

CURRICULUM VITAE

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EDUCATION:

1999	Ph.D. in Computational Theoretical Chemistry Department of Chemistry, University of Toronto, Canada
1994	M. Sc. in Computational Biophysics, <i>summa cum laude</i> Moscow Institute of Physics and Technology, Moscow, Russia
1992	B. Sc. in Physics, <i>summa cum laude</i> Moscow Institute of Physics and Technology, Moscow, Russia

PROFESSIONAL EXPERIENCE:

August 2003 – Present	Research Scientist, Team Leader Bioinformatics Institute, Singapore Adjunct Assistant Professor, Division of Bioengineering, National University of Singapore, Singapore
January 2001 – June 2003	Senior Scientist, Product Manager, GeneData AG, Basel, Switzerland
May 1999 – December 2000	NSERC Postdoctoral Fellow, Ontario Cancer Institute, Princess Margaret Hospital, Toronto, Canada Research Advisor: Professor A. M. Edwards

- January 1995 – April 1999** **Research Assistant, Teaching Assistant,**
Department of Chemistry, University of Toronto, Toronto,
Canada
Research Advisor: Professor R. E. Kapral
- September 1993 – December 1994** **Research Assistant,**
I. E. Tamm Theoretical Division, P. N. Lebedev Physical
Institute, Moscow, Russia
Research Advisor: Professor D. S. Chernavskii

PUBLICATIONS:

1. **A. Goryachev**, D.-J. Toh, K. B. Wee, T. Lee, H. B. Zhang, and L. H. Zhang, *Transition to quorum sensing in an Agrobacterium population: A stochastic model*. To appear in PLoS Computational Biology 1(4), (2005).
2. **A. Goryachev**, D.-J. Toh, T. Lee, *Systems analysis of a quorum sensing network: design constraints imposed by the functional requirements, network topology and kinetic constants*. To appear in the BioSystems focus issue on Systems biology (2005).
3. D.-J. Toh, F. Tang, T. Lee, D. Sarda, A. Krishnan, and **A. Goryachev**, *Parallel computing platform for the agent-based modeling of multicellular biological systems*. In: K. M. Liew, H. Shen, S. See, *et al.* (Eds.) *Parallel and distributed computing: applications and technologies*. (2004) Springer, Heidelberg.
4. L. Chen, **A. Goryachev**, J. Sun *et al.*, *Altered expression of genes involved in hepatic morphogenesis and fibrogenesis is identified by cDNA microarray analysis in biliary atresia*. *Hepatology* **38**, 567 – 576 (2003).
5. **A. Goryachev**, P. Macgregor, and A. Edwards, *Unfolding of microarray data*. *J. Comp. Biol.* **8**, 443 – 461 (2001).
6. K. Mossman, P. Macgregor, J. Rozmus, **A. Goryachev**, A. Edwards, and J. Smiley, *Herpes simplex virus triggers and then disarms a host antiviral response*. *J. Virol.* **75**, 750 - 758 (2001).
7. S. Hemming, D. Jansma, P. Macgregor, **A. Goryachev**, J. Friesen, and A. Edwards, *RNA polymerase II subunit Rpb 9 regulates transcription elongation in vivo*. *J. Biol. Chem.* **275**, 35506 - 35511 (2000).
8. **A. Goryachev**, R. Kapral, and H. Chate, *Synchronization defect lines*. *Int. J. Bif. & Chaos* **10**, 1537 – 1564 (2000).
9. **A. Goryachev**, H. Chate, and R. Kapral, *Transition to line-defect mediated turbulence in complex oscillatory media*. *Phys. Rev. Lett.* **83**, 1878 - 1881 (1999).
10. **A. Goryachev** and R. Kapral, *Spiral waves in media with complex excitable dynamics*. *Int. J. Bif. & Chaos* **9**, 2243 - 2247 (1999).

11. **A. Goryachev**, H. Chate, and R. Kapral, *Synchronization defects and broken symmetry in spiral waves*. Phys. Rev. Lett. **80**, 873 - 876 (1998).
12. **A. Goryachev**, P. Strizhak, and R. Kapral, *Slow manifold structure and the emergence of mixed mode Oscillations*. J. Chem. Phys. **107**, 2881 - 2889 (1997).
13. **A. Goryachev** and R. Kapral, *Structure of complex-periodic and chaotic media with spiral waves*. Phys. Rev. E **54**, 5469 - 5482 (1996).
14. **A. Goryachev** and R. Kapral, *Spiral waves in chaotic systems*. Phys. Rev. Lett. **76**, 1619 - 1622 (1996).
15. **A. Goryachev**, A. Polezhaev, and D. Chernavskii, *Catastrophic extinction, noise-stabilized turbulence and unpredictability of competition in modified Volterra-Lotka model*. CHAOS **6**, 78 - 86 (1996).
16. **A. Goryachev**, A. Polezhaev, and D. Chernavskii, *Dynamics of extinction catastrophe in the competing population model*. Mat. Model. **8**, 37 - 47 (1995) (in Russian).
17. **A. Goryachev**, A. Polezhaev, and D. Chernavskii, *On the stability of coexistence on a finite habitat in models of competing populations*. Biofizika **39**, 726 - 731 (1994) (in Russian).

