Curriculum Vitae

1. General Information

First Name: Charin

Last Name: Modchang

Date of Birth: August 8, 1983

Sex: Male

Nationality: Thai

Home Address: 56/2 Paktang Road, Mueang Phichit, Phichit 66000, Thailand.

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2. Education

2001-2004 B.Sc. with 1st class honored (Physics), Mahidol University, Thailand (GPA 3.77)

Senior project: Modeling of the Dynamic Pole-to-Pole Oscillations of the Min Proteins in Bacterial Cell Division: the Effect of an External Field.

Advisor: Assoc. Prof. Wannapong Triampo, Ph.D.

2005-2009 Ph.D. candidate (Physics), Mahidol University, Thailand.

Thesis: Biophysical Modeling and Monte Carlo Simulations of Receptor Dynamics in Signal Transduction

Advisor: Assoc. Prof. Wannapong Triampo, Ph.D.
Prof. Yongwimon Lenbury, Ph.D.
Asst. Prof. Narin Nuttavut, Ph.D.

3. Research Experience and Activities

May 2008 – March 2009 Visiting Scholar at Center for Theoretical Biological Physics (CTBP), University of California, San Diego, USA.

4. Honors

2005 Outstanding Physics Student with the Highest GPA throughout the Physics Program (2001-2004) Award, from Faculty of Science, Mahidol University, Thailand

2005 Outstanding Physics Student with the International Publication Year 2004 Award, from Faculty of Science, Mahidol University, Thailand

2005 Outstanding Physics Student with the Highest GPA year 2004 Award, from Professor Taeb Nilanithi Foundation

5. Scholarship

2001-2004 Sithangthong Scholarship from Faculty of Science, Mahidol University, Thailand

2003-2004 Research Projects for Undergraduate Students Scholarship from Thailand Research Fund

2005 – 2007: New Scientist Production Scholarship from Faculty of Science, Mahidol University, Thailand

2007 – Present: Strategic Scholarships for Frontier Research Networks from Commission on Higher Education, Ministry of Education, Thailand

6. List of International Publications

1. **Modchang C**, Kanthang P, Triampo W, Ngamsaad W, Tang IM, Nuttawut N, Sanguansin S, Boondirek A, and Lenbury Y. *Modeling of the Dynamic Pole-to-Pole Oscillations of the Min Proteins in Bacterial Cell Division: the Effect of an External Field*. Journal of the Korean Physical Society. (2005) **46**, 1031-1036. (Impact Factor 1.383).
2. Ngamsaad W, Triampo W, Kanthang P, Tang IM, Nuttawut N, **Modchang C**, and Lenbury Y. *A Lattice Boltzmann Method for Modeling the Dynamic Pole-to-Pole Oscillations of Min Proteins for Determining the Position of the Midcell Division Plane*. Journal of the Korean Physical Society. (2005) **46**, 1025-1030. (Impact Factor 1.383)
3. **Modchang C**, Triampo W, and Lenbury Y. *Mathematical Modeling and Application of Genetic Algorithm to Parameter Estimation in Signal Transduction: Trafficking and Promiscuous Coupling of G-protein coupled Receptors.* Computers in Biology and Medicine. (2008) **38** 574– 582. (Impact Factor 1.170)
4. Junthorn U, Unai S, Kanthang P, Ngamsaad W, Triampo W, **Modchang C**, Krittanai C, and Lenbury Y. *Single-Particle Tracking Method for Quantitative Tracking and Biophysical Studies of the MinE Protein.* Journal of the Korean Physical Society. (2008) **52(3)**, 639-648. (Impact Factor 1.204)
5. **Modchang C**, Triampo W, Kanthang P, Junthorn U, Unai S, Ngamsaad W, and Nattawut N. *Stochastic modeling of the effect of an external electric field on the Min protein Dynamics in E. coli.* . Journal of the Korean Physical Society. (2008) **53(2)**, 851-862. (Impact Factor 1.204)
6. Leelawattanachai J., **Modchang C**., Triampo W*, Triampo D., Lenbury Y. *Modeling and genetic algorithm optimization of early events in signal transduction via dynamics of G-protein-coupled receptors: internalization consideration.* Appl. Math. Comput. (2009) **207(2)**, 528-544. **(as a co-first author)** (Impact Factor 0.821)
7. Unai S., Kanthang P., Junthon U., Ngamsaad W., Triampo* W., **Modchang C.**, Krittanai C., *Quantitative analysis of time-series fluorescence microscopy using a spot tracking method: application to Min protein dynamics.* Biologia (2009) **64(1),** 27-42. (Impact Factor 0.207)

