CURRICULUM VITAE SANDRA SCHULZE

I. PERSONAL INFORMATION

Name: Sandra Rimma Schulze
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II. EDUCATION AND TRAINING

Current: **Post-Doctoral Fellow**, Dept. of Biochemistry, University of Iowa, Iowa City, IA USA
Supervisor: Dr. L.L. Wallrath
Project Summary: My current project focuses on the role nuclear envelope associated proteins called lamins play in the regulation of nuclear architecture and differential gene expression. Mutations in lamins lead to a variety of tissue-specific diseases in humans, including muscular dystrophies, lipodystrophies and premature aging syndromes. I am developing the fruit fly Drosophila as a model to study lamin disease mechanisms and developmental biology, as this organism offers unique tissue-specific expression tools, in addition to many genetic and cytological resources. Currently I am testing the evolutionary conservation of lamin function by expressing human lamins in flies.

2003 (July): **Ph.D. (Molecular Biology and Genetics)** Dept. of Molecular Biology and Biochemistry, Simon Fraser University, Burnaby BC., Canada.
Thesis advisor: Dr. B.M. Honda.
Thesis Summary: My project focused on the regulation of two genes in *D. melanogaster* located in a transcriptionally repressive compartment of the genome called heterochromatin, which is commonly found associated with centromeres, telomeres, and the nuclear envelope. Heterochromatin normally silences gene expression, but my studies demonstrated that both genes paradoxically require their heterochromatic location in order to function. In addition I cloned both genes from a distantly related Drosophilid (*D.virilis*) in which one of the two genes was not heterochromatic, showing that the same gene can function in greatly contrasting chromatin contexts. I have continued to work on this project, and have extended the analysis to seven related Drosophilids, by establishing collaboration with scientists involved in the Comparative Drosophila Genome Project (http://www.genome.gov/11008080). Since our starting point involved genes located in the heterochromatin that flanks centromeres, tracking the movements of these genes across a set of related species has revealed surprising features of chromosome evolution.

1998: Diploma in Classical Singing, Royal Conservatory, The Hague, Holland.

1996: Post Graduate Certificate in Early Music Performance, Royal Conservatory, The Hague, Holland.

1985: B.Sc., Dept. Zoology, University of British Columbia, Vancouver, B.C., Canada.

III. SCHOLARSHIPS/AWARDS

2004-2006: American Heart Association Post-doctoral fellowship (US $40,000 p.a.)
Fall 2001-Fall 2003: NSERC PGS B (CN $38,000.00)
2001 (Summer term): MacMillan-Bloedel M.B.B Graduate Scholarship (CN$5,000.00)
2001 (Spring term): Simon Fraser University Graduate Fellowship (CN$5,000.00)
2000 (Fall term): MacMillan-Bloedel M.B.B Graduate Scholarship (CN$5,000.00)
2000 (Summer term): Simon Fraser University Graduate Fellowship (CN$4,400.00)

IV. TEACHING AND MENTORING EXPERIENCE

Current: **Research Mentor**, Department of Biochemistry, Iowa City, IA, USA
As a post-doctoral scholar, I am currently coordinating a project (see description above) in which I am responsible for training and supervising a number of undergraduates and a research technician. In this capacity I work as a mentor, ensuring that each individual has acquired a secure understanding of the biology behind the experiments, and can fulfill (where applicable) the examination requirements of his or her specific program. Usually this means the student makes a public presentation of his or her work, either in the form of a seminar or poster display. I have seen four students through to the end of their program, and am currently mentoring two more.

2005: **Co-instructor**, Department of Biochemistry, Iowa City, IA, USA, Summer CERT (Chromatin Effects on Replication and Transcription) Undergraduate Series. This series of classes was designed to instruct undergraduate students working in a variety of related labs. The course work described the theory behind cloning, PCR, expression systems, protein:protein and protein:DNA interactions, Southern, Northern and Western analysis, microarray analysis, and knock down of protein levels using RNAi. I co-taught this series of lectures with two other professors in our department.

