

October 28, 2005

Jeremy Bennett  
Faculty Search Coordinator  
Department of Biology  
Indiana University  
1001 East 3rd Street  
Jordan Hall 127  
Bloomington, IN 47405-3700

Dear Dr. Bennett,

It is with great enthusiasm that I recommend Dr. Sandra Schulze for a faculty position in your department. I have known and worked closely with Sandra for two years, as she is a post-doctoral fellow in the laboratory of my collaborator, Dr. Lori Wallrath at the University of Iowa. Sandra is an enthusiastic, talented, and independent thinker who is ready to assume responsibilities as a principle investigator.

Sandra has a long standing interest in nuclear organization and gene expression. As a graduate student with Dr. Barry Honda at Simon Fraser University, Sandra tackled the difficult problem of studying the regulation of genes embedded in heterochromatin. Such studies are challenging, as the cloning and characterization of heterochromatic genes is hampered by the fact that these genes are embedded in large expanses of repetitive DNA. Sandra's studies focused on two genes that encode RpL15, a protein of the large ribosomal subunit and Dbp80, a protein that may play a role in mRNA export. Interestingly, *RpL15* is an unusually small heterochromatic gene, encompassing < 2 kb of genomic DNA, while *Dbp80* is extremely large, including a > 140 kb region, leading to the speculation that highly expressed heterochromatic genes may have evolutionary pressures to maintain a small transcription unit. Sandra's studies demonstrated that both genes require the heterochromatic environment for expression, as levels of expression decreased in the presence of mutations in the gene encoding Heterochromatin Protein 1. Sandra published five papers from her PhD work, including two first author publications. Notably, the *Faculty of 1000* cited her study on the two third chromosome heterochromatic genes as a significant contribution.

Sandra joined the Wallrath laboratory in our early stages of investigation of the *Drosophila* nuclear envelope and she has been the driving force for these studies. Sandra applied her outstanding genetic background to identify mutations within *Lamin C*, the gene encoding the *Drosophila* A-type lamin. Mutations in A type lamins are associated with range of human diseases, known as laminopathies. A particularly important question in the field is

how does a broadly expressed protein such as Lamin A cause such a spectrum of tissue-specific diseases, such as muscular dystrophies, lipodystrophies, cardiomyopathies and premature aging. Understanding the contributions that A-type lamins make to nuclear function using a model organism, such as *Drosophila*, will provide insights into mechanisms of human disease. The tissue-specific expression tools available in *Drosophila* suggest that this system is uniquely positioned to provide insights into the tissue specific requirements for A type lamins. Sandra's findings imply that Lamin C is required for differentiation of adult tissues, as mutations in *Lamin C* are pre-pupal lethals and her studies support the proposal that *Drosophila* will be an excellent model to assess tissue-specific requirements. It should be noted that the genetic analysis of *Lamin C* was quite complex, as this gene is embedded within the large, essential *tout-velu* gene. Sandra is currently extending these studies, by determining the relationship between the two lamin genes in *Drosophila*.

At the University of Iowa, Sandra works as part of a larger team investigating the *Drosophila* nuclear envelope. She has been involved in supervising undergraduate researchers, as well as a research associate. These individuals enjoy working with Sandra and have benefited from their association with her. Sandra has a wealth of knowledge to share with her colleagues and has been an excellent resource for the broad research community. In addition, Sandra has volunteered for teaching activities. During the summers, we hold a weekly meeting to introduce undergraduate students to the basis of many techniques that are commonly used in molecular biology laboratories. This summer, Sandra presented several of these techniques to the group.

In summary, Sandra is an accomplished scientist who is hard working, intelligent, and curious. She is well read and has great enthusiasm for her studies and science in general. These qualities are essential for a successful and productive independent research career. I give you an enthusiastic endorsement of Sandra for a faculty position in your department.

Sincerely,

Pamela Geyer  
Professor of Biochemistry