

CURRICULUM VITAE

Name: Vincent J. VanBuren, Ph.D.
Date and Place of Birth: June 12, 1971, Lansdale, Pennsylvania, USA
Citizenship: USA
Marital Status: Married, two children
Home Address: 1830 Loch Shiel Road, Baltimore, Maryland 21234, USA
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Field of Specialization: Computational Biology and Bioinformatics, Molecular Biophysics

Education:

1994 Cedar Crest College, Allentown, PA B.S. Biology
2002 Lehigh University, Bethlehem, PA Ph.D. Molecular Biology
Dissertation: Computational Modeling of Microtubule Structure and Assembly
Advisor: Lynne Cassimeris, Ph.D., Associate Professor of Molecular Biology,
Department of Biological Sciences, Lehigh University
Co-Advisor: David J. Odde Ph.D., Associate Professor of Chemical
Engineering, Department of Biomedical Engineering, University of
Minnesota

Relevant Bioinformatics training and skills:

- Expert programmer in MATLAB and Perl. Proficient in using UNIX/Linux, Wintell PCs, and Macintosh systems. Competence and strong interest in algorithm development.
- Expert in applying computational methods to biological problems. A solid understanding of bioinformatics algorithms. Experienced using BLAST, BLAT, RepeatMasker, CLUSTAL, FASTA, RASMOL, and SWISS-PDB Viewer, various statistics packages and others on various platforms (UNIX, Mac, Win2K).

Positions:

Postdoctoral Work

Supervisor: Minoru S.H. Ko, MD, Ph.D., 410-558-8359

Duties in my current postdoctoral work at NIA include project management, research planning, bioinformatics consulting, analysis, modeling, application building, sharing findings at national conferences, and authorship of research manuscripts and reviews.

Accomplishments:

- Designed and developed a Web-based application for high-throughput probe selection using probe screening criteria for *in situ* hybridization (ISH) probe selection and DNA microarray probe selection (manuscript submitted to **Bioinformatics**).
- Published a book chapter on genetic networks in the text **Mammalian Genomics**, a book section on Embryogenomics in the **EMCBMM** and a first-authored publication of my work organizing the assembly of a murine cDNA clone collection (NIA 7.4K) was published in **Genome Research**. I have publications with authorship in a supporting role in **PLoS** and **Human Molecular Genetics**, and others, as well as other works (probe design, DNA microarray data comparison analysis) in preparation.
- My manuscript entitled "A mechanochemical model for microtubule structure and self-assembly kinetics" was recently published online ahead of print in **Biophysical Journal**. (June 10) **Biophysical Journal** will publish a "New and Notable" about this article.

Positions (continued):

2002-Present **IRTA Postdoctoral Fellow**, Laboratory of Genetics, National Institute on Aging, National Institutes of Health, Baltimore, MD

Graduate School (1995-2002)

Advisor: Lynne Cassimeris, 610-758-6275

Duties in graduate school at Lehigh University included teaching undergraduate and graduate laboratories, teaching a lecture course in Human Genetics to undergraduates and graduates, conducting protein chemistry and cell culture experiments using a variety of techniques, project management, research planning, bioinformatics consulting, analysis, modeling, application building, sharing findings at national and international conferences, and authorship of research manuscripts.

Accomplishments:

- Designed and developed a computational model to estimate the energy of protein-protein interactions and elastic energy within microtubules
- Designed and developed a computational model that recapitulates microtubule dynamic instability
- Designed and developed a computational model that recapitulates the 3-dimensional shapes assumed by microtubules undergoing assembly or disassembly
- Published part of this work in ***PNAS***.

2001-2002 **Research Assistant**, Department of Biological Sciences, Lehigh University, Bethlehem, PA

2000-2001 **Aventis Fellow** (one of two awarded by Aventis Pharmaceuticals, Inc.), Department of Biological Sciences, Lehigh University, Bethlehem, PA

1999-2000 **Research Assistant**, Department of Biological Sciences, Lehigh University, Bethlehem, PA

1998-1999 **Dean's Fellow** (one of two awarded by the College of Arts and Sciences, Lehigh University), Department of Biological Sciences, Lehigh University, Bethlehem, PA

1995-1998 **Teaching Assistant** [Genetics Laboratory (3 semesters), Histology Laboratory (2 semesters), Advanced Cell Biology Laboratory (1 semester)], Department of Biological Sciences, Lehigh University, Bethlehem, PA

Prior to Graduate School

Prior to entering graduate school, my duties as a Nursing Assistant included assisting elderly patients with their activities of daily living, and assisting RNs and LPNs as needed. My duties as a Restorative Aide included preserving or extending the range of motion of patients under the care of the resident physical therapist, and to assist the physical therapist and physical therapist's assistant as needed.

1994-1995 **Nursing Assistant and Restorative Aide**, Pennsburg Manor, Pennsburg, PA

Other Professional Experience:

1998 **Lecturer** (faculty assignment), Human Genetics and Reproduction, Biological Sciences Department, Lehigh University

1998 **Computer Consultant and Technician**, Biological Sciences Department, Lehigh University

Research Interests:

- Novel data mining and analysis of DNA microarray experiments.
- Prediction of absolute transcript abundance from DNA microarray measured intensities.
- Probe design for high-throughput *in situ* hybridization and DNA microarrays.
- Computational analysis and modeling of genetic and biochemical networks.
- Computational analysis and modeling of microtubule structure and assembly.