2002: **Guest Lecturer**, Department of Molecular Biology and Biochemistry, Simon Fraser University, Burnaby B.C. CANADA
I was invited to lecture on chromatin structure to a third year molecular biology class. The principal instructor was Dr. Don Sinclair (see references below). I was responsible for preparing and presenting the class, and for designing examination questions.

1999-2000: **Teaching Assistant**, Department of Molecular Biology and Biochemistry, Simon Fraser University, Burnaby B.C. CANADA.
BISC 400 Evolution is a fourth year level lecture course that emphasizes theory and analysis, and which consists primarily of written assignments and examinations. The principal instructor is Dr. Rolf Mathewes. Student appraisals of my role as their teaching assistant are available on request, or have been appended to this C.V.
BISC 431 Molecular Biotechnology is a third year laboratory course in which the basics of recombinant DNA technology and molecular biology are combined to provide students with the practical essentials of working in a modern research laboratory. I was an assistant teacher for this course twice. The principal instructor is Dr. Barry Honda (see references below). Student appraisals of my role as their teaching assistant are available on request, or have been appended to this C.V.

1995-1998: **Music Instructor**: Cecilia Music School, International School, The Hague, HOLLAND.
I taught vocal performance to students who ranged in age from six to sixty. Some students were preparing for professional careers and entrance into post secondary music programmes, while others wanted mainly to perfect their vocal skills for personal enjoyment. My work included preparing and leading masterclasses, workshops, concert performances for various festivals, and private tuition. A letter of reference is either available on request, or appended to this C.V.

1991-1994: **Music Instructor**: McGill Conservatory of Music, Montreal Quebec, CANADA
My responsibilities in this position were very similar to those described above, except that the age range was narrower, as these students were enrolled in semester-length programmes for which formal performance examinations were required. A letter of reference is either available on request, or appended to this C.V.

V. PEDAGOGY DEVELOPMENT TRAINING/WORKSHOPS

1999: Completion of **Instructional Skills Workshop** program through Simon Fraser University, Burnaby, B.C. CANADA

VI. PUBLICATIONS

(a). Published papers in refereed journals:

1. **Sandra R. Schulze**, Lori L. Wallrath (2006) Connections between chromatin structure and gene regulation: Insights from studies on *Drosophila melanogaster*. Ann. Rev. Entom. Vol 52 (invited review)

2. **Schulze S.R.**, Curio-Penny B., Li Y., Imani R., Rydberg L., Geyer P.K., Wallrath L.L. (2005) Molecular genetic analysis of the nested *Drosophila melanogaster Lamin C* gene. Genetics 171(1): 185-96**Note: this paper was cited as significant by Faculty of 1000*

3. **Sandra R. Schulze**, Bryant F. McAllister, Donald A.R. Sinclair, Kathleen A. Fitzpatrick, Marcella Marchetti, Sergio Pimpinelli and Barry M. Honda (2005) Heterochromatic genes in *Drosophila*: a comparative analysis of two genes. Molecular Biology and Evolution (submitted)

4. **Sandra R. Schulze**, Donald A.R. Sinclair, Kathleen A. Fitzpatrick, Barry M. Honda (2005) A Genetic and Molecular Characterization of two proximal heterochromatic genes on chromosome 3 of *Drosophila melanogaster* Genetics 169 (4): 2165-2177 **Note: this paper was cited as significant by Faculty of 1000*

5. K.A. Fitzpatrick, D.A. Sinclair, **S. R. Schulze**, M. Syrzycka and B. M. Honda (2005) A genetic and molecular profile of chromosome 3 centric heterochromatin in *Drosophila melanogaster*. Genome 48: 571-84

