THE UNIVERSITY OF BRITISH COLUMBIA

加拿大不列颠哥伦比亚大学

Yue-Xian Li 李躍先， Ph.D. 博士， Professor 教授
Mathematics Department and Zoology Department
數學系和動物系
University of British Columbia
Vancouver, B.C. Canada V6T 1Z2

Tel: 1-604-822-6225
Fax: 1-604-822-6074
E-mail: yxli@math.ubc.ca
www.math.ubc.ca/~yxli

Present affiliation

Mathematics Department and Zoology Department 1997-
University of British Columbia
Room 121 – 1984 Mathematics Road
Vancouver, BC, Canada V6T 1Z2

Education and Experience

UC Davis, USA.	Postdoc	1996-97
NIH, Mathematics Research Branch, USA	Postdoc	1992-96
Free University of Brussels, Belgium	Ph.D.	1992
Institute of Biophysics, Chinese Academy, China	M.S.	1985
U of Science & Technology Of China, China	B.S.	1982

Research Interest

Applied Mathematics
- Nonlinear systems of ordinary differential equations
- Nonlinear partial and integral differential equations
- Analytical, qualitative, & numerical methods for analyzing nonlinear systems

Applications
- Neuroendocrinology, cell physiology, neuroscience
- Pattern formation in biological systems:
  - -- Temporal patterns: oscillations, rhythms, phase dynamics, networks, synchronization
  - -- Spatial patterns: Turing patterns, social aggregates (school formation)
  - -- Spatio-temporal patterns: traveling waves, waves in non-homogeneous media

Publications

1. Li, Y.X., D.F. Ding, and J.H. Xu, Chaos and other temporal self-organization patterns in coupled enzyme-catalyzed systems. *Commun. Theor. Phys. (Beijing)* (1984) 3:629-638.

2. Goldbeter, A., O. Decroly, Y.X. Li, J.L. Martiel, and F. Moran, Finding complex oscillatory phenomena in biochemical systems. An empirical approach, *Biophys. Chem.* (1988) 29:211-217.

3. Li, Y.X., and A. Goldbeter, Oscillatory isozymes as the simplest model for coupled biochemical oscillators, *J. Theor. Biol.* (1989) 138:149-174.

4. Li, X.Y., and A. Goldbeter, Frequency specificity in intercellular communication. Influence of patterns of periodic signaling on target cell responsiveness, *Biophys. J.,* (1989) 55:125-145.

5. Goldbeter, A., and Y.X. Li, Frequency encoding in intercellular communication, In*: Cell to Cell Signaling: From Experiments to Theoretical Models*. A. Goldbeter, ed. Academic Press, London, (1989) 415-432.

6. Li, Y.X., Conditions for the occurrence of degeneracy between Turing and phase instabilities, *Phys. Lett. A* (1990). 147:204-208.

7. Li, Y.X., and A. Goldbeter, Frequency encoding of pulsatile signals of cAMP based on receptor desensitization in *Dictyostelium* cells, *J.Theor. Biol.* (1990) 146:335-367.

8. Halloy, J., Y.X. Li, J.L. Martiel, B.Wurster, and A. Goldbeter, Coupling chaotic and periodic cells results in a period-doubling route to chaos in a model for cAMP oscillations in *Dictyostelium* suspensions, *Phys. Lett. A* (1990) 151:33-36.

9. Goldbeter, A., Y.X. Li, and G. Dupont, Oscillatory dynamics in intercellular communication, *Biomed. Biochim. Acta*, (1990) 49:935-940.

10. Dab, D., J.P. Boon, and Y.X. Li, Lattice gas automata for coupled reaction-diffusion equations, *Phys. Rev. Lett.* (1991) 66(19): 2535-2538.

11. Goldbeter, A., Y. X. Li, and G. Dupont, Periodicity and chaos in cAMP, hormonal and Ca^{2+} signaling. In: *Complex dynamics and biological evolution*. E. Mosekilde, ed. Plenum Press, New York. (1991) 134-143.

12. Li, Y.X., and A. Goldbeter, Pulsatile signaling in intercellular communication: Periodic stimuli are more efficient than random or chaotic signals in a model based on receptor desensitization, *Biophys. J.* (1992) 61:161-171.

13. Li, Y.X., J. Halloy, J.L. Martiel, B.Wurster, and A. Goldbeter, Suppression of chaos by periodic oscillations in a model for cyclic AMP signaling in *Dictyostelium*, *Experientia*, (1992) 48:603-606.

14. Li, Y.X., J. Halloy, J.L. Martiel, B. Wurster, and A. Goldbeter, Switching between chaos, periodic oscillations and nonoscillatory states through intercellular coupling in a model for cAMP signaling in *Dictyostelium* cells. *Chaos*, (1992) 2(4): 501-512.

15. Li, Y.X., and J. Rinzel, Equations for $InsP_3$ receptor-mediated $[Ca^{2+}]_i$ oscillations derived from a detailed kinetic model: A Hodgkin-Huxley like formalism. *J. Theor. Biol.* (1994) 166:461-473.

16. Li, Y.X., J. Rinzel, J. Keizer, and S.S. Stojilkovic, Calcium oscillations in pituitary gonadotrophs: Comparison of experiment and theory. *Proc. Natl. Acad. Sci. USA*, (1994) 91:58-62.

17. Li, Y.X., J. Rinzel, L. Vergara, and S.S. Stojilkovic, Spontaneous electrical and calcium oscillations in pituitary cells, *Biophys. J.* (1995) 69:785-795.