Honors:

Research Grants:

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| 2002-Present | Intramural Research Training Award Postdoctoral Fellowship, NIA/NIH. |
| 2003 | Fellows Award for Research Excellence (FARE 2003), NIA/NIH. |
| 2000 | Travel Award, American Society of Cell Biology annual meeting. |

Scholarships:

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| 2000-2001 | Predocotrual Fellowship, Aventis Pharmaceuticals, Inc., Lehigh University. |
| 1998-1999 | Dean's Predocotrual Fellowship, Lehigh University College of Arts and Sciences. |

Invited Talks:

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| June 2004 | H. Lee Moffitt Cancer Research Center, University of Southern Florida, Tampa, FL. |
| May 2004 | Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan |
| December 2003 | Department of Biochemistry, Robert Wood Johnson Medical School, Piscataway, NJ. |
| August 2001 | Laboratory of Genetics, National Institute on Aging, NIH, Baltimore, MD |
| October 2000 | Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN |

Professional Activities:

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| 2001 | Ex Officio Committee Member, Search Committee for a new faculty appointment in Molecular Modeling, Department of Biological Sciences, Lehigh University |
| 1997-2001 | Graduate Student Representative at departmental faculty meetings, Department of Biological Sciences, Lehigh University |
| 1996-1997 | Graduate Student Representative at Graduate Student Council Meetings |

Society Memberships:

American Association for the Advancement of Science (AAAS)

BIBLIOGRAPHY

1. **VanBuren, V.**, Odde, D.J., Cassimeris, L. (1999) Modeling Tube Tops: A Model for Tubulin-Tubulin Interactions in Microtubule Statics and Dynamics (abstract). *Mol Biol Cell* 10(S): 376a.
2. **VanBuren, V.**, Cassimeris, L., Odde, D.J. (2000) Static Modeling of Microtubular Structures (abstract). *Mol Biol Cell* 11(S): 357a.
3. **VanBuren, V.**, Odde, D.J., Cassimeris, L. (2002) Estimates of Lateral and Longitudinal Bond Energies within the Microtubule Lattice. *Proc Natl Acad Sci USA*, 99(9): 6035-40.
4. **VanBuren, V.**, Piao, Y., Dudekula, D.B., Qian, Y., Carter, M.G., Martin, P.R., Stagg, C.A., Bassey, U.C., Aiba, K., Hamatani, T., Kargul, G.J., Luo, A.G., Kelso, J., Hide, W., Ko, M.S.H. (2002) Assembly, Verification, and Initial Annotation of the NIA Mouse 7.4K cDNA Clone Set. *Genome Research*, 12:1999-2003.
5. **VanBuren, V.**, Yoshikawa, T., Hamatani, T., Ko, M.S.H. (2003) Probe Design for Large-Scale Molecular Biology Applications. *IEEE CSB Proceedings (CSB2003)*. 502-503.
6. Sharov, A.A., Piao, Y., Matoba, R., Dudekula, D.B., Qian, Y., **VanBuren, V.**, Falco, G., Martin, P.R., Stagg, C.A., Bassey, U.C., Wang, Y., Carter, M.G., Hamatani, T., Aiba, K., Akutsu, H., Sharova, L., Tanaka, T.S., Kimber, W.L., Yoshikawa, T., Jaradat, S.A., Pantano, S., Nagaraja, R., Boheler, K.R., Taub, D., Longo, D.L., Schlessinger, D., Keller, J., Klotz, E., Kelsoe, G., Umezawa, A., Vescovi, A.L., Rossant, J., Kunath, T., Hogan, B.L.M., Curci, A., D'Urso, M., Kelso, J., Hide, W., and Ko, M.S.H. (2003) Transcriptome analyses yield gene sets correlated with developmental potential in mouse stem cells and early embryos. *PLoS Biology*, 1(3): 410-419.
7. Carter, M.G., Piao, Y., Dudekula, D.B., Qian, Y., **VanBuren, V.**, Sharov, A.A., Tanaka, T.S., Martin, P.R., Bassey, U.C., Stagg, C.A., Aiba, K., Hamatani, T., Ko, M.S.H. (2003) The NIA Mouse cDNA Project: Building a Gene Catalog of Mouse Stem Cells and Early Embryos. *CR Biologies*, 326 (10-11): 931-940.
8. Hamatani T, Falco G, Carter MG, Akutsu H, Stagg CA, Sharov AA, Dudekula DB, **VanBuren V**, Ko MS. (2004) Age-associated alteration of gene expression patterns in mouse oocytes. *Hum Mol Genet.* 13 (19): 2263-2278. Aug 18 [Epub ahead of print].
9. **VanBuren, V.** and Ko, M.S.H. (2005) Regulation of genome activity and genetic networks in mammals (invited book chapter). *Mammalian Genomics*. CAB International Publishing, Cambridge, Massachusetts. 201-220.
10. **VanBuren, V.** and Ko, M.S.H. (2005) Principles and applications of embryogenomics (invited encyclopedia section). *Encyclopedia of Molecular Cell Biology and Molecular Medicine*. Wiley-VCH, Berlin. 529-556.
11. **VanBuren, V.**, Cassimeris, L., Odde, D.J. (2005) A mechanochemical model for microtubule structure and self-assembly kinetics. *Biophysical Journal* June 10 [Epub ahead of print]
New and Notable: Schek, H.T., III, and Hunt, A.J. (2005) Microtubules: Mechanical Meets Chemical *Biophysical Journal* August 12 [Epub ahead of print]
12. Carter, M.G., Sharov, A.A., **VanBuren, V.**, Dudekula, D.B., Carmack, C.E., and Ko, M.S.H. (2005) A mouse whole-genome oligonucleotide microarray platform for transcript copy number estimation. *Genome Biology* 6:R61.

REFERENCES

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Letters of support and additional references are available upon request.