

## Hang Yu

Theoretical and Computational Biophysics Group  
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### Education

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| Jul 2008- Present  | Ph.D. candidate, Biophysics / Computational Biology.<br>University of Illinois, Urbana-Champaign.  |
| Jul 2003- Jul 2007 | BS. Honors, Biology / Computing.<br>Nanyang Technological University, Singapore.<br>Specialization: Computational Biomolecule Simulation.  |
| Nov 2002- Jul 2003 | Education Program for Gifted Youth (Accelerated Program).<br>National Institute of Education, Singapore.<br>Specialization: Math, Physics. |

### Research Experience

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| Jul 2008- Present  | Research Assistant.<br>Theoretical and Computational Biophysics Group, UIUC.<br>Computational simulation analysis of membrane curvature protein (BAR domain proteins). |
| Jul 2007- Jul 2008 | Project Officer.<br>Nanyang Technological University, Singapore.<br>Computational simulation analysis of DNA condensation in presence of histone tails.                |
| Nov 2003- Jul 2007 | Research Programs.<br>Nanyang Technological University, Singapore.<br>Research experience in Biochemistry, Virology and Computational Simulation.                      |

### Publication

Yu, H., Mu, Y., Nordenskiöld, L., and Stock, G. (2008). Influence of Nitroxide Spin Labels on RNA Structure: A Molecular Dynamics Simulation Study. *Journal of Chemical Theory and Computation* 4(10), 1781-1787.

Marko, A., Margraf, D., Yu, H., Mu, Y., Stock, G., and Prisner, T. (2009). Molecular orientation studies by pulsed electron-electron double resonance experiments. *The Journal of Chemical Physics* 130(6), 064102.

## Fellowship and Awards

- Jul 2008- Dec 2008 Eugene Rabinowitch Graduate Fellowship.  
Department of Biophysics / Computational Biology, UIUC.
- Jul 2008- Dec 2008 President Research Scholarship.  
Nanyang Technological University, Singapore.
- Jul 2008- Dec 2008 Deanlist Student (3 consecutive years).  
Nanyang Technological University, Singapore.
- Jul 2003- Dec 2007 Undergraduate Scholarship.  
Ministry of Education, Singapore.

## Research Accomplishments

**BAR Domain Protein Curve Cellular Membrane** with Anton Arkhipov, Ying Yin and Klaus Schulten. Living cells need to maintain curvature at cell membrane and vesicles. One mechanism that cells employ is to use BAR domain protein to maintain curvature of membrane. We are currently investigating the curvature process by multi-scale simulation of large membrane protein complex at different resolutions, to find out exact mechanism of membrane curvature formation.

**Structural influence of spin label on RNA duplex** with Yuguang Mu and Lars Nordenskiöld. EPR is a common technique for nucleic acid conformation detection. Spin labelling on RNA is required for it to be detected by EPR. By computational simulation with a more realistic forcefield for spin label, we proved that spin labelling affect RNA conformation that is detected under EPR.

**DNA condensation in presence of histone tails** with Nikolay Korolev and Lars Nordenskiöld. Living cells employ special techniques to compact DNA by 10,000 fold into nucleus. One technique is to use positively charged histone tails to compact DNA around histone. With all atom computer simulation of DNA with histone tail fragments, we showed that positively charged histone tails, together with potassium ions, increase DNA compaction significantly by electrostatic interactions.

## Computer Skills

Computer Languages:

Efficient: C/C++, Tcl, awk, MPI/AMPI, Unix shell scripts, HTML, Microsoft Office.  
Common: Java, Perl, OpenMP.

Molecular Dynamics Simulations packages: VMD, NAMD.

Operating Systems: Unix/Linux, MacOSX, Windows.