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DEPARTMENT OF PLANT BIOLOGY

October 27, 2005

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Dear Dr. Bruns,

I am writing this letter in support of Kevin Reddings application for a position in your department. I first became acquainted with Kevin Redding when he was a graduate student at Stanford University working with Robert Fuller; Fuller was on the faculty in the Medical School at Stanford at that time. Even as a graduate student, it was clear that Kevin was an exceptional scientist, which is exemplified by his top notch publications on the secretory apparatus in yeast. During that time I spoke to Kevin about his future scientific directions - he showed a strong interest in photosynthesis and especially in coupling genetic and biophysical aspects of photosynthesis. I suggested that he contact Jean-David Rochaix in Geneve, and he ended up going to Jean-David's laboratory as a postdoctoral fellow. During his tenure as a postdoctoral in Geneve I could see that Kevin had already developed into an independent researcher with an incredible scope of knowledge and an imaginative and meticulous approach to both the conceptual and technical aspects of the work. His biophysical training became much stronger as he entered collaborations with Cournac and Peltier in Carache, Rutherford and Breton in Saclay, and Joliot in Paris (many of the best people doing this type of work in the world). But he also interacted with Pierre Bennoun and the Peltier group to explore chlororespiration and learned protein biochemistry and chloroplast molecular biology with Rochaix. It is Kevin's capacity to use his strong intellect and to combine his knowledge of biophysics, genetics, molecular biology and protein biochemistry to develop a scientific project with high impact that makes him one the very best researchers in the field of photosynthesis.

Kevin's focus with respect to photosynthesis has been on trying to understand electron flow within the reaction center of photosystem I. One of the early breakthroughs occurred while working with people in Paris (Joliot, Boudreaux, Guergova-Kuras); they generated evidence for two active branches of electron flow within the reaction of center of photosystem I (this was published in PNAS). This was taken further with the study of two oriented phyloquinones within the photosystem I reaction center and the finding that electron flow was related to these phylloquinones (which defined the two potential pathways). Kevin is currently extending this work to define factors, and especially the protein environment, that influences the flow of electrons along these two pathways. This avenue of research has led to the use of the *Heliobacteria* homodimeric reactions center to develop a project in which the symmetrical reaction center of this bacterium could be made asymmetrical via the generation of a strain with

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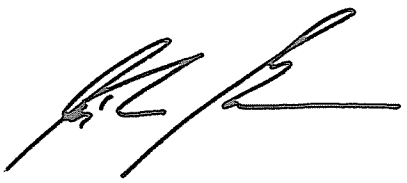
a gene duplication and the introduction of changes within the duplicate gene; analyses of electron flow through the altered reaction centers (now heterodimers) would help define factors within the protein environment that generate a flow bias. Kevin has also developed this work in the direction of understanding disassembly and degradation of photosystem I. Members of his group have already isolated mutants in the putative degradation pathway and have established an in vitro system to study the disassembly/degradation of the photosystem I complex.

In sum, Kevin is one of the best young scientists working on the mechanisms of photosynthesis in the world. Kevin's use of spectroscopy (optical, infrared, EPR, FTIR) to define primary and secondary electron transfer reactions and the factors critical for directed electron flow in photosystem I has been extremely important for the field. But Kevin's scope and depth of understanding of processes that influence photosynthetic function extend well beyond his early studies with the Geneve, Cadarache, Paris and Saclay groups, and he has developed a strong, independent program in Birmingham that bridges areas from the biophysical to the genetic and biochemical, and he has been able to incorporate a number of new approaches into his research, including one of directed protein evolution. I recently saw Kevin present a seminar in South Africa (International Phycology Congress – August, 2005), which in my opinion was the best that I have seen on the topic of photosystem I structure/function. I would love to have Kevin as a colleague at Stanford and if you are at all interested in his area of research, I can't think of a better person to pursue.

Sincerely yours,



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