Research interests in Khosla's laboratory lie at the interface of enzyme chemistry and medicine. For the past several years, we have investigated the catalytic mechanisms of modular megasynthases such as polyketide synthases, with the concomitant goal of harnessing their programmable chemistry for preparing pharmaceutically relevant natural products. Recent accomplishments include methods for heterologous production of polyketides; genetically reprogrammed biosynthesis of anthraquinones and polypropionates; and chemo-biosynthesis of new polyketides not readily affordable by synthetic or biological methods alone. These methodologies are already finding practical use. At the same time, we have placed a major emphasis on the biochemistry and structural biology of these giant protein assemblies. Fundamental insights into assembly line biosynthetic mechanisms have emerged, including the finding that protein-protein interactions play a central role in intermodular communications. In turn, these insights are highlighting opportunities for enhancing the efficiency of biosynthetic engineering. Over the next decade we envision that the predictive power of polyketide biosynthetic engineering will mature analogous to current protein engineering capabilities.

More recently, we have investigated the pathogenesis of Celiac Sprue, an HLA-DQ2 associated inflammatory disease of the small intestine that is induced by exposure to gluten from foodgrains such as wheat, rye and barley. Within the past few years, we have explored three potential therapeutic strategies for this widespread but overlooked disease. By dissecting the unique chemical features of gluten, we discovered an intimate link between proteolytic stability and immunotoxicity of gluten, and translated this knowledge into the design of an oral enzyme therapy for the disease. We have also synthesized and evaluated mechanism-based inhibitors of human transglutaminase 2, the predominant disease associated auto-antigen, and used them to deduce the high-resolution structure of the antigen-bound protein. Finally, our structural and mechanistic dissection of HLA-DQ2 has been used to design, synthesize and evaluate gluten peptide analogues that selectively inhibit disease associated T cells. We remain committed to the vision that, within the next decade, safe and effective drugs will start having measurable impact on the health of celiac sprue patients.
HONORS AND AWARDS
- Alan T Waterman Award, National Science Foundation (1999)
- Eli Lilly Award in Biological Chemistry, American Chemical Society (1999)
- Pure Chemistry Award, American Chemical Society (2000)
- Fellow, American Association for the Advancement of Science (2006)
- Member, American Academy of Arts and Sciences (2007)
- Arthur C. Cope Scholar Award, American Chemical Society (2009)
- Member, National Academy of Engineering (2009)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS
- Member, National Academy of Engineering (2013 - present)
- Member, American Academy of Arts and Sciences (2013 - present)

PROFESSIONAL EDUCATION
- PhD, California Institute of Technology (1990)

LINKS
- http://www.stanford.edu/dept/chemistry/faculty/khosla/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS
Research interests in this laboratory lie at the interface of chemistry and medicine.

For the past several years, we have investigated the catalytic mechanisms of modular megasynthases such as polyketide synthases, with the concomitant goal of harnessing their programmable chemistry for preparing new antibiotics. Recent accomplishments include methods for heterologous production of polyketides; genetically reprogrammed biosynthesis of anthraquinones and polypropionates; and chemo-biosynthesis of new polyketides not readily affordable by synthetic or biological methods alone. These methodologies are already finding practical use. At the same time, we have placed a major emphasis on the biochemistry and structural biology of these giant protein assemblies. Fundamental insights into assembly line biosynthetic mechanisms have emerged, including the finding that protein-protein interactions play a central role in intermodular communications. In turn, these insights are highlighting opportunities for enhancing the efficiency of biosynthetic engineering. Over the next decade we envision that the predictive power of polyketide biosynthetic engineering will mature analogous to current protein engineering capabilities.

More recently, we have investigated the pathogenesis of celiac sprue, an HLA-DQ2 associated autoimmune disease of the small intestine that is induced by exposure to gluten from foodgrains such as wheat, rye and barley. Within the past few years, we have explored three potential therapeutic strategies for this widespread but overlooked disease. By dissecting the unique chemical features of gluten, we discovered an intimate link between proteolytic stability and immunotoxicity of gluten, and translated this knowledge into the design of an oral enzyme therapy for the disease. At the same time, we have synthesized and evaluated mechanism-based inhibitors of human transglutaminase 2, the predominant disease associated auto-antigen. Finally, our structural and mechanistic dissection of HLA-DQ2 has been used to design, synthesize and evaluate gluten peptide analogues that selectively inhibit disease associated T cells. We remain committed to the vision that, within the next decade, safe and effective drugs will start having measurable impact on the health of celiac sprue patients.
Teaching

COURSES

2015-16
• Biochemistry I: BIO 188, CHEM 181, CHEMENG 181, CHEMENG 281 (Aut)
• Introduction to Chemical Engineering: CHEMENG 20 (Spr)
• Special Topics in Biocatalysis: CHEMENG 503 (Aut, Win, Spr, Sum)

2014-15
• Biochemistry I: BIO 188, BIO 288, CHEM 181, CHEMENG 181, CHEMENG 281 (Aut)
• Introduction to Chemical Engineering: CHEMENG 20, ENGR 20 (Spr)
• Public Communication of Research: CHEMENG 410 (Aut)
• Special Topics in Biocatalysis: CHEMENG 503 (Aut, Win, Spr, Sum)

2013-14
• Biochemistry I: BIO 188, BIO 288, CHEM 181, CHEMENG 181, CHEMENG 281 (Aut)
• Introduction to Chemical Engineering: CHEMENG 20, ENGR 20 (Spr)
• Special Topics in Biocatalysis: CHEMENG 503 (Aut, Win, Spr, Sum)

2012-13
• Biochemistry I: BIO 188, BIO 288, CHEM 181, CHEMENG 181, CHEMENG 281 (Aut)
• Introduction to Chemical Engineering: CHEMENG 20, ENGR 20 (Spr)
• Special Topics in Biocatalysis: CHEMENG 503 (Aut, Win, Spr, Sum)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor
Nick Cox, Anwesha Goswami, Andrew Hilmer, Yu-Chen Liu, David McCutcheon, Ayse Okesli

Doctoral Dissertation Reader (AC)
Andrew Klein

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS
• Biochemistry (Phd Program)
• Biophysics (Phd Program)

Publications

PUBLICATIONS
• Quo vadis, enzymology? NATURE CHEMICAL BIOLOGY
  Khosla, C.
  2015; 11 (7): 438-441

• Therapeutic approaches for celiac disease BEST PRACTICE & RESEARCH IN CLINICAL GASTROENTEROLOGY
  Plugis, N. M., Khosla, C.
  2015; 29 (3): 503-521

• Therapeutic approaches for celiac disease. Best practice & research. Clinical gastroenterology
  Plugis, N. M., Khosla, C.
In Vitro Reconstitution of Metabolic Pathways: Insights into Nature’s Chemical Logic. *SYNLETT*
Lowry, B., Walsh, C. T., Khosla, C.

Discovery of Potent and Specific Dihydroisoxazole Inhibitors of Human Transglutaminase 2. *JOURNAL OF MEDICINAL CHEMISTRY*
Klocek, C., Herrera, Z., Albertelli, M., Khosla, C.
2014; 57 (21): 9042-9064.

Discovery of potent and specific dihydroisoxazole inhibitors of human transglutaminase 2. *Journal of medicinal chemistry*
Klöck, C., Herrera, Z., Albertelli, M., Khosla, C.
2014; 57 (21): 9042-9064.

Role of hypoxia-induced transglutaminase 2 in pulmonary artery smooth muscle cell proliferation. *AMERICAN JOURNAL OF PHYSIOLOGY-LUNG CELLULAR AND MOLECULAR PHYSIOLOGY*

Role of hypoxia-induced transglutaminase 2 in pulmonary artery smooth muscle cell proliferation. *American journal of physiology. Lung cellular and molecular physiology*

Generation of food-grade recombinant Lactobacillus casei delivering Myxococcus xanthus prolyl endopeptidase. *APPLIED MICROBIOLOGY AND BIOTECHNOLOGY*

Generation of food-grade recombinant Lactobacillus casei delivering Myxococcus xanthus prolyl endopeptidase. *Applied microbiology and biotechnology*

Elucidation of the Cryptic Epimerase Activity of Redox-Inactive Ketoreductase Domains from Modular Polyketide Synthases by Tandem Equilibrium Isotope Exchange. *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

Comparative Analysis of the Substrate Specificity of trans- versus cis-Acyltransferases of Assembly Line Polyketide Synthases. *BIOCHEMISTRY*
Dunn, B. J., Watts, K. R., Robbins, T., Cane, D. E., Khosla, C.

Comparative analysis of the substrate specificity of trans- versus cis-acyltransferases of assembly line polyketide synthases. *Biochemistry*
Dunn, B. J., Watts, K. R., Robbins, T., Cane, D. E., Khosla, C.

