

Curriculum Vitae -- YI TANG

Assistant Professor, Department of Chemical and Biomolecular Engineering, University of California, Los Angeles
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PROFESSIONAL EXPERIENCES

Assistant Professor, University of California, Los Angeles **2004 to current**
Department of Chemical and Biomolecular Engineering

EDUCATION

NIH Postdoctoral Fellow, Stanford University **2002-2004**
Ph.D., Chemical Engineering, California Institute of Technology **1997-2002**
B.Sc., Chemical Engineering, Material Science and Engineering, Pennsylvania State University **1994-1997**

AWARDS AND HONORS

The David and Lucile Packard Foundation Fellowship (2007)
UCLA Faculty Career Development Award (2007)
Presidential Early Career Award in Science and Engineering (PECASE) (2006)
National Science Foundation CAREER Award (2006)
UCLA AIChE Student Chapter Professor of the Year Award (2005, 2006)
American Heart Association National Scientist Development Grant Award (2005-2009)
National Research Service Award, National Institute of Health (2002-2004)
Whitaker Graduate Research Fellowship in Biomedical Engineering (1997-2002)
Caltech 10K Business Plan Competition Winner (2000)
Constantin Economou Award for Excellency in Graduate Research (1999)
Elizabeth and Holmes Memorial Scholarship (1993-1997)
Dow Chemical Co. Outstanding Student in Material Science and Engineering (1995)
The 1934 Penn State Alumni Scholarship Award (1995)

PUBLICATIONS

30. Zhang, W., Watanabe, K., Cai, X., Jung, M. E., Tang, Y., Zhan, J. "Identifying the Minimal Enzymes Required for Anhydrotetracycline Biosynthesis." **2008, submitted.**
29. Zhou, H., Zhan, J., Watanabe, K., Xie, X., Tang, Y. "A Polyketide Macrolactone Synthase from the Filamentous Fungus *Gibberella zeae*." **2008, Proc. Natl. Acad. Sci. USA**, in press.
28. Ames, B., Korman, T., Zhang, W., Smith, P., Vi, T., Tang, Y., Tsai, S-C. "Crystal Structure and Functional Analysis of Tetracenomycin ARO/CYC: Implications for Cyclization Specificity of Aromatic Polyketides." **2008, Proc. Natl. Acad. Sci. USA**, in press.
27. Ma, S. M., Zhan, J., Xie, X., Watanabe, K., Tang, Y., Zhang, W. "Redirecting the Cyclization Steps of Fungal Polyketide Synthase." *J. Am. Chem. Soc.* **2008**, 130, 38-39.
26. Zhang, W., Tang, Y., "Combinatorial Biosynthesis of Natural Products" *J. Med. Chem.* **2008**, in press. (Invited peer-reviewed submission)
25. Ma, S. M., Zhan, J., Watanabe, K., Xie, X., Zhang, W., Wang, C. C. C., Tang, Y. "Enzymatic Synthesis of Novel Polyketide using PKS4 from *Gibberella fujikuroi*." *J. Am. Chem. Soc.* **2007**, 129, 10642-10643.
24. Zhang, W., Wilke, B. I., Zhan, J., Watanabe, K., Boddy, C. N., Tang, Y. "A New Mechanism for Benzopyrone Formation in Aromatic Polyketide Biosynthesis." *J. Am. Chem. Soc.* **2007**, 129, 9304-9305.
23. Zhang, W., Watanabe, K., Wang, C. C. C., Tang, Y. "Investigation of Unique Early Tailoring Reactions in the Oxytetracycline Biosynthetic Pathway." *J. Biol. Chem.* **2007**, 282, 25717-25725.
22. Xie, X., Wong, W. W., Tang, Y. "Improving Simvastatin Bioconversion in *Escherichia coli* by Deletion of *bioH*." *Metab. Eng.* **2007**, 9, 379-386.

Curriculum Vitae -- YI TANG

21. Ma, S. M., Tang, Y. "Biochemical Characterization of the Minimal Polyketide Synthase Domains in the Lovastatin Nonaketide Synthase LovB." *FEBS J.* **2007**, 274, 2854–2864.
20. Xie, X., Tang, Y. "Efficient Synthesis of Simvastatin Using Whole-Cell Biocatalysis." *Appl. Environ. Microb.* **2007**, 73, 2054-2060.
19. Zhang, W., Watanabe, K., Wang, C. C. C., Tang, Y. "Heterologous Biosynthesis of Amidated Polyketides with Novel Cyclization Regioselectivity from Oxytetracycline Polyketide Synthase" *J. Nat. Prod.* **2006**, 69, 1633-1636.
18. Xie, X., Watanabe, K., Wojcicki, W. A., Wang, C. C. C., Tang, Y. "Biosynthesis of lovastatin analogs with a broadly specific acyltransferase." *Chem. Biol.* **2006**, 13, 1161-1169.
17. Zhang, W., Ames, B., Tsai, S-C., Tang, Y., "Tetracycline Biosynthesis: Sequencing of the Oxytetracycline Gene Cluster and Reconstitution of the Malonomyl-Specific Initiation module." *Appl. Environ. Microb.* **2006**, 72, 2573-2580.

16. Tang, Y. Lee, H.Y., Tang, Y., Kim, C-Y., Mathews, I. and Khosla, C. "Structural and Functional Studies on SCO1815: A -Ketoacyl-Acyl Carrier Protein Reductase from *Streptomyces coelicolor* A3(2)." *Biochemistry*, **2006**, 45, 14085-14093.
15. Lee, T. S.* , Khosla, C., Tang, Y.* "Orthogonal Protein Interactions in Spore Pigment Producing and Antibiotic Producing Type II Polyketide Synthases." *J. Antibiotics*, **2005**, 58, 664-667.
14. Lee, T. S.* , Khosla, C., Tang, Y.* "Engineered Biosynthesis of Aklanonic Acid Analogs." *J. Am. Chem. Soc.*, **2005**, 127, 12254-12262.
13. Khosla, C., Tang, Y., "Chemistry. A new route to designer antibiotics." *Science* **2005**, 308, 367-368.
12. Tang, Y., Koppisch, A., Khosla, C. "The Acyltransferase Homolog Found in Initiation Modules of Type II PKS is an Acetyl-ACP Thiolase that Suppresses Acetate-Priming of the KS-CLF." *Biochemistry* **2004**, 43, 9546-9555.
11. Tang, Y., Lee, T. S., Lee, H. Y., Khosla, C. "Exploring the Biosynthetic Potential of Bimodular Aromatic Polyketide Synthases." *Tetrahedron*, **2004**, 7659-7671.
10. Kumar, P.* , Khosla, C., Tang, Y.* "Manipulation and Analysis of Polyketide Synthases." *Methods in Enzymology Volume 388: Protein Engineering* **2004**, 269-293.
9. Tang, Y., Lee, T. S., Khosla, C. "Engineered Biosynthesis of Regioselectively Modified Aromatic Polyketides Using Bimodular Polyketide Synthases." *PLoS Biol.* **2004**, 2, 227-237.
8. Tang, Y., Tsai, S. C., Khosla, C. "Polyketide Chain Length Control by Chain Length Factor." *J. Am. Chem. Soc.* **2003**, 125, 12708-12709.
7. Tang, Y., Lee, T. S., Kobayashi, S., Khosla, C. "Ketosynthases in the Initiation and Elongation Modules of Aromatic Polyketide Synthases Have Orthogonal Acyl-Carrier Protein Specificity." *Biochemistry* **2003**, 42, 6588-6595.
6. Cirino, P.C , Tang, Y., Takahashi, K., Tirrell, D. A., Arnold, F. H. "Global Incorporation of Norleucine in Place of Methionine in Cytochrome P450 BM-3 Heme Domain Increases Peroxygenase Activity." *Biotechnol Bioeng.* **2003**, 20, 729-734.
5. Wang, P., Tang, Y., Tirrell, D. A., "Incorporation of Trifluoroisoleucine into Proteins In Vivo." *J. Am. Chem. Soc.* **2003**, 125, 6900-6906.
4. Tang, Y., Tirrell, D. A. "Attenuation of Leucyl-tRNA Synthetase Proofreading Activity in *Escherichia coli* Allows Introduction of An Array of Unnatural Amino Acids in vivo." *Biochemistry* **2002**, 41, 10635-10645.
3. Tang, Y., Tirrell, D. A. "Biosynthesis of Highly Stable Coiled-coils Containing Hexafluoroisoleucine Using an Engineered Bacterial Host." *J. Am. Chem. Soc.* **2001**, 123, 11089-11090.
2. Tang, Y., Ghirlanda, G., Petka, W. A., Nakajima, T., W. A., DeGrado, W. F., Tirrell, D. A. "Fluorinated Coiled-coils Prepared in vivo Display Enhanced Thermal and Chemical Stability." *Angew. Chem. Int. Ed.* **2001**, 40, 1494-1497.
1. Tang, Y., Ghirlanda, G., Vaidehi, N., Kua, J., Mainz, D. T., Goddard, W. A., DeGrado, W. F., Tirrell, D. A. "Stabilization of Leucine Zipper Coiled-coils using Trifluoroisoleucine." *Biochemistry* **2001**, 40, 2790-2796.

Curriculum Vitae -- YI TANG

BOOK CHAPTERS

4. Zhang, W., Ferreira, J. P., Tang, Y. "Regulation of Secondary Metabolism Biosynthesis." In: Smolke, C.D., ed. *Handbook for Metabolic Pathway Engineering*. CRC Press. **2006** Submitted.
3. Tang, Y.; Ma, S.M; Wojcicki, W. A. "Applications of Metabolic Engineering for Natural Drug Discovery." In: Smolke, C.D., ed. *Handbook for Metabolic Pathway Engineering*. CRC Press. **2006** Submitted.
2. Zhang, W., Tang, Y., "Engineering Starter Units in Aromatic Polyketides." In ACS Volume Based on *Polyketides: Biosynthesis, Biological Activity and Genetic Engineering*. eds S. R. Baerson; American Chemical Society, **2006**.
1. Tang, Y., Khosla, C., "Diversity from Mother Nature: natural and unnatural products." In *Exploiting Chemical Diversity for Drug Discovery*, eds P. Bartlett and M. Entzeroth; Royal Society of Chemistry, **2006**.

PATENT APPLICATIONS

2. Xie, X., Tang, Y. "A One Step Fermentation Process to Produce Simvastatin" PCT Int. Appl. WO2007/139871, **2007**
1. Tang, Y., Khosla, C. "Production of aromatic polyketides using recombinant polyketide synthases and recombinant acyl carrier protein priming module." PCT Int. Appl. WO2006/045063, **2006**

INVITED TALKS

13. *Department of Chemical Engineering*, University of California, Irvine, Jan **2008**
12. *Department of Chemical Engineering*, California Institute of Technology, Dec **2007**
11. *Biomedical Engineering Society Annual Meeting*, Los Angeles, CA, Aug **2007**
10. *Iterative Polyketide Conference*, University of Alberta, July, **2007**
9. *School of Chemical Engineering*, Tianjin University, Tianjin, China , Jan, **2007**.
8. *Chemistry Department, University of California, Los Angeles*, Dec, **2006**.
7. *NSF workshop on the "Fundamentals of Transport, Pollution and Energy Processes"*, University of New Hampshire, Durham NH, Aug, **2006**.
6. *Shanghai Jiaotong University*, Shanghai, China, Jun, **2006**.
5. *Tongji University* , Shanghai, China, Jun, **2006**.
4. *New York Academy of Sciences Chemical Biology Discussion Group*, New York, Nov, **2005**.
3. *Polyketide-NRPS Annual Meeting*, Santa Cruz, CA, **2005**.
2. *ACS 2005 Spring National Meeting*, San Diego, CA, **2005**.
1. *Department of Material Science*, Nagoya Institute of Technology, Nagoya, Japan, **2000**.

REVIEWER

Journal of the American Chemical Society

Proceedings of the National Academy of Science

Chemistry and Biology

FEBS Journal

Metabolic Engineering

Bioinformatics

Biotechnology Progress

Bioorganic and Medicinal Chemistry

Molecular Pharmaceutics

ChemBioChem

NSF SBIR, CAREER and CBET panels

NIH Synthetic and Biological Chemistry B (SBCB) *ad hoc* member, Oct 2007