6. **S. Schulze**, D.A.R. Sinclair, E. Silva, K.A. Fitzpatrick, M. Singh, V.K. Lloyd, K.A. Morin, J. Kim, D.G. Holm, J. Kennison and B.M. Honda (2001) Essential genes in proximal 3L heterochromatin of *Drosophila melanogaster*. Molecular and General Genetics 264: 782-789

7. D.A.R. Sinclair, **S. Schulze**, E. Silva, K.A. Fitzpatrick and B.M. Honda (2000) Essential Genes in autosomal heterochromatin of *Drosophila melanogaster*. Genetica 109: 9-18

8. M. Singh, E. Silva, **S. Schulze**, D.A.R. Sinclair, K.A. Fitzpatrick and B.M. Honda (2000) Cloning and characterization of a new theta class Glutathione-S-transferase gene (GST), DmGST-3, from *Drosophila melanogaster* Gene 247: 167-173

(b). Selected meeting abstracts:

1. Platform: **S.R. Schulze**, B. Curio-Penny, Y. Li, R.A. Imani, L. Rydberg, P.K. Geyer and L.L. Wallrath. The Nuclear Envelope and Human Disease: Modeling laminopathies in Drosophila. 8th Canadian Drosophila Research Conference (CanFly) 2005 Vancouver BC CANADA

2. Poster: **S. R. Schulze**, B. Curio-Penny, Y. Li, R. Imani, R. Davis, P.K. Geyer, L.L. Wallrath. The Nuclear Envelope and Human Disease: Modeling laminopathies in Drosophila. Genetics Society of America: 44th Annual Drosophila Conference, 2005, San Diego CA., USA

3. Platform: **S.R. Schulze**, Y. Li, R. Imani, R. Davis, J. Martin, P.K. Geyer and L.L. Wallrath. The nuclear envelope and human disease: modeling laminopathies in Drosophila. Midwest Fly Meeting, October 8-10, 2004, Allerton Illinois, USA

4. Platform: **S. R. Schulze,** K. A. Fitzpatrick, D.A.R. Sinclair, B.F. McAllister, M. Marchetti, S. Pimpinelli, C. Jackson, M. Syrzycka and B.M. Honda. Analysis of chromosome 3 heterochromatin in *Drosophila melanogaster*. Seventh International Conference on Drosophila Heterochromatin. July 5-11, 2005 Gubbio, ITALY

5. Poster: **S.R. Schulze**, K.A. Fitzpatrick, D.A.R. Sinclair and B.M.Honda. Structure, expression and evolution of two proximal genes in centric heterochromatin of chromosome 3 in *Drosophila melanogaster*. Sixth International Conference on Drosophila Heterochromatin. July 25-31, 2003 Ravello, ITALY

6. Poster: **S. Schulze**, D.A.R. Sinclair, K.A. Fitzpatrick, C. Sullivan-Walker, D. Deitcher and B.M. Honda Molecular and Genetic Characterization of 3rd Chomosome Heterochomatin. Genetics Society of America: 43nd Annual Drosophila Conference, 2002, San Diego CA., USA

VII. ADMINISTRATIVE EXPERIENCE

1995-1998: **Administrative Assistant**, Department of Early Music, Royal Conservatory, The Hague, Holland
My duties in this position included coordinating student schedules and academic requirements, maintaining routine matters of correspondence, organizing schedules for concert performances, and class schedules for visiting faculty. The Royal Conservatory is a major musical center for Early Music performance practice, and my responsibilities often involved interacting with other music schools across Europe, in addition to established artists through their agents. A letter of reference describing this position is either available on request or appended to this C.V.

1996: **Project Coordinator**, "Baroque Third Generation": This was a specific project jointly under the auspices of the Royal Conservatory in The Hague, and the UNESCO office in Paris. The project consisted of a series of workshops involving six European music schools, coached by six established artists from three countries. It was held at the Royaumont Abbey near Paris. A letter of reference describing this position is either available on request or appended to this C.V.

VIII. REFERENCES (PERSONNEL)

Please feel free to contact the following people for references (* indicates people with whom I work most directly):

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