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Re: Letter of recommendation for Gavin Conant

September 25, 2005

To who it may concern:

I am delighted to comment on the qualifications of my graduate student Gavin Conant for your program. I have known Gavin since the fall of 1998 in my function as his Ph.D. supervisor. Gavin is a truly exceptional graduate student, not only with respect to his intellectual abilities, but also in regard to his personality, teaching ability, and his highly original dissertation work.

Gavin's dissertation research was extremely broad. His original dissertation project concerned the development of novel algorithms to determine functionally important sites on proteins by automatically identifying fast and slow-evolving protein domains in the context of a phylogenetic analysis. After this "starter" project, his work has branched out into multiple other areas. For instance, he developed a software tool to identify duplicate genes in whole-genome DNA sequences and estimate their divergence with high accuracy; he used this tool to ask how often gene duplicates diverge asymmetrically in sequence and function; he showed that multiple transcriptional regulation circuits in yeast and bacteria arose through convergent evolution; he asked whether highly connected genes in metabolic and protein interaction networks evolve slowly; and so on. Most of his projects have yielded publications. As a result, his publication record as a result of his dissertation was outstanding. (He has several publications in journals such as *Nature Genetics*, *Proceedings of the Royal Society of London*, and *Journal of Molecular Evolution*.)

On the biological side, his projects required not only a deep understanding of the relation of protein sequence to structure and function, but also a good grasp of genome evolution. On the computational side, he did not only have to be an efficient programmer, but also had to solve difficult mathematical problems in areas such as combinatorial optimization and graph theory. Gavin also has a good working knowledge in areas such as probability theory and differential equations. In deriving algorithmic solutions to the computational problems, he required next to no 'hand-holding'. In the later stages of his dissertation work, he was highly independent. I would present Gavin with a general idea of a research project and a broad outline of how to pursue it. A few months later, he would come back to me with a draft manuscript containing all the results.

This is not to say that Gavin is just an executing organ. Several of his projects originated entirely through his initiative.

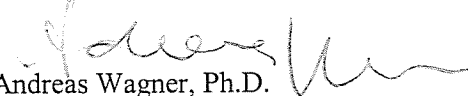
Gavin also engaged in several productive collaborations with researchers outside our department. That he does so without neglecting his main dissertation work speaks both to his ability to focus on the essential, as well as to his efficiency. (In fact, one of his undergraduate research supervisors, now a tenured faculty member, told me that he felt embarrassingly inefficient in comparison to Gavin, even when Gavin was still an undergraduate.) During the beginning of Gavin's dissertation work, his financial support derived from a competitive fellowship at the Albuquerque High Performance Computing Center (AHPCC), where he advised users on a part-time basis in the use of two massively parallel supercomputers. I mention this because it is an unusual skill to have for a biology graduate student, and one of his supervisors at AHPCC has commended him on several occasions for his outstanding work.

As if all this was not enough, Gavin is also a 'natural' at teaching. I have let him teach sections of one of my advanced undergraduate courses in evolutionary genetics, where he performed exceedingly well. He gives highly organized lectures and feels very comfortable at interacting with students during the class. I have heard similar statements from other colleagues. One colleague recently mentioned that Gavin taught a lecture in her computational biology course and that he received a prolonged ovation from the students afterwards. She marveled at Gavin's teaching ability and, although a highly respected teacher herself, expressed a tinge of envy that she never got similarly positive feedback from her students.

In our departmental seminars he outshines all other graduate students with his breadth of knowledge in a wide number of areas that are not necessarily related to his dissertation. Most importantly, he never does so self-aggrandizingly, and never makes other students feel uncomfortable. His competent advice, delivered in a characteristic low-key style, is sought out by many of our graduate students who struggle with computational tasks. As a faculty member, I also find it a great pleasure to work with him. He is intellectually extremely independent, but takes advice seriously. And while he is always respectful, he does not hesitate to deliver an intellectual challenge.

I have been truly blessed with having Gavin as graduate student. I am confident that any investment in his professional future will provide ample returns.

Sincerely,


Andreas Wagner, Ph.D.
Associate Professor of Biology