

Shuning (Annie) Gai

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Curriculum Vitae

Education

- 9/2004 – present **Massachusetts Institute of Technology** (Cambridge, Massachusetts)
Degree objective: Ph.D. in Chemical Engineering
- 9/2000 – 6/2004 **Stanford University** (Stanford, California)
B.S. in Chemical Engineering; minor in Biological Sciences
- 3/2003 – 6/2003 **Stanford-in-Berlin** (Berlin, Germany)

Research Experience

- 7/2004 – present **MIT, Chemical Engineering** (Cambridge, Massachusetts)
Advisor: Prof. K. Dane Wittrup
Interleukin-2 engineering.
- 1/2002 – 6/2004 **Stanford University, Chemical Engineering** (Stanford, California)
Advisor: Prof. Camilla Kao
Rational engineering of antibiotic-overproducing *Streptomyces coelicolor* through gene expression analysis using DNA microarrays.
- 6/2003 – 9/2003 **Max Planck Institute for Polymer Research** (Mainz, Germany)
Advisor: Prof. Dr. Wolfgang Knoll
Characterization of DNA and DNA polymerase interactions using surface plasmon fluorescence spectroscopy.
- 6/1999 – 9/1999 **Oregon State Univ., Chemical Engineering** (Corvallis, Oregon)
Advisor: Prof. Skip Rochefort
Evaluation of synthetic replacements for hyaluronic acid.

Poster Presentations

- B.M. Rao, I. Driver, S. Gai, D. Lauffenburger, K.D. Wittrup. "High-affinity CD25-binding IL-2 mutants potently stimulate persistent T-Cell growth." *Basic Aspects of Tumor Immunotherapy*. Keystone, Colorado (March 2005).
- S. Gai, N. Karoonuthaisiri, C.-H. Huang, S.N. Cohen, V. Molle, M.A. Elliot, M.J. Buttner, C.M. Kao. "Analysis of *Streptomyces coelicolor* sigma factors using DNA microarrays." *Society for Industrial Microbiology's Conference on the Biotechnology of Microbial Products*. Honolulu, Hawaii (October 2002).

Publications

D. Weaver, N. Karoonuthaisiri, H.-H. Tsai, C.-H. Huang, M. Ho, S. Gai, K.G. Patel, J. Huang, S.N. Cohen, D.A. Hopwood, C.W. Chen, C.M. Kao. "Genome plasticity in *Streptomyces*: identification of 1-Mb TIRs in the *S. coelicolor* A3(2) chromosome." *Mol Microbiol.* **51**: 1535-1550 (2004).

D. Weaver, N. Karoonuthaisiri, S. Gai, M. Ho, C.M. Kao. "Evolution of *Streptomyces* genomes: How and why did *Streptomyces coelicolor* acquire 7% of its chromosome by recent horizontal gene transfers?" Manuscript in preparation.

N. Karoonuthaisiri, S. Gai, C.M. Kao. "Antibiotic overproduction by *Streptomyces coelicolor* after osmotic upshifts." Manuscript in preparation.

Awards & Honors

National Science Foundation Graduate Research Fellowship (2004)

Stanford University President's Scholar (2000)

Intel Science Talent Search semifinalist (2000)