

# Nan Song

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## Education

- Carnegie Mellon University, Pittsburgh, PA, USA** 2001-present
- Ph.D. candidate, Computational Biology *Advisor: Dannie Durand*
  - M.S. candidate, Machine Learning *Advisor: John Lafferty*
- Michigan State University, Lansing, MI, USA** 2000-2001
- Research Assistant, Molecular Biology
- Cancer Institute, Chinese Academy of Medical Science, Beijing, China** 1997-2000
- M.S., Oncology *Advisor: Dongxin Lin*
- Nankai University, Tianjin, China** 1993-1997
- B.S., Biochemistry and Molecular Biology

## Research Experience

Graduate Research Assistant, Carnegie Mellon University, Pittsburgh, PA 2002-Present

### Homologous protein identification

- **Comparison of protein neighborhood** - developed a new computational method to identify homologs by utilizing protein similarity graph structure information. This new method outperforms the traditional methods which are based only on protein similarity.
- **Comparison of domain architecture** - developed several schemes to explicitly compare domain architectures. The results demonstrate the importance of both weighting critical domains and of compensating for proteins with large numbers of domains.
- **Classification of proteins** - applied various semi-supervised, supervised and unsupervised methods to classify proteins into families. The results indicate that the semi-supervised classification method has a good performance.

Graduate Research Assistant, Michigan State University, Lansing, MI Sep-Dec 2000

- **Evaluation of the scoring function of protein ligand docking** - analyzed the correct versus incorrect docking ligands for thrombin. The results indicate that RMSD is not a smoothly varying variable for comparing scores as a function of the correctness of docking.

Graduate Research Assistant, Cancer Institute, Beijing, China Sep 1997-Jul 2000

- **Identification of genetic susceptibility factors of lung cancer** - determined the association of polymorphism of genes CYP1A1, CYP2E1, GSTs and hOGG1 and susceptibility of lung cancer. Investigated the mechanisms of cancer predisposition by analyzing DNA-adduct and protein expression

## Teaching Experience

Teaching Assistant, Carnegie Mellon University, Pittsburgh, PA

- Modern Biology Jan 2004 - May 2004
- Computational Molecular Biology and Genomics Aug 2004 - Dec 2004

## **Skills**

- Computer: Java, Perl, Python, MATLAB, MySQL, HTML; Unix, Linux, Windows.
- Statistical Software: R/Splus.
- Experimental Molecular Biology: Gene cloning, protein expression and cell culture

## **Honors**

- Mellon College of Science's Graduate Student Travel Award, 2006
- The honor society of PHI KAPPA PHI, 2005
- Merck Graduate Fellow, 2003
- Second Prize in the 2nd National Conference of Oncologists, 1999
- FuDan-TanJiaZhen scholarship, 1999
- Nankai University outstanding student award, 1994, 1997
- Academic Scholarship of Nankai University, 1994, 1995

## **Selected publications**

- Song N.**, Davis G., Durand D. Homology identification for multi-domain proteins. (In preparation)
- Song N.**, Sedgewick R., and Durand D. Domain architecture in homology identification (Lecture Notes in Bioinformatics. In press.)
- Przytycka T., Davis G., **Song N.** and Durand D. Graph theoretical insights into evolution of multidomain proteins. *J Comput Biol.*, 2006, 13(2):351-63
- Song N.**, Tan W., Xing D., Lin D. CYP1A1 polymorphism and risk of lung cancer in relation to tobacco smoking: case-control study in China. *Carcinogenesis*, 2001, 22(1):11-6
- Xing D., Tan W., **Song N.**, Lin D. Ser326Cys polymorphism in hOGG1 gene and risk of esophageal cancer in a Chinese population. *Int J Cancer*, 2001, 95(3):140-3.
- Tan. W., **Song N.**, Wang G., Liu Q., Tang H., Kadlubar F., Lin D. Impact of genetic polymorphisms in cytochrome P450 2E1 and glutathione S-transferases M1, T1, and P1 on susceptibility to esophageal cancer among high-risk individuals in China. *Cancer Epidemiol Biomarkers Prev.*, 2000, 9(6):551-6.