CONFERENCE TALKS:

1. *In silico analysis of the transition to quorum sensing in Agrobacterium*, **3rd TLL Life Sciences Symposium 2005**, Singapore
2. *Systems analysis of the quorum sensing phenomenon in a peculiar plant pathogen Agrobacterium tumefaciens*, **International Conference on Systems Biology 2004**, Heidelberg, Germany.
3. *Computational modeling of morphogenetic processes in epithelial tissues and 3D cultures*, **ICETTE 2003**, Singapore.
4. *High-Throughput Quality Assessment and Processing of Microarray Data*, **CHI Conference on Informatics and Microarray Data Analysis**, Zurich, Switzerland (2003).
5. *Synchronization Defects*, **Dynamics Days Europe 2001**, Dresden, Germany.

CONFERENCE ABSTRACTS:

1. A. Goryachev, D. J. Toh, and T. Lee, *Transition to quorum sensing in the stochastic model of a bacterial population*. **ISCCB05**, Lenox, USA.
2. A. Pokhilko and A. Goryachev, *Mathematical modeling of the Rho-GTPase cycle*. **Keystone Symposium 2005**, USA.

3. D. J. Toh, T. Lee, D. Wee, Li Ye, F. Tang, A. Krishnan, P. Dhar and A. Goryachev, *Agent-Based Modeling of Multicellular Systems with Highly Parallel Cluster-based Simulation Platform*, **APBC 2005**, Singapore.
4. A. Goryachev, A. Edwards, and K. Furuya, *Microarray analysis of a complex liver disease*. **HUGO Pacific 2004**, Singapore.
5. A. Goryachev, D. J. Toh, T. Lee, F. Tang, A. Krishnan, P. Dhar, *Parallel Simulation Platform for Agent-Based Modeling of Multicellular System*. **ISMB 2004**, Glasgow, UK.
6. A. Goryachev *et al.*, *Expressionist Refiner: A Software Solution for Assessment and Correction of Gene Expression Data*. **ISMB 2002**, Edmonton, Canada.
7. A. Goryachev, J. Nickolenko and D. Bittner, *Enriching Value of Gene Expression Data with GeneData Expressionist Refiner*. **RECOMB 2002**, Washington DC, USA.
8. A. Goryachev, K. Furuya, L. Chen, P. Macgregor and A. Edwards, *Understanding Etiology of Human Disease on the Genomic Level*. **PSB 2002**, Lihue, USA.
9. A. Goryachev, K. Furuya, P. Macgregor and A. Edwards, *Learning the Genomic Nature of Complex Disease from the Gene Expression Data*. **ISMB 2001**, Copenhagen, Denmark.
10. A. Goryachev, P. Macgregor, and A. Edwards, *Unfolding of Microarray Data*, **ISMB 2000**, San Diego, USA.
11. A. Goryachev, P. Macgregor, B. McNeil, A. Edwards, and J. Woodgett, *Validating Microarray Data*. **CHI Conference Labs-on-Chips and Microarrays 2000**, Zurich, Switzerland.
12. A. Goryachev, P. Macgregor, B. McNeil, A. Edwards, and J. Woodgett, *Coping with Variability of cDNA Microarray Data*. **Pacific Symposium on Biocomputing 2000**, Honolulu, USA.
13. A. Goryachev and R. Kapral, *Synchronization Defects and Transition to Turbulence in Spiral Waves*. **The 13th Canadian Symposium on Theoretical Chemistry**, Vancouver, Canada (1998).
14. A. Goryachev and R. Kapral, *Spiral Waves in Complex Periodic and Chaotic Media*. **GRC on Oscillations and Dynamic Instabilities in Chemical Systems**, Salve Regina, USA (1997).
15. R. Kapral and A. Goryachev, *Spiral Waves in Chaotic Systems*. **The 4th SIAM Conference on Applications of Dynamical Systems**, Snowbird, USA (1997).
16. A. Polezhaev, A. Goryachev, and D. Chernavskii, *Noise-Induced Quasistationary Pattern Formation in the Model of Competing Populations*. **The 3rd European Conference on Mathematics Applied to Biology and Medicine**, Heidelberg, Germany (1996).

TEACHING:

- **BN5205** Computational biomechanics, NUS, Singapore
- **BN5104** Quantitative physiology principles in bioengineering, NUS, Singapore
- **LSM5194** Systems biology: Modeling of spatially distributed biological systems, BII, Singapore

SERVICE:

Reviewer for *Intelligent Systems for Molecular Biology* (ISMB) 2004, *European Conference for Computational Biology* (ECCB) 2005, *Bioinformatics*, *Europhysics Letters*.

HONORS AND AWARDS:

07/99 - 07/01	NSERC Postdoctoral Fellowship
1999	Nominee, the American Chemical Society Nobel Laureate Signature Award for Graduate Education in Chemistry
1998	D. J. Leroy Graduate Prize in Physical Chemistry
05/97 - 04/99	NSERC Postgraduate Scholarship B
1997	M. J. Dignam Graduate Travel Award
09/93 - 04/95	Moscow Mayor Graduate Scholarship

PROFESSIONAL MEMBERSHIPS:

International Society for Computational Biology, Regular member

REFERENCES:

Available upon request