8. Sriyab S., Yojina J., Ngamsaad W., Kanthang P., **Modchang C.**, Nuttavut N., Lenbury Y., Krittanai C., Triampo W. *Mesoscale modeling technique for studying the dynamics oscillation of Min protein: Pattern formation analysis with lattice Boltzmann method*. Computers in Biology and Medicine (Impact Factor 1.170), Computers in Biology and Medicine. (2009) **39** 412-424 (Impact Factor 1.170)**.**
9. **Charin Modchang**, Suhita Nadkarni, Wannapong Triampo, Herbert Levine, Wouter-Jan Rappel. *A comparison of deterministic and stochastic simulations of neuronal vesicle release models*. ***Submitted*** **(2009)**
10. Waipot Ngamsaad, Paisan Kanthang, **Charin Modchang**, Somchai Sriyab, Wannapong Triampo. *The Effect of Boundary Conditions on Mesoscopic Lattice Boltzmann Method: case Study of a Reaction-Diffusion Based Model for Min-Protein Oscillation*. ***Submitted*** **(2009)**
11. Apiwat Wisitsorasak,Wannapong Triampo, Darapond Triampo, **Charin Modchang**, Yongwimon Lenbury. *Stochastic biophysical model of heterodimerization of receptors: Monte Carlo simulations.* ***Submitted*** **(2009)**

7. Research Work Presented in Conferences, Seminars and Proceedings

1. **Modchang C**, and Triampo W. *Modeling of the Dynamic Pole-to-pole Oscillations of the Min Proteins in Bacterial Cell Division: the Effect of an External Field.* The sixth Science Project Exhibition, Faculty of Science, Mahidol University, Thailand, 15 Mar 2005.
2. **Modchang C**, and Triampo W. *Deterministic and Stochastic Modeling of Mechanism for Compartmentalization Involved in Bacteria Division Processes: E. Coli & L. interrogans.* The Third Industrial and Research Projects for Undergraduate Students, Bangkok, Thailand, 1 – 3 May 2005.
3. Ngamsaad W, Triampo W, Kanthang P, Tang IM, Nuttawut N, **Modchang C**, and Lenbury Y. *A Lattice Boltzmann Method for Modeling Min Proteins Oscillation in Escherichia coli*. Proceedings of the International Conference in Mathematics and Applications, 15-17 December 2005 Chaophya Park Hotel, Bangkok, Thailand.

4. **Modchang C**, Triampo W, and Lenbury W. *Mathematical Model Investigations of Signal Transduction via G-Protein Coupled Receptors: Trafficking and Promiscuous Coupling of Receptors.* International Conference in Mathematics and Applications 2007, Bangkok, Thailand, 15 – 17 Aug 2007
5. Leelawattanachai J, Triampo W, **Modchang C**, and Lenbury Y. *Modeling of Signal Transduction via Dynamics of G-Protein-Coupled Receptors: Internalization Consideration.* International Conference in Mathematics and Applications 2007, Bangkok, Thailand, 15 – 17 Aug 2007
6. **Modchang C**, Triampo W, and Lenbury Y. *A Stochastic Model of Min Protein Oscillations in Escherichia Coli: the Effect of an External Electric Field.* 33rd Congress on Science and Technology of Thailand, Nakhon Si Thammarat, Thailand, 18 – 20 Oct 2007
7. Junthorn U, Unai S, Kanthang P, Ngamsaad W, Triampo W, **Modchang C**, Krittanai C, and Lenbury Y. *How to track MinE protein oscillations in Escherichia coli.* 33rd Congress on Science and Technology of Thailand, Nakhon Si Thammarat, Thailand, 18 – 20 Oct 2007.

8. Books

1. Randall I. Charles, Warren Crown and Francis Fennell, **Scott Foresman-Addison Wesley Mathematics: Book 6 Volume 1,** Pearson Education Indochina LTD.

แปลและเรียบเรียง: ผศ.ดร. วีระชัย สิริพันธ์วราภรณ์ ผู้ช่วยแปลและเรียบเรียง: **ชรินทร์ โหมดชัง** และ ธนาวุฒิ วัฒนปรีชากิจ

9. Research Interests

- Computational and Theoretical Biophysics
- Biophysical Modeling and Monte Carlo Simulations in Signal Transductions
- Genetic Algorithm and Optimization
- Pattern Formation and Proteins Oscillation in *E. coli*
- Effect of Electric Field on Biological Systems
- Random Walk

10. Computer Skills

- Programming: C, C++, Matlab, Mathematica
- Operating Systems: Windows, Linux
- Software: TeX, LaTeX, MS Office, Adobe Photoshop, ImageJ, Image Pro, gnuplot, Macromedia Flash, Macromedia Dreamweaver

11. Academic References

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