18. Li, Y.X., J. Keizer, S.S. Sotjilkovic, and J. Rinzel, Calcium excitability of the endoplasmic reticulum membrane: An explanation for $InsP_3$-induced Ca^{2+} oscillations, *Am. J. Physiol. (Cell Physiol.)* (1995) 296:C1079-1092.

19. Keizer, J., Y.X. Li, S.S. Sotjilkovic, and J. Rinzel, $InsP_3$-induced Ca^{2+} excitability of the endoplasmic reticulum, *Mol. Biol. Cell* (1995) 6:945-951.

20. Li, Y.X., R. Bertram, and J. Rinzel, Modeling N-Methyl-D-Aspartate-induced bursting in dopamine neurons, *Neuroscience,* (1996) 71:397-410.

21. Rinzel, J., J. Keizer, and Y.X. Li, Modeling plasma membrane and endoplasmic reticulum excitability in pituitary cells, *Trends Endocrinol. Metabol.,* (1996) 7:388-393.

22. Li, Y.X., S.S. Stojilkovic, J. Keizer, and J. Rinzel, Sinsing and refilling calcium stores in an excitable cell, *Biophys. J.* (1997) 72:1080-1091.

23. Wagner, J., Y.X. Li, J. Pearson, and J. Keizer, Simulation of the fertilization Ca^{2+} waves in *Xenopus laevis* eggs, *Biophys. J.* (1998) 75:2088-2097.

24. Zhang, X., J. Audet, J. Piret, and Y.X. Li. Cell cycle distribution of primitive hematopoitic cells stimulated in vitro and in vivo. *Blood Proliferation* (2001) 34(5):321-330.

25. Van Goor, F., Y.X. Li, and S. Stojilkovic, Paradoxical role of large conductance calcium-activated K^+ (BK) channels in controlling action potential-driven Ca^{2+} entry in anterior pituitary cells. *J. Neurosci*. (2001) 21:5902-5915.

26. Sherman, A., Y.X. Li, J. Keizer (2002). Whole Cell Models In: *Computational Cell Biology*, Ed. C. Fall, E. Marland, J. Tyson, J. Wagner. pp. 101-139.

27. Y.X. Li, Y.Q. Wang, and R. Miura, Clustering in small networks of excitatory neurons with heterogeneous coupling strengths. J. Comp. Neurosci. (2003) 14:139-159.

28. Y.Q. Wang, Z.D. Wang, Y.X.Li, and X. Pei. Synchronous phase clustering in a network of neurons with spatially decaying excitatory coupling. *J. Phys. Soc. Japan* (2003) 72:443-447.

29. Y.X. Li. Clustering in neural networks with heterogeneous and asymmetric coupling strengths. *Physica D (2003)* 180:210-234.

30. A.E Desjardin, Y.X. Li, S. Reinker, R. Miura, R. Neuman. The influence of Ih on temporal summation in hippocampal CA1 pyramidal neurons: a modeling study. *J.Comp. Neurosci.* (2003) 15:131-142.

31. Y.X. Li. Tango waves in a bidomain model of fertilization calcium waves. *Physica D* (2003) 186:27-49.

32. A.Prat and Y.X. Li. Stability of front solutions in inhomogeneous media. *Physica* D (2003) 186:50-68.

33. Bressloff, Folias, Prat, Li. Oscillatory waves in inhomogeneous neural media. *Phys. Rev. Lett*. (2003) 91:178101-178104.

34. A.Prat, Y.X. Li, and P. Bressloff. Stability of front solutions in inhomogeneous media. *Physica D* (2005) 202:177-199.

35. S. Reinker, Y.X. Li, and R. Kuske. Noise-induced coherence and network oscillations in a reduced bursting model. *Bull. Math. Biol.* (2006) 68:1401-1427.

36. A. Khadra and Y.X. Li. A model for the pulsatile secretion of gonadotropin-releasing hormone from synchronized hypothalamic neurons. *Biophys. J*. (2006) 91:74-83.

37. N. Yu, R. Kuske, and Y.X. Li. Stochastic phase dynamics: multi-scale behavior and coherence measures. Phys. Rev. E. (2006). 73:056205.

38. A. Khadra and Y.X. Li. A model for the pulsatile secretion of gonadotropin-releasing hormone from synchronized hypothalamic neurons. *Biophys. J*. (2006) 91:74-83.

39. N. Yu, R. Kuske, Y.X. Li. Stochastic phase dynamics and noise-induced mixed-mode oscillations in coupled oscillators. *Chaos,* (2008) 18: 015112.

40. Y.X. Li, R. Lukeman, L. Keshet. Minimal mechanisms for school formation in self-propelled particles. *Physica D* (2008) 237:699-720.

41. Y.X. Li, A. Khadra. Robust synchrony and rhythmogenesis in endocrine neurons via autocrine regulations in vitro and in vivo. *Bull. Math. Biol.* (2008) 70:2103-2125.

42. R. Bertram, Y.X. Li. A Mathematical model for the actions of activin, inhibin, and follistatin on pituitary gonadotrophs. *Bull. Math. Biol.* (2008) 70:2211-2228.

43. R. Lukeman, Y.X. Li, and L. Keshet. A conceptual model for milling formations in biological aggregates. *Bull. Math. Biol.* (2009) 71:352-382.

44. P. Fletcher and Y.X. Li. A minimal model electrical spiking, bursting, and calcium oscillations in GnRH neurons. *Biophys. J.* (2009) 96:4514-4524.

45. N. Yu, Y.X. Li, and R. Kuske. Spike Time Reliability in Two Cases of Threshold Dynamics.