionine, folic acid, B12, and B6. It has been very unclear how these substances can serve to regulate complex processes in our bodies, particularly vascular disease, and hence his group aimed to uncover some plausible mechanisms suggesting a causal relationship rather than merely an associative one. His well-controlled experiments on rodents have helped cement the idea that homocysteine may indeed be an integral factor in vascular disease, and the background work he writes about here also goes a long way toward showing how scientific literature is moving strongly in this same direction.

In addition to the scientific contributions implicit in this work, Mr Kyles also shows an extremely high level of writing proficiency in his dissertation. It has a well-developed structure, is free from common writing errors that are the bane of most editors, and shows a strong sense of persuasion with his use of strong, evidence-based argumentation.

In sum, I feel Mr Kyles should be given an A for an outstanding piece of writing.