Use of transmission electron microscopy to identify nanocrystals of challenging protein targets. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
2014; 111 (23): 8470-8475.

Dihydroisoxazole inhibitors of Anopheles gambiae seminal transglutaminase AgTG3. *MALARIA JOURNAL*
Le, B. V., Klocek, C., Schatz, A., Nguyen, J. B., Kakani, E. G., Catteruccia, F., Khosla, C., Baxter, R. H.
2014; 13.

Architectures of Whole-Module and Bimodular Proteins from the 6-Deoxyerythronolide B Synthase. *JOURNAL OF MOLECULAR BIOLOGY*
Edwards, A. L., Matsui, T., Weiss, T. M., Khosla, C.

Assembly Line Polyketide Synthases: Mechanistic Insights and Unsolved Problems. *BIOCHEMISTRY*
Khosla, C., Herschlag, D., Cane, D. E., Walsh, C. T.
2014; 53 (18): 2875-2883

- The initiation ketosynthase (FabH) is the sole rate-limiting enzyme of the fatty acid synthase of Synechococcus sp PCC 7002. *METABOLIC ENGINEERING*
  Kuo, J., Khosla, C.
  2014; 22: 53-59

- Computational identification and analysis of orphan assembly-line polyketide synthases. *JOURNAL OF ANTIBIOTICS*
  O'Brien, R. V., Davis, R. W., Khosla, C., Hillenmeyer, M. E.
  2014; 67 (1): 89-97

- Elevated Transglutaminase 2 Activity Is Associated with Hypoxia-Induced Experimental Pulmonary Hypertension in Mice. *ACS CHEMICAL BIOLOGY*
  2014; 9 (1): 266-275

- Dihydroisoxazole inhibitors of Anopheles gambiae seminal transglutaminase AgTG3. *Malaria journal*
  Le, B. V., Klock, C., Schatz, A., Nguyen, J. B., Kakani, E. G., Catteruccia, F., Khosla, C., Baxter, R. H.
  2014; 13: 210-?

- Metabolic Flux between Unsaturated and Saturated Fatty Acids Is Controlled by the FabA:FabB Ratio in the Fully Reconstituted Fatty Acid Biosynthetic Pathway of Escherichia coli. *BIOCHEMISTRY*
  Xiao, X., Yu, X., Khosla, C.
  2013; 52 (46): 8304-8312

- In Vitro Reconstitution and Analysis of the 6-Deoxyerythronolide B Synthase. *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Lowry, B., Robbins, T., Weng, C., O'Brien, R. V., Cane, D. E., Khosla, C.
  2013; 135 (45): 16809-16812

  Garg, A., Khosla, C., Cane, D. E.
  2013; 135 (44): 16324-16327

- Expanding the Fluorine Chemistry of Living Systems Using Engineered Polyketide Synthase Pathways. *SCIENCE*
  Walker, M. C., Thuronyi, B. W., Charkoudian, L. K., Lowry, B., Khosla, C., Chang, M. C.
  2013; 341 (6150): 1089-1094

- Engineering the acyltransferase substrate specificity of assembly line polyketide synthases. *JOURNAL OF THE ROYAL SOCIETY INTERFACE*
  Dunn, B. J., Khosla, C.
  2013; 10 (85)

- Dietary gluten triggers concomitant activation of CD4+ and CD8+ αβ T cells and γδ T cells in celiac disease. *Proceedings of the National Academy of Sciences of the United States of America*
  Han, A., Newell, E. W., Glanville, J., Fernandez-Becker, N., Khosla, C., Chien, Y., Davis, M. M.
  2013; 110 (32): 13073-13078

- Dietary gluten triggers concomitant activation of CD4(+) and CD8(+) alpha beta T cells and gamma delta T cells in celiac disease. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Han, A., Newell, E. W., Glanville, J., Fernandez-Becker, N., Khosla, C., Chien, Y., Davis, M. M.
  2013; 110 (32): 13073-13078

- CYP3A4-Catalyzed Simvastatin Metabolism as a Non-Invasive Marker of Small Intestinal Health in Celiac Disease. *American journal of gastroenterology*
  2013; 108 (8): 1344-1351

- Discovery and Mechanism of Type III Secretion System Inhibitors. *ISRAEL JOURNAL OF CHEMISTRY*
  May, A. E., Khosla, C.
  2013; 53 (8): 577-587

- Nonproteinogenic Amino Acid Building Blocks for Nonribosomal Peptide and Hybrid Polyketide Scaffolds. *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*

- **Stereochemistry of Reductions Catalyzed by Methyl-Epimerizing Ketoreductase Domains of Polyketide Synthases** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

- **Gluten-sensitive enteropathy coincides with decreased capability of intestinal T cells to secrete IL-17 and IL-22 in a macaque model for celiac disease** *CLINICAL IMMUNOLOGY*

- **Mechanism and Specificity of an Acyltransferase Domain from a Modular Polyketide Synthase** *BIOCHEMISTRY*

- **Analysis and Refactoring of the A-74528 Biosynthetic Pathway** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

- **Selective Inhibition of Extracellular Thioredoxin by Asymmetric Disulfides** *JOURNAL OF MEDICINAL CHEMISTRY*

- **Regulation of the activities of the mammalian transglutaminase family of enzymes.** *Protein science*
  Klöck, C., Khosla, C. 2012; 21 (12): 1781-1791

- **Molecular Insights into the Biosynthesis of Guadinomine: A Type III Secretion System Inhibitor** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

- **Natural product inhibitors of glucose-6-phosphate translocase** *MEDCHEMCOMM*
  Charkoudian, L. K., Farrell, B. P., Khosla, C. 2012; 3 (8): 926-931

- **Precursor Directed Biosynthesis of an Orthogonally Functional Erythromycin Analogue: Selectivity in the Ribosome Macrolide Binding Pocket** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

- **Role of transglutaminase 2 in celiac disease pathogenesis** *SEMINARS IN IMMUNOPATHOLOGY*

- **Role of a Conserved Arginine Residue in Linkers between the Ketosynthase and Acyltransferase Domains of Multimodular Polyketide Synthases** *BIOCHEMISTRY*
  Yuzawa, S., Kapur, S., Cane, D. E., Khosla, C. 2012; 51 (18): 3708-3710

- **Resolving Multiple Protein-Peptide Binding Events: Implication for HLA-DQ2 Mediated Antigen Presentation in Celiac Disease** *CHEMISTRY-AN ASIAN JOURNAL*

- **Combinatorial biosynthesis of polyketides - a perspective** *CURRENT OPINION IN CHEMICAL BIOLOGY*
  Wong, F. T., Khosla, C. 2012; 16 (1-2): 117-123
• Interferon-? activates transglutaminase 2 via a phosphatidylinositol-3-kinase-dependent pathway: implications for celiac sprue therapy. *journal of pharmacology and experimental therapeutics*
  DiRaimondo, T. R., Klöck, C., Khosla, C.
  2012; 341 (1): 104-114

• Reprogramming a module of the 6-deoxyerythronolide B synthase for iterative chain elongation *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Kapur, S., Lowery, B., Yuzawa, S., Kenthirapalan, S., Chen, A. Y., Cane, D. E., Khosla, C.
  2012; 109 (11): 4110-4115

• Activation and Inhibition of Transglutaminase 2 in Mice *PLOS ONE*
  Dafik, L., Albertelli, M., Stammaes, J., Sollid, L. M., Khosla, C.
  2012; 7 (2)

• ORAL ENZYME THERAPY FOR CELIAC SPRUE *METHODS IN ENZYMOLGY, VOL 502: PROTEIN ENGINEERING FOR THERAPEUTICS, PT A*
  Bethune, M. T., Khosla, C.
  2012; 502: 241-271

• In vitro and in vivo activity of frenolicin B against Plasmodium falciparum and P berghei *JOURNAL OF ANTIBIOTICS*
  2011; 64 (12): 799-801

• Engineered biosynthesis of the antiparasitic agent frenolicin B and rationally designed analogs in a heterologous host *JOURNAL OF ANTIBIOTICS*
  Fitzgerald, J. T., Ridley, C. P., Khosla, C.
  2011; 64 (12): 759-762

• In vitro reconstitution and steady-state analysis of the fatty acid synthase from Escherichia coli *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  2011; 108 (46): 18643-18648

• Activation of Extracellular Transglutaminase 2 by Thioredoxin *JOURNAL OF BIOLOGICAL CHEMISTRY*
  2011; 286 (43): 37866-37873

• Structural and Biochemical Studies of the Hedamycin Type II Polyketide Ketoreductase (HedKR): Molecular Basis of Stereo- and Regiospecificities *BIOCHEMISTRY*
  Javidpour, P., Das, A., Khosla, C., Shiu-Chuan Tsai, S. C.
  2011; 50 (34): 7426-7439

• Analysis of the Ketosynthase-Chain Length Factor Heterodimer from the Fredericamycin Polyketide Synthase *CHEMISTRY & BIOLOGY*
  2011; 18 (8): 1021-1031

• Structure and Mechanism of the trans-Acting Acyltransferase from the Disorazole Synthase *BIOCHEMISTRY*
  Wong, F. T., Jin, X., Mathews, I. I., Cane, D. E., Khosla, C.
  2011; 50 (30): 6539-6548

• Probing the interactions of an acyl carrier protein domain from the 6-deoxyerythronolide B synthase *PROTEIN SCIENCE*
  2011; 20 (7): 1244-1255

• Novel chemo-sensitizing agent, ERW1227B, impairs cellular motility and enhances cell death in glioblastomas *JOURNAL OF NEURO-ONCOLOGY*
  2011; 103 (2): 207-219

• Novel therapies for coeliac disease *JOURNAL OF INTERNAL MEDICINE*
  Sollid, L. M., Khosla, C.
  2011; 269 (6): 604-613
• Acylideneoxoindoles: A new class of reversible inhibitors of human transglutaminase 2 BIOORGANIC & MEDICINAL CHEMISTRY LETTERS
2011; 21 (9): 2692-2696

• Chemistry and Biology of Macrolide Antiparasitic Agents JOURNAL OF MEDICINAL CHEMISTRY
Lee, Y., Choi, J. Y., Fu, H., Harvey, C., Ravindran, S., Roush, W. R., Boothroyd, J. C., Khosla, C.
2011; 54 (8): 2792-2804

• Dihydroisoxazole Analogs for Labeling and Visualization of Catalytically Active Transglutaminase 2 CHEMISTRY & BIOLOGY
Dafik, L., Khosla, C.
2011; 18 (1): 58-66

• Improved precursor-directed biosynthesis in E. coli via directed evolution JOURNAL OF ANTIBIOTICS
Lee, H. Y., Harvey, C. J., Cane, D. E., Khosla, C.
2011; 64 (1): 59-64

• Molecular recognition between ketosynthase and acyl carrier protein domains of the 6-deoxyerythronolide B synthase PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA
Kapur, S., Chen, A. Y., Cane, D. E., Khosla, C.
2010; 107 (51): 22066-22071

• Stereospecificity of the Dehydratase Domain of the Erythromycin Polyketide Synthase JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
2010; 132 (42): 14697-14699

• A Balancing Act for Taxol Precursor Pathways in E. coli SCIENCE
Liu, T., Khosla, C.
2010; 330 (6000): 44-45

• In Living Color: Bacterial Pigments as an Untapped Resource in the Classroom and Beyond PLOS BIOLOGY
Charkoudian, L. K., Fitzgerald, J. T., Khosla, C., Champlin, A.
2010; 8 (10)

• Thematic Minireview Series on Antibacterial Natural Products: New Tricks for Old Dogs JOURNAL OF BIOLOGICAL CHEMISTRY
Khosla, C.
2010; 285 (36): 27499-27499

• Redox Regulation of Transglutaminase 2 Activity JOURNAL OF BIOLOGICAL CHEMISTRY
Stamnaes, J., Pinkas, D. M., Fleckenstein, B., Khosla, C., Sollid, L. M.
2010; 285 (33): 25402-25409

• Mechanism and Engineering of Polyketide Chain Initiation in Fredericamycin Biosynthesis JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
Das, A., Szu, P., Fitzgerald, J. T., Khosla, C.
2010; 132 (26): 8831-7

• Cloning, Sequencing, Heterologous Expression, and Mechanistic Analysis of A-74528 Biosynthesis JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
Zaleta-Rivera, K., Charkoudian, L. K., Ridley, C. P., Khosla, C.
2010; 132 (26): 9122-9128

• Quantitative analysis and engineering of fatty acid biosynthesis in E. coli METABOLIC ENGINEERING
Liu, T., Vora, H., Khosla, C.
2010; 12 (4): 378-386

• Characterization of transglutaminase type II role in dendritic cell differentiation and function JOURNAL OF LEUKOCYTE BIOLOGY
Matic, I., Sacchi, A., Rinaldi, A., Melino, G., Khosla, C., Falasca, L., Piacentini, M.
2010; 88 (1): 181-188

• Novel aspects of quantitation of immunogenic wheat gluten peptides by liquid chromatography-mass spectrometry/mass spectrometry JOURNAL OF CHROMATOGRAPHY A
Sealey-Voyksner, J. A., Khosla, C., Voyksner, R. D., Jorgenson, J. W.
Inhibition of Tubulogenesis and of Carcinogen-mediated Signaling in Brain Endothelial Cells Highlight the Antiangiogenic Properties of a Mumbaistatin Analog. **CHEMICAL BIOLOGY & DRUG DESIGN**

Tahanian, E., Lord-Dufour, S., Das, A., Khosla, C., Roy, R., Annabi, B.
2010; 75 (5): 481-488

Visualization of Transepithelial Passage of the Immunogenic 33-Residue Peptide from alpha-2 Gliadin in Gluten-Sensitive Macaques. **PLOS ONE**

2010; 5 (4)

Protein-Protein Recognition between Acyltransferases and Acyl Carrier Proteins in Multimodular Polyketide Synthases. **BIOCHEMISTRY**

Wong, F. T., Chen, A. Y., Cane, D. E., Khosla, C.
2010; 49 (1): 95-102

Genetic Engineering of Escherichia coli for Biofuel Production. **ANNUAL REVIEW OF GENETICS, VOL 44**

Liu, T., Khosla, C.
2010; 44: 53-69

The Biochemical Basis for Stereochemical Control in Polyketide Biosynthesis. **JOURNAL OF THE AMERICAN CHEMICAL SOCIETY**

Valenzano, C. R., Lawson, R. J., Chen, A. Y., Khosla, C., Cane, D. E.
2009; 131 (51): 18501-18511

In Vivo and In Vitro Analysis of the Hedamycin Polyketide Synthase. **CHEMISTRY & BIOLOGY**

Das, A., Khosla, C.
2009; 16 (11): 1197-1207

Structures and Mechanisms of Polyketide Synthases. **JOURNAL OF ORGANIC CHEMISTRY**

Khosla, C.
2009; 74 (17): 6416-6420

Noninflammatory Gluten Peptide Analogs as Biomarkers for Celiac Sprue. **CHEMISTRY & BIOLOGY**

Bethune, M. T., Crespo-Bosque, M., Bergseng, E., Mazumdar, K., Doyle, L., Sestak, K., Sollid, L. M., Khosla, C.
2009; 16 (8): 868-881

Modular Biocatalysts. **AICHE JOURNAL**

Khosla, C.
2009; 55 (8): 1926-1929

A Food-Grade Enzyme Preparation with Modest Gluten Detoxification Properties. **PLOS ONE**

Ehren, J., Moron, B., Martin, E., Bethune, M. T., Gray, G. M., Khosla, C.
2009; 4 (7)

Interferon-gamma Released by Gluten-Stimulated Celiac Disease-Specific Intestinal T Cells Enhances the Transepithelial Flux of Gluten Peptides. **JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS**

Bethune, M. T., Siegel, M., Howles-Banerji, S., Khosla, C.
2009; 329 (2): 657-668

Biosynthesis of Aromatic Polyketides in Bacteria. **ACCOUNTS OF CHEMICAL RESEARCH**

Das, A., Khosla, C.
2009; 42 (5): 631-639

Revisiting the modularity of modular polyketide synthases. **CURRENT OPINION IN CHEMICAL BIOLOGY**

Khosla, C., Kapur, S., Cane, D. E.
2009; 13 (2): 135-143

Evidence for Transcriptional Regulation of the Glucose-6-Phosphate Transporter by HIF-1 alpha: Targeting G6PT with Mumbaistatin Analogs in Hypoxic Mesenchymal Stromal Cells. **STEM CELLS**

2009; 27 (3): 489-497
THE DIVERSITY OF NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY  
**BIOPHYSICS AND THE CHALLENGES OF EMERGING THREATS**

2009: 65-81

Protein engineering of improved prolyl endopeptidases for celiac sprue therapy  
**PROTEIN ENGINEERING DESIGN & SELECTION**

Ehren, J., Govindarajan, S., Moron, B., Minshall, J., Khosla, C.  
2008; 21 (12): 699-707

Overproduction of free fatty acids in E. coli: Implications for biodiesel production  
**METABOLIC ENGINEERING**

Lu, X., Vora, H., Khosla, C.  
2008; 10 (6): 333-339

Tissue transglutaminase 2 expression in meningiomas  
**JOURNAL OF NEURO-ONCOLOGY**

Yuan, L., Behdad, A., Siegel, M., Khosla, C., Higashikubo, R., Rich, K. M.  
2008; 90 (2): 125-132

Stereospecificity of ketoreductase domains 1 and 2 of the tylactone modular polyketide synthase  
**JOURNAL OF THE AMERICAN CHEMICAL SOCIETY**

2008; 130 (35): 11598-2

Biochemistry - Fit for an enzyme  
**NATURE**

Kapur, S., Khosla, C.  
2008; 454 (7206): 832-833

Toward the Assessment of Food Toxicity for Celiac Patients: Characterization of Monoclonal Antibodies to a Main Immunogenic Gluten Peptide  
**PLOS ONE**

2008; 3 (5)

Mechanism based protein crosslinking of domains from the 6-deoxyerythronolide B synthase  
**BIOORGANIC & MEDICINAL CHEMISTRY LETTERS**

Kapur, S., Worthington, A., Tang, Y., Cane, D. E., Burkart, M. D., Khosla, C.  
2008; 18 (10): 3034-3038

Transepithelial Transport and Enzymatic Detoxification of Gluten in Gluten-Sensitive Rhesus Macaques  
**PLOS ONE**

Bethune, M. T., Ribka, E., Khosla, C., Sestak, K.  
2008; 3 (3)

Extracellular Transglutaminase 2 Is Catalytically Inactive, but Is Transiently Activated upon Tissue Injury  
**PLOS ONE**

Siegel, M., Strnad, P., Watts, R. E., Choi, K., Jabri, B., Omary, M. B., Khosla, C.  
2008; 3 (3)

Evolution of polyketide synthases in bacteria  
**PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA**

Ridley, C. P., Lee, H. Y., Khosla, C.  
2008; 105 (12): 4595-4600

A Non-Human Primate Model for Gluten Sensitivity  
**PLOS ONE**

2008; 3 (2)

Parallels between pathogens and gluten peptides in celiac sprue  
**PLOS PATHOGENS**

Bethune, M. T., Khosla, C.  
2008; 4 (2)

Transglutaminase 2 undergoes a large conformational change upon activation  
**PLOS BIOLOGY**

2007; 5 (12): 2788-2796

Stereospecificity of ketoreductase domains of the 6-deoxyerythronolide B synthase  
**JOURNAL OF THE AMERICAN CHEMICAL SOCIETY**

Castonguay, R., He, W., Chen, A. Y., Khosla, C., Cane, D. E.
2007; 129 (44): 13758-13769

- Cyclic and dimeric gluten peptide analogues inhibiting DQ2-mediated antigen presentation in celiac disease *BIOORGANIC & MEDICINAL CHEMISTRY*
  Xia, J., Bergseng, E., Fleckenstein, B., Siegel, M., Kim, C., Khosla, C., Sellin, L. M.
  2007; 129 (44): 13758-13769

- Solution structure and proposed domain-domain recognition interface of an acyl carrier protein domain from a modular polyketide synthase *PROTEIN SCIENCE*
  Alekseyev, V. Y., Liu, C. W., Cane, D. E., Puglisi, J. D., Khosla, C.
  2007; 16 (10): 2093-2107

- Structure-based design of alpha-amido aldehyde containing gluten peptide analogues as modulators of HLA-DQ2 and transglutaminase 2 *BIOORGANIC & MEDICINAL CHEMISTRY*
  Siegel, M., Xia, J., Khosla, C.
  2007; 15 (18): 6253-6261

- A scalable manufacturing process for pro-EP-B2, a cysteine protease from barley indicated for Celiac Sprue *BIOTECHNOLOGY AND BIOENGINEERING*
  Vora, H., McIntyre, J., Kumar, P., Deshpande, M., Khosla, C.
  2007; 98 (1): 177-185

- Combination enzyme therapy for gastric digestion of dietary gluten in patients with celiac sprue *GASTROENTEROLOGY*
  Gass, J., Bethune, M. T., Siegel, M., Spencer, A., Khosla, C.
  2007; 133 (2): 472-480

- Transglutaminase 2 inhibitors and their therapeutic role in disease states *PHARMACOLOGY & THERAPEUTICS*
  Siegel, M., Khosla, C.
  2007; 115 (2): 232-245

- Structure-activity relationships of semisynthetic mumbaistatin analogs *BIOORGANIC & MEDICINAL CHEMISTRY*
  Lee, T. S., Das, A., Khosla, C.
  2007; 15 (15): 5207-5218

- Structural and mechanistic analysis of protein interactions in module 3 of the 6-deoxyerythronolide B synthase *CHEMISTRY & BIOLOGY*
  Tang, Y., Chen, A. Y., Kim, C., Cane, D. E., Khosla, C.
  2007; 14 (8): 931-943

- Structure-based dissociation of a type I polyketide synthase module *CHEMISTRY & BIOLOGY*
  Chen, A. Y., Cane, D. E., Khosla, C.
  2007; 14 (7): 784-792

- Enhancement of dietary protein digestion by conjugated bile acids *GASTROENTEROLOGY*
  2007; 133 (1): 16-23

- Transglutaminase 2 inhibitor, KCC009, disrupts fibronectin assembly in the extracellular matrix and sensitizes orthotopic glioblastomas to chemotherapy *ONCOGENE*
  Yuan, L., Siegel, M., Choi, K., Khosla, C., Miller, C. R., Jackson, E. N., Pownica-Worms, D., Rich, K. M.
  2007; 26 (18): 2563-2573

- Antibiotic production from the ground up *NATURE BIOTECHNOLOGY*
  Katz, L., Khosla, C.
  2007; 25 (4): 428-429

- Transglutaminase 2 regulates mallory body inclusion formation and injury-associated liver enlargement *GASTROENTEROLOGY*
  2007; 132 (4): 1515-1526

- Substrate tolerance of module 6 of the epothilone synthetase *BIOCHEMISTRY*
  Tse, M. L., Watts, R. E., Khosla, C.
  2007; 46 (11): 3385-3393
• Bioassay-Guided evolution of glycosylated macrolide antibiotics in Escherichia coli *PLOS BIOLOGY*
  Lee, H. Y., Khosla, C.
  2007; 5 (2): 243-250

• Synthesis and biological activity of novel pyranopyrones derived from engineered aromatic polyketides *ACS CHEMICAL BIOLOGY*
  Ridley, C. P., Khosla, C.
  2007; 2 (2): 104-108

• Prolyl endopeptidases *CELLULAR AND MOLECULAR LIFE SCIENCES*
  Gass, J., Khosla, C.
  2007; 64 (3): 345-355

• Structure and mechanism of the 6-deoxyerythronolide B synthase *ANNUAL REVIEW OF BIOCHEMISTRY*
  Khosla, C., Tang, Y., Chen, A. Y., Schnarr, N. A., Cane, D. E.
  2007; 76: 195-221

• Structure-activity relationship analysis of the selective inhibition of transglutaminase 2 by dihydroisoxazoles *JOURNAL OF MEDICINAL CHEMISTRY*
  Watts, R. E., Siegel, M., Khosla, C.
  2006; 49 (25): 7493-7501

• Structural and functional studies on SCO1815: A beta-ketoacyl-acyl carrier protein reductase from Streptomyces coelicolor A3(2) *BIOCHEMISTRY*
  Tang, Y., Lee, H. Y., Tang, Y., Kim, C., Mathews, I., Khosla, C.
  2006; 45 (47): 14085-14093

• Effect of barley endoprotease EP-B2 on gluten digestion in the intact rat *JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS*
  Gass, J., Vora, H., Bethune, M. T., Gray, G. M., Khosla, C.
  2006; 318 (3): 1178-1186

• Production of ansamycin polyketide precursors in Escherichia coli *JOURNAL OF ANTIBIOTICS*
  Rude, M. A., Khosla, C.
  2006; 59 (8): 464-470

• The 2.7-angstrom crystal structure of a 194-kDa homodimeric fragment of the 6-deoxyerythronolide B synthase *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Tang, Y., Kim, C., Mathews, I. I., Cane, D. E., Khosla, C.
  2006; 103 (30): 11124-11129

• Heterologous expression, purification, refolding, and structural-functional characterization of EP-B2, a self-activating barley cysteine endoprotease *CHEMISTRY & BIOLOGY*
  Bethune, M. T., Strop, P., Tang, Y., Sollid, L. M., Khosla, C.
  2006; 13 (6): 637-647

• Investigating nonribosomal peptide and polyketide biosynthesis by direct detection of intermediates on > 70 kDa polypeptides by using Fourier-transform mass spectrometry *CHEMBIOCHEM*
  Hicks, L. M., Mazur, M., Miller, L. M., Dorrestein, P. C., Schnarr, N. A., Khosla, C., Kelleher, N. L.
  2006; 7 (6): 904-907

• Rational design of combination enzyme therapy for celiac sprue *CHEMISTRY & BIOLOGY*
  2006; 13 (6): 649-658

• Pharmacologic transglutaminase inhibition attenuates drug-primed liver hypertrophy but not Mallory body formation *FEBS LETTERS*
  Strnad, P., Siegel, M., Toivola, D. M., Choi, K., Kosek, J. C., Khosla, C., Omary, M. B.
  2006; 580 (9): 2351-2357

• Extender unit and acyl carrier protein specificity of ketosynthase domains of the 6-deoxyerythronolide B synthase *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  2006; 128 (9): 3067-3074
• Inhibition of HLA-DQ2-mediated antigen presentation by analogues of a high affinity 33-residue peptide from alpha 2-gliadin. *Journal of the American Chemical Society*
  Xia, J., Siegel, M., Bergseng, E., Sollid, L. M., Khosla, C.
  2006; 128 (6): 1859-1867

• Macrolactonization to 10-deoxymethynolide catalyzed by the recombinant thioesterase of the picromycin/methymycin polyketide synthase. *Bioorganic & Medicinal Chemistry Letters*
  He, W. G., Wu, J. Q., Khosla, C., Cane, D. E.
  2006; 16 (2): 391-394

• Trapping transient protein-protein interactions in polyketide biosynthesis. *ACS Chemical Biology*
  Schnarr, N. A., Khosla, C.
  2006; 1 (11): 679-680

• Modular polyketide synthases: Investigating intermodular communication using 6-deoxyerythronolide B synthase module 2. *Bioorganic & Medicinal Chemistry Letters*
  Moffet, D. A., Khosla, C., Cane, D. E.
  2006; 16 (1): 213-216

• Fermentation, purification, formulation, and pharmacological evaluation of a prolyl endopeptidase from Myxococcus xanthus: Implications for Celiac sprue therapy. *Biotechnology and Bioengineering*
  Gass, J., Ehren, J., Strohmeier, G., Isaacs, I., Khosla, C.
  2005; 92 (6): 674-684

• Polyketide double bond biosynthesis. Mechanistic analysis of the dehydratase-containing module 2 of the picromycin/methymycin polyketide synthase. *Journal of the American Chemical Society*
  Wu, J. Q., Zaleski, T. J., Valenzano, C., Khosla, C., Cane, D. E.
  2005; 127 (49): 17393-17404

• Orthogonal protein interactions in spore pigment producing and antibiotic producing polyketide synthases. *Journal of Antibiotics*
  Lee, T. S., Khosla, C., Tang, Y.
  2005; 58 (10): 663-666

• Engineered biosynthesis of aklanonic acid analogues. *Journal of the American Chemical Society*
  Lee, T. S., Khosla, C., Tang, Y.
  2005; 127 (35): 12254-12262

• Analysis of covalently bound polyketide intermediates on 6-deoxyerythronolide B synthase by tandem proteolysis-mass spectrometry. *Biochemistry*
  Schnarr, N. A., Chen, A. Y., Cane, D. E., Khosla, C.
  2005; 44 (35): 11836-11842

• Identification and analysis of multivalent proteolytically resistant peptides from gluten: Implications for Celiac Sprue. *Journal of Proteome Research*
  Shan, L., Qiao, S. W., Arentz-Hansen, H., Molberg, O., Gray, G. M., Sollid, L. M., Khosla, C.
  2005; 4 (5): 1732-1741

• Tissue transglutaminase 2 inhibition promotes cell death and chemosensitivity in glioblastomas. *Molecular Cancer Therapeutics*
  2005; 4 (9): 1293-1302

• Biological chemistry: Just add chlorine. *Nature*
  Schnarr, N. A., Khosla, C.
  2005; 436 (7054): 1094-1095

• Stereocchemical assignment of intermediates in the rifamycin biosynthetic pathway by precursor-directed biosynthesis. *Journal of the American Chemical Society*
  Hartung, I. V., Rude, M. A., Schnarr, N. A., Hunziker, D., Khosla, C.
  2005; 127 (32): 11202-11203

• Effect of pretreatment of food gluten with prolyl endopeptidase on gluten-induced malabsorption in celiac sprue. *Clinical Gastroenterology and Hepatology*
2005; 3 (7): 678-694

• Low-dose gluten challenge in celiac sprue: Malabsorptive and antibody responses  CLINICAL GASTROENTEROLOGY AND HEPATOLOGY
2005; 3 (7): 679-686

• Main chain hydrogen bond interactions in the binding of proline-rich gluten peptides to the Celiac disease-associated HLA-DQ2 molecule  JOURNAL OF BIOLOGICAL CHEMISTRY
  Bergseng, E., Xia, J., Kim, C. Y., Khosla, C., Sollid, L. M.  
2005; 280 (23): 21791-21796

• A new route to designer antibiotics  SCIENCE
  Khosla, C., Tang, Y.  
2005; 308 (5720): 367-368

• Chemistry and biology of dihydroisoxazole derivatives: Selective inhibitors of human transglutaminase 2  CHEMISTRY & BIOLOGY

• Equilibrium and kinetic analysis of the unusual binding behavior of a highly immunogenic gluten peptide to HLA-DQ2  BIOCHEMISTRY
  Xia, J., Sollid, L. M., Khosla, C.  
2005; 44 (11): 4442-4449

• Structural and mechanistic analysis of two prolyl endopeptidases: Role of interdomain dynamics in catalysis and specificity  PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA
  Shan, L., Mathews, I. L., Khosla, C.  
2005; 102 (10): 3599-3604

• Future therapeutic options for celiac disease  NATURE CLINICAL PRACTICE GASTROENTEROLOGY & HEPATOLOGY
  Sollid, L. M., Khosla, C.  
2005; 2 (3): 140-147

• Tissue transglutaminase-mediated formation and cleavage of histamine-gliadin complexes: Biological effects and implications for celiac disease  JOURNAL OF IMMUNOLOGY
  Qiao, S. W., Piper, J., Haraldsen, G., Oynebraten, I., Fleckenstein, B., Molberg, O., Khosla, C., Sollid, L. M.  
2005; 174 (3): 1657-1663

• Chain elongation, macrolactonization, and hydrolysis of natural and reduced hexaketide substrates by the picromycin/methymycin polyketide synthase  ANGEWANDE CHEIMIE-INTERNATIONAL EDITION
  Wu, J. Q., He, W. G., Khosla, C., Cane, D. E.  
2005; 44 (46): 7557-7560

• Prolyl endopeptidase-mediated destruction of T cell epitopes in whole gluten: Chemical and immunological characterization  JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS
  Marti, T., Molberg, O., Li, Q., Gray, G. M., Khosla, C., Sollid, L. M.  
2005; 312 (1): 19-26

• Biochemical analysis of the substrate specificity of the beta-ketoacyl-acyl carrier protein synthase domain of module 2 of the erythromycin polyketide synthase  BIOCHEMISTRY
  Wu, J. Q., Kinoshita, K., Khosla, C., Cane, D. E.  
2004; 43 (51): 16301-16310

• Reconstituting modular activity from separated domains of 6-deoxyerythronolide B synthase  BIOCHEMISTRY
  Kim, C. Y., Alekseyev, V. Y., Chen, A. Y., Tang, Y. Y., Cane, D. E., Khosla, C.  
2004; 43 (44): 13892-13898

• Crystal structure of the beta-subunit of Acyl-CoA carboxylase: Structure-based engineering of substrate specificity  BIOCHEMISTRY
2004; 43 (44): 14027-14036
- Engineered biosynthesis of polyketides in heterologous hosts
  Rude, M. A., Khosla, C.
  Pergamon-Elsevier Science Ltd. 2004: 4693-4701

- Comparative biochemical analysis of three bacterial prolyl endopeptidases: implications for coeliac sprue BIOCHEMICAL JOURNAL
  Shan, L., Martin, T., Sollid, L. M., Gray, G. M., Khosla, C.
  2004; 383: 311-318

- Effect of prolyl endopeptidase on digestive-resistant gliadin peptides in vivo JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS
  Piper, J. L., Gray, G. M., Khosla, C.
  2004; 311 (1): 213-219

- An antibiotic factory caught in action NATURE STRUCTURAL & MOLECULAR BIOLOGY
  Keatinge-Clay, A., Maltby, D. A., Medzihradszky, K. F., Khosla, C., Stroud, R. M.
  2004; 11 (9): 889-893

- Exploring the biosynthetic potential of bimodular aromatic polyketide synthases TETRAHEDRON
  2004; 60 (35): 7659-7671

- Reconstitution and characterization of a new desosaminyl transferase, EryCIII, from the erythromycin biosynthetic pathway JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  2004; 126 (32): 9924-9925

- Antigen presentation to celiac lesion-derived T cells of a 33-mer gliadin peptide naturally formed by gastrointestinal digestion JOURNAL OF IMMUNOLOGY
  Qiao, S. W., Bergseng, E., Molberg, O., Xia, J., Fleckenstein, B., Khosla, C., Sollid, L. M.
  2004; 173 (3): 1757-1762

- The acyltransferase homologue from the initiation module of the R1128 polyketide synthase is an acyl-ACP thioesterase that edits acetyl primer units BIOCHEMISTRY
  Tang, Y., Koppisch, A. T., Khosla, C.
  2004; 43 (29): 9546-9555

- Precursor-directed biosynthesis of epothilone in Escherichia coli JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  Boddy, C. N., Hotta, K., Tse, M. L., Watts, R. E., Khosla, C.
  2004; 126 (24): 7436-7437

- Structural basis for HLA-DQ2-mediated presentation of gluten epitopes in celiac disease PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA
  Kim, C. Y., Quarsten, H., Bergseng, E., Khosla, C., Sollid, L. M.
  2004; 101 (12): 4175-4179

- Engineered biosynthesis of regioselectively modified aromatic polyketides using bimodular polyketide synthases, PLoS biology
  Tang, Y., Lee, T. S., Khosla, C.
  2004; 2 (2): E31-?

- Engineered biosynthesis of regioselectively modified aromatic polyketides using bimodular polyketide synthases PLOS BIOLOGY
  Tang, Y., Lee, T. S., Khosla, C.
  2004; 2 (2): 227-238

- Manipulation and analysis of polyketide synthases PROTEIN ENGINEERING
  Kumar, P., Khosla, C., Tang, Y.
  2004; 388: 269-293

- Timeline - Metabolic engineering for drug discovery and development NATURE REVIEWS DRUG DISCOVERY
  Khosla, C., Keasling, J. D.
  2003; 2 (12): 1019-1025
• Crystal structure of an Acyl-ACP dehydrogenase from the FK520 polyketide Biosynthetic pathway: Insights into extender unit biosynthesis. *Journal of Molecular Biology*  
  Watanabe, K., Khosla, C., Stroud, R. M., Tsai, S. C.  
  2003; 334 (3): 435-444

• Enhancing the modularity of the modular polyketide synthases: Transacylation in modular polyketide synthases catalyzed by malonyl-CoA : ACP transacylase. *Journal of the American Chemical Society*  
  Kumar, P., Koppisch, A. T., Cane, D. E., Khosla, C.  
  2003; 125 (47): 14307-14312

• A switch for the transfer of substrate between nonribosomal peptide and polyketide modules of the rifamycin synthetase assembly line. *Journal of the American Chemical Society*  
  Admiraal, S. J., Khosla, C., Walsh, C. T.  
  2003; 125 (45): 13664-13665

• Precursor-directed polyketide biosynthesis in Escherichia coli. *Bioorganic & Medicinal Chemistry Letters*  
  Kinoshita, K., Pfeifer, B. A., Khosla, C., Cane, D. E.  
  2003; 13 (21): 3701-3704

• Biosynthesis of yersiniabactin, a complex polyketide-nonribosomal peptide, using Escherichia coli as a heterologous host. *Applied and Environmental Microbiology*  
  2003; 69 (11): 6698-6702

• Understanding substrate specificity of polyketide synthase modules by generating hybrid multimodular synthases. *Journal of Biological Chemistry*  
  Watanabe, K., Wang, C. C., Boddy, C. N., Cane, D. E., Khosla, C.  
  2003; 278 (43): 42020-42026

• Polyketide chain length control by chain length factor. *Journal of the American Chemical Society*  
  Tang, Y., Tsai, S. C., Khosla, C.  
  2003; 125 (42): 12602-12607

• Structure-based mutagenesis of the malonyl-CoA : Acyl carrier protein transacylase from Streptomyces coelicolor. *Biochemistry*  
  Koppisch, A. T., Khosla, C.  
  2003; 42 (37): 11057-11064

• Engineered biosynthesis of an ansamycin polyketide precursor in Escherichia coli. *Proceedings of the National Academy of Sciences of the United States of America*  
  Watanabe, K., Rude, M. A., Walsh, C. T., Khosla, C.  
  2003; 100 (17): 9774-9778

• A specific role of the Saccharopolyspora erythraea thioesterase II gene in the function of modular polyketide synthases. *Microbiology-SGM*  
  Hu, Z. H., Pfeifer, B. A., Chao, E., Murli, S., Kealey, J., Carney, J. R., Ashley, G., Khosla, C., Hutchinson, C. R.  
  2003; 149: 2213-2225

• Ketosynthases in the initiation and elongation modules of aromatic polyketide synthases have orthogonal acyl carrier protein specificity. *Biochemistry*  
  Tang, Y., Lee, T. S., Kobayashi, S., Khosla, C.  
  2003; 42 (21): 6588-6595

• Expression and kinetic analysis of the substrate specificity of modules 5 and 6 of the picromycin/methymycin polyketide synthase. *Journal of the American Chemical Society*  
  Yin, Y. F., Lu, H. X., Khosla, C., Cane, D. E.  
  2003; 125 (19): 5671-5676

• Mechanistic analysis of acyl transferase domain exchange in polyketide synthase modules. *Journal of the American Chemical Society*  
  Hans, M., Hornung, A., Dziarmowski, A., Cane, D. E., Khosla, C.  
  2003; 125 (18): 5366-5374

• Solution structure and backbone dynamics of the holo form of the frenolicin acyl carrier protein. *Biochemistry*  
  Li, Q., Khosla, C., Puglisi, J. D., Liu, C. W.
Intermodular communication in modular polyketide synthases: Structural and mutational analysis of linker mediated protein-protein recognition *Journal of the American Chemical Society*

Kumar, P., Li, Q., Cane, D. E., Khosla, C.
2003; 125 (14): 4097-4102

Building-block selectivity of polyketide synthases *Current Opinion in Chemical Biology*

Liou, G. F., Khosla, C.
2003; 7 (2): 279-284

Epothilone C macro lactonization and hydrolysis are catalyzed by the isolated thioesterase domain of epothilone polyketide synthase *Journal of the American Chemical Society*

Boddy, C. N., Schneider, T. L., Hotta, K., Walsh, C. T., Khosla, C.
2003; 125 (12): 3428-3429

Design, synthesis, and evaluation of gluten peptide analogs as selective inhibitors of human tissue transglutaminase *Chemistry & Biology*

Hausch, F., Halttunen, T., Maki, M., Khosla, C.
2003; 10 (3): 225-231

Catalysis, specificity, and ACP docking site of Streptomyces coelicolor malonyl-CoA : ACP transacylase *Structure*

2003; 11 (2): 147-154

Quantitative analysis of loading and extender acyltransferases of modular polyketide synthases *Biochemistry*

Liou, G. F., Lau, J., Cane, D. E., Khosla, C.
2003; 42 (1): 200-207

Precursor-directed biosynthesis: Stereospecificity for branched-chain diketides of the beta-ketoacyl-ACP synthase domain 2 of 6-deoxyerythronolide B synthase *Helvetica Chimica Acta*

Kinoshita, K., Khosla, C., Cane, D. E.
2003; 86 (12): 3889-3907

Circular dichroism and nuclear magnetic resonance spectroscopic analysis of immunogenic gluten peptides and their analogs *Journal of Biological Chemistry*

Parrot, I., Huang, P. C., Khosla, C.
2002; 277 (47): 45572-45578

Crystal structure of the priming beta-ketosynthase from the R1128 polyketide biosynthetic pathway *Structure*

Pan, H., Tsai, S. C., Meadows, E. S., Miercke, L. J., Keatinge-Clay, A. T., O'Connell, J., Khosla, C., Stroud, R. M.
2002; 10 (11): 1559-1568

Insights into channel architecture and substrate specificity from crystal structures of two macrocycle-forming thioesterases of modular polyketide synthases *Biochemistry*

Tsai, S. C., Lu, H. X., Cane, D. E., Khosla, C., Stroud, R. M.
2002; 41 (42): 12598-12606

Expression, site-directed mutagenesis, and steady state kinetic analysis of the terminal thioesterase domain of the methymycin/picromycin polyketide synthase *Biochemistry*

Lu, H. X., Tsai, S. C., Khosla, C., Cane, D. E.
2002; 41 (42): 12590-12597

Intestinal digestive resistance of immunodominant gliadin peptides *American Journal of Physiology-Gastrointestinal and Liver Physiology*

Hausch, F., Shan, L., Santiago, N. A., Gray, G. M., Khosla, C.
2002; 283 (4): G996-G1003

Structural basis for gluten intolerance in Celiac sprue *Science*

Shan, L., Molberg, O., Parrot, I., Hausch, F., Filiz, F., Gray, G. M., Sollid, L. M., Khosla, C.
2002; 297 (5590): 2275-2279


• Malonyl-CoA:ACP transacylase from Streptomyces coelicolor has two alternative catalytically active nucleophiles. *Biochemistry*. Dreier, J., Li, Q., Khosla, C. 2001; 40 (41): 12407-12411


• Assessing the balance between protein-protein interactions and enzyme-substrate interactions in the channeling of intermediates between polyketide synthase modules. *Journal of the American Chemical Society*. Wu, N., Tsuji, S. Y., Cane, D. E., Khosla, C.
• Enhancing the atom economy of polyketide biosynthetic processes through metabolic engineering  *BIOTECHNOLOGY PROGRESS*
Lombo, F., Pfeifer, B., Leaf, T., Ou, S., Kim, Y. S., Cane, D. E., Licari, P., Khosla, C.
2001; 17 (4): 612-617

• Remarkably broad substrate tolerance of Malonyl-CoA synthetase, an enzyme capable of intracellular synthesis of polyketide precursors  *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
2001; 123 (24): 5822-5823

• Erythromycin biosynthesis. The 4-pro-S hydride of NADPH is utilized for ketoreduction by both module 5 and module 6 of the 6-deoxyerythronolide B synthase  *BIOORGANIC & MEDICINAL CHEMISTRY LETTERS*
Yin, Y. F., Gokhale, R., Khosla, C., Cane, D. E.
2001; 11 (12): 1477-1479

• The loading module of rifamycin synthetase is an adenylation-thiolation didomain with substrate tolerance for substituted benzoates  *BIOCHEMISTRY*
Admiraal, S. J., Walsh, C. T., Khosla, C.
2001; 40 (20): 6116-6123

• Intellectual border: Two-way traffic  *CHEMICAL & ENGINEERING NEWS*
Khosla, C.
2001; 79 (13): 149-149

• Precursor-directed biosynthesis of 16-membered macrolides by the erythromycin polyketide synthase  *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Kinoshita, K., WILLIARD, P. G., Khosla, C., Cane, D. E.
2001; 123 (11): 2495-2502

• Biosynthesis of complex polyketides in a metabolically engineered strain of E-coli  *SCIENCE*
Pfeifer, B. A., Admiraal, S. J., Gramajo, H., Cane, D. E., Khosla, C.
2001; 291 (5509): 1790-1792

• Biosynthesis of polyketides in heterologous hosts  *MICROBIOLOGY AND MOLECULAR BIOLOGY REVIEWS*
Pfeifer, B. A., Khosla, C.
2001; 65 (1): 106-?

• Intermodular communication in polyketide syntheses: Comparing the role of protein-protein interactions to those in other multidomain proteins  *BIOCHEMISTRY*
Tsuji, S. Y., Wu, N., Khosla, C.
2001; 40 (8): 2317-2325

• Selective protein-protein interactions direct channeling of intermediates between polyketide synthase modules  *BIOCHEMISTRY*
Tsuji, S. Y., Cane, D. E., Khosla, C.
2001; 40 (8): 2326-2331

• Structure-activity relationships within a family of selectively cytotoxic macrolide natural products  *ORGANIC LETTERS*
Salomon, A. R., Zhang, Y. B., Seto, H., Khosla, C.
2001; 3 (1): 57-59

• Modular enzymes  *NATURE*
Khosla, C., Harbury, P. B.
2001; 409 (6817): 247-252

• Apoptolidin, a selective cytotoxic agent, is an inhibitor of F0F1-ATPase  *CHEMISTRY & BIOLOGY*
2001; 8 (1): 71-80

• Process development and metabolic engineering for the overproduction of natural and unnatural polyketides.  *Advances in biochemical engineering/biotechnology*
McDaniel, R., Licari, P., Khosla, C.


• Studies on the substrate specificity of loading end extender unit acyltransferase domains in the erythromycin polyketide synthase. Amer Chemical Soc. 2000: U158-U158


• Kinetic analysis of the actinorhodin aromatic polyketide synthase. *Journal of Biological Chemistry*
  Dreier, J., Shah, A. N., Khosla, C.
  1999; 274 (35): 25108-25112

• Dissecting and exploiting intermodular communication in polyketide synthases. *Science*
  Gokhale, R. S., Tsuji, S. Y., Cane, D. E., Khosla, C.
  1999; 284 (5413): 482-485

• Tolerance and specificity of recombinant 6-methylsalicylic acid synthase. *Metabolic Engineering*
  Richardson, M. T., Pohl, N. L., Kealey, J. T., Khosla, C.
  1999; 1 (2): 180-187

• Dissecting the role of acyltransferase domains of modular polyketide synthases in the choice and stereochemical fate of extender units. *Biochemistry*
  Lau, J., Fu, H., Cane, D. E., Khosla, C.
  1999; 38 (5): 1643-1651

• Mechanism and specificity of the terminal thioesterase domain from the erythromycin polyketide synthase. *Chemistry & Biology*
  Gokhale, R. S., Hunziker, D., Cane, D. E., Khosla, C.
  1999; 6 (2): 117-125

• Precursor-directed biosynthesis of novel 6-deoxyerythronolide B analogs containing non-natural oxygen substituents and reactive functionalities. *Tetrahedron Letters*
  Hunziker, D., Wu, N., Kenoshita, K., Cane, D. E., Khosla, C.
  1999; 40 (4): 635-638

• Tolerance and specificity of polyketide synthases. *Annual Review of Biochemistry*
  Khosla, C., Gokhale, R. S., Jacobsen, J. R., Cane, D. E.
  1999; 68: 219-253

• Synthesis and incorporation of an N-acetylcysteamine analogue of methylmalonyl-CoA by a modular polyketide synthase. *Journal of the American Chemical Society*
  Pohl, N. L., Gokhale, R. S., Cane, D. E., Khosla, C.
  1998; 120 (43): 11206-11207

• Biochemistry - Harnessing the biosynthetic code: Combinations, permutations, and mutations. *Science*
  Cane, D. E., Walsh, C. T., Khosla, C.
  1998; 282 (5386): 63-68

• Dissecting the evolutionary relationship between 14-membered and 16-membered macrolides. *Journal of the American Chemical Society*
  Jacobsen, J. R., Cane, D. E., Khosla, C.
  1998; 120 (35): 9096-9097

• Dissecting and manipulating substrate specificity of the acyltransferase domains of modular polyketide synthases.
  Lau, J., Khosla, C.
  AMER CHEMICAL SOC. 1998: U252-U252

• Engineered biosynthesis of novel polyketides from Streptomyces spore pigment polyketide synthases. *Journal of the American Chemical Society*
  1998; 120 (31): 7749-7759

• Precursor-directed biosynthesis of 12-ethyl erythromycin. *Bioorganic & Medicinal Chemistry*
  Jacobsen, J. R., Keatinge-Clay, A. T., Cane, D. E., Khosla, C.
  1998; 6 (8): 1171-1177

• Erythromycin biosynthesis: The beta-ketoreductase domains catalyze the stereospecific transfer of the 4-pro-S hydride of NADPH. *Journal of the American Chemical Society*
  McPherson, M., Khosla, C., Cane, D. E.
  1998; 120 (13): 3267-3268

• Spontaneous priming of a downstream module in 6-deoxyerythronolide B synthase leads to polyketide biosynthesis. *Biochemistry*

Alcohol stereochemistry in polyketide backbones is controlled by the beta-ketoreductase domains of modular polyketide synthases JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
Kao, C. M., McPherson, M., McDaniel, R. N., Fu, H., Cane, D. E., Khosla, C. 1998; 120 (10): 2478-2479

Functional orientation of the acyltransferase domain in a module of the erythromycin polyketide synthase BIOCHEMISTRY
Gokhale, R. S., Lau, J., Cane, D. E., Khosla, C. 1998; 37 (8): 2524-2528

Purification and in vitro reconstitution of the essential protein components of an aromatic polyketide synthase BIOCHEMISTRY
Carreras, C. W., Khosla, C. 1998; 37 (8): 2084-2088

Primer unit specificity in rifamycin biosynthesis principally resides in the later stages of the biosynthetic pathways JOURNAL OF THE AMERICAN CHEMICAL SOCIETY

New directions in metabolic engineering CURRENT OPINION IN CHEMICAL BIOLOGY

Gain of function mutagenesis of the erythromycin polyketide synthase.2. Engineered biosynthesis of eight-membered ring tetraketide lactone JOURNAL OF THE AMERICAN CHEMICAL SOCIETY

Molecular recognition of diketide substrates by a beta-ketoacyl-acyl carrier protein synthase domain within a bimodular polyketide synthase CHEMISTRY & BIOLOGY

Utilization of enzymatically phosphopantetheinylated acyl carrier proteins and acetyl-acyl carrier proteins by the actinorhodin polyketide synthase BIOCHEMISTRY

Engineered intermodular and intramodular polyketide synthase fusions CHEMISTRY & BIOLOGY

Precursor-directed biosynthesis of erythromycin analogs by an engineered polyketide synthase SCIENCE

Domain analysis of the molecular recognition features of aromatic polyketide synthase subunits JOURNAL OF BIOLOGICAL CHEMISTRY
Zawada, R. J., Khosla, C. 1997; 272 (26): 16184-16188

Gain-of-function mutagenesis of a modular polyketide synthase JOURNAL OF THE AMERICAN CHEMICAL SOCIETY

Structure, function and engineering of modular polyketide synthases
Kao, C. M., Luo, G., Pieper, R., Cane, D. E., Khosla, C. AMER CHEMICAL SOC.1997: 77-BIOT

Purification and characterization of bimodular and trimodular derivatives of the erythromycin polyketide synthase BIOCHEMISTRY

Chaitan Khosla
http://cap.stanford.edu/profiles/Chaitan_Khosla/
Pieper, R., Gokhale, R. S., Luo, G. L., Cane, D. E., Khosla, C.
1997; 36 (7): 1846-1851

• Rational design and engineered biosynthesis of a novel 18-carbon aromatic polyketide JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
1997; 119 (4): 635-639

• Harnessing the Biosynthetic Potential of Modular Polyketide Synthases. Chemical reviews
Khosla, C.
1997; 97 (7): 2577-2590

• The chemistry and biology of fatty acid, polyketide, and nonribosomal peptide biosynthesis BIOORGANIC CHEMISTRY DEOXSUGARS, POLYKETIDES AND RELATED CLASSES: SYNTHESIS, BIOSYNTHESIS, ENZYMES
Carreras, C. W., Pieper, R., Khosla, C.
1997; 188: 85-126

• 6-deoxyerythronolide B synthase 1 is specifically acylated by a diketide intermediate at the beta-ketoacyl-acyl carrier protein synthase domain of module 2 BIOCHEMISTRY
Tsukamoto, N., Chuck, J. A., Luo, G. L., Kao, C. M., Khosla, C., Cane, D. E.
1996; 35 (48): 15244-15248

• A new enzyme superfamily - The phosphopantetheinyl transferases CHEMISTRY & BIOLOGY
Lambalot, R. H., Gehring, A. M., Flugel, R. S., Zaber, P., LaCelle, M., Marahiel, M. A., Reid, R., Khosla, C., Walsh, C. T.
1996; 3 (11): 923-936

• Evolutionally guided enzyme design
Khosla, C., Caren, R., Kao, C. M., McDaniel, R., Wang, S. W.
JOHN WILEY & SONS INC.1996: 122-128

• A functional chimeric modular polyketide synthase generated via domain replacement CHEMISTRY & BIOLOGY
Bedford, D., Jacobsen, J. R., Luo, G. L., Cane, D. E., Khosla, C.
1996; 3 (10): 827-831

• Specificity and versatility in erythromycin biosynthesis CHEMICAL SOCIETY REVIEWS
Pieper, R., Kao, C., Khosla, C., Luo, G. L., Cane, D. E.
1996; 25 (5): 297-337

• Engineered biosynthesis of structurally diverse tetraketides by a trimodular polyketide synthase JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
Kao, C. M., Luo, G. L., Katz, L., Cane, D. E., Khosla, C.
1996; 118 (38): 9184-9185

• Evidence for two catalytically independent clusters of active sites in a functional modular polyketide synthase BIOCHEMISTRY
Kao, C. M., Pieper, R., Cane, D. E., Khosla, C.
1996; 35 (38): 12363-12368

• Generation of polyketide libraries via combinatorial biosynthesis TRENDS IN BIOTECHNOLOGY
Khosla, C., Zawada, R. J.
1996; 14 (9): 335-341

• Erythromycin biosynthesis: Exploiting the catalytic versatility of the modular polyketide synthase BIOORGANIC & MEDICINAL CHEMISTRY
Luo, G. L., Pieper, R., Rosa, A., Khosla, C., Cane, D. E.
1996; 4 (7): 995-999

• Efficient synthesis of aromatic polyketides in vitro by the actinorhodin polyketide synthase JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
Carreras, C. W., Pieper, R., Khosla, C.
1996; 118 (21): 5158-5159

• Engineered biosynthesis of novel polyketides: Regiospecific methylation of an unnatural substrate by the tcmO O-methyltransferase BIOCHEMISTRY
Fu, H., Alvarez, M. A., Khosla, C., Bailey, J. E.
1996; 35 (21): 6527-6532
• Combinatorial chemistry and biology: An opportunity for engineers CURRENT OPINION IN BIOTECHNOLOGY
  Khosla, C.
  1996; 7 (2): 219-222

• Engineered biosynthesis of novel polyketides: Properties of the whiE aromatase/cyclase NATURE BIOTECHNOLOGY
  Alvarez, M. A., Fu, H., Khosla, C., Hopwood, D. A., Bailey, J. E.
  1996; 14 (3): 335-338

• Deciphering the biosynthetic origin of the aglycone of the aureolic acid group of anti-tumor agents CHEMISTRY & BIOLOGY
  Blanco, G., Fu, H., Mendez, C., Khosla, C., Salas, J. A.
  1996; 3 (3): 193-196

• Erythromycin biosynthesis: Kinetic studies on a fully active modular polyketide synthase using natural and unnatural substrates BIOCHEMISTRY
  Pieper, R., EBERTKHOSLA, S., Cane, D., Khosla, C.
  1996; 35 (7): 2054-2060

• Antibiotic activity of polyketide products derived from combinatorial biosynthesis: Implications for directed evolution MOLECULAR DIVERSITY
  Fu, H., Khosla, C.
  1996; 1 (2): 121-124

• Engineering of novel polyketides - Progress and prospects ENZYME ENGINEERING XIII
  Kramer, P. J., Khosla, C.
  1996; 799: 32-45

• CELL-FREE SYNTHESIS OF POLYKETIDES BY RECOMBINANT ERYTHROMYCIN POLYKETIDE SYNTHASES NATURE
  Pieper, R., Luo, G. L., Cane, D. E., Khosla, C.
  1995; 378 (6554): 263-266

• MANIPULATION OF MACROLIDE RING SIZE BY DIRECTED MUTAGENESIS OF A MODULAR POLYKETIDE SYNTHASE JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  Kao, C. M., Luo, G. L., Katz, L., Cane, D. E., Khosla, C.
  1995; 117 (35): 9105-9106

• EXPRESSION OF A FUNCTIONAL FUNGAL POLYKETIDE SYNTHASE IN THE BACTERIUM STREPTOMYCES-COELICOLOR A3(2) JOURNAL OF BACTERIOLOGY
  Bedford, D. J., Schweizer, E., Hopwood, D. A., Khosla, C.
  1995; 177 (15): 4544-4548

• ENGINEERED BIOSYNTHESIS OF NOVEL POLYKETIDES - ANALYSIS OF TCMN FUNCTION IN TETRACENOMYCIN BIOSYNTHESIS JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  McDaniel, R., Hutchinson, C. R., Khosla, C.
  1995; 117 (26): 6805-6810

• ERYTHROMYCIN BIOSYNTHESIS - HIGHLY EFFICIENT INCORPORATION OF POLYKETIDE CHAIN ELONGATION INTERMEDIATES INTO 6-DEOXYERYTHRONTROLIDE-B IN AN ENGINEERED STREPTOMYCINES HOST JOURNAL OF ANTIBIOTICS
  Cane, D. E., Luo, G. G., Khosla, C., Kao, C. M., Katz, L.
  1995; 48 (7): 647-651

• RATIONAL DESIGN OF AROMATIC POLYKETIDE NATURAL-PRODUCTS BY RECOMBINANT ASSEMBLY OF ENZYMATIC SUBUNITS NATURE
  McDaniel, R., EBERTKHOSLA, S., Hopwood, D. A., Khosla, C.
  1995; 375 (6532): 549-554

• COMBINATORIAL BIOSYNTHESIS OF UNNATURAL NATURAL-PRODUCTS - THE POLYKETIDE EXAMPLE CHEMISTRY & BIOLOGY
  TSOI, C. J., Khosla, C.
  1995; 2 (6): 355-362

• ENGINEERED BIOSYNTHESIS OF A TRIKETIDE LACTONE FROM AN INCOMPLETE MODULAR POLYKETIDE SYNTHASE JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  Kao, C. M., Luo, G. L., Katz, L., Cane, D. E., Khosla, C.
• Engineered biosynthesis of novel polyketides: evidence for temporal, but not regiospecific, control of cyclization of an aromatic polyketide precursor. *Chemistry & biology*
  Fu, H., Hopwood, D. A., Khosla, C.
  1994; 1 (4): 205-210

• ENGINEERED BIOSYNTHESIS OF NOVEL POLYKETIDES - ACT(VII) AND ACT(IV) GENES ENCODE AROMATASