

HARVARD MEDICAL SCHOOL

*Department of Microbiology  
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Dr. Yves Brun  
Systems Biology/Microbiology Faculty Search  
Department of Biology  
Indiana University  
1001 E 3rd St.  
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Dear Yves,

I am writing to strongly recommend Dr. Eric Stewart for a faculty position in your Department. Eric did his PhD work in my laboratory.

Eric Stewart came to my lab with a strong background in microbiology and maintained a strong commitment to the field throughout his stay here. He worked on several projects. He was the first in the lab to attempt to develop a system that would allow us to assay dimerization of transmembrane segments of integral membrane proteins. He tried to use the AraC gene product as a reporter system for this purpose based on a publication from Bob Schleif's lab. Eric did an extraordinarily thorough job with this project convincing himself at the end that it was not going to work. We now think that the conclusions of the Bustos and Schleif paper were probably wrong. In doing this work, he showed many of his outstanding strengths. He is a hard worker and excellent in the lab. He immerses himself deeply in whatever project he is working on and persists until he really has a complete picture. This project was part of a collaborative project with several biophysics groups at Yale. We had joint meetings with these groups several times a year, in which Eric was a participant even after he switched projects. I was particularly impressed at the degree to which Eric was able to follow some of the more abstruse (from our perspective) presentations of the biophysicists and ask penetrating questions.

When it was clear that the membrane protein system was not going to work and Eric needed a more productive project to complete his thesis, he chose to take on two new subjects. These were 1) the basis of the ability of thioredoxin reductase mutants of *E. coli* to allow disulfide bond formation in cytoplasmically localized alkaline phosphatase and 2) aspects of the structure and function of DsbD, a cytoplasmic membrane protein that transduces reducing potential across the membrane to the periplasm. In the first project, he was successful in discovering a second thioredoxin in *E. coli* and showing its role not only in the alkaline phosphatase phenomenon, but also in the normal thiol reducing functions in the cytoplasm. In the second project, he studied the

properties of an *E. coli* membrane protein, DsbD. This protein has the unusual property of transferring electrons from the cytosolic thioredoxin across the cytoplasmic membrane to a protein (DsbC) located in the periplasm. Eric determined the membrane topology of DsbD, in the process showing that a previously published paper on the length and sequence of this protein was incorrect. He first deduced this from his genetic experiments. Then, using mutagenesis, he determined the role of individual cysteines in this protein's function. His results suggested that the process of electron transfer involves several cysteines located at various topological positions in the membrane. Both of these projects opened up new avenues in my laboratory that are being pursued by several students and postdoctoral fellows. The same qualities of thoroughness and immersion in the subject matter in a scholarly fashion were the hallmark of Eric's work in this case.

I have not followed Eric's work closely since he left, but I have read his impressive recent paper in PLoS. This project is clearly an innovative one that looks like it may well open up a new area in microbiology. Eric's commitment to working with microbes shows in this newest project.

Eric was a lively, interactive person in the lab. At lab meetings, he consistently asked the most questions, as he did at other departmental scientific functions. His suggestions to others were always effective and gently presented. Eric is one of those people whose presence was really missed when he left, as he somehow provided a focus for much that went on and much of the interaction in the lab. I can give him my strongest recommendation.

Sincerely yours,



Jon Beckwith  
American Cancer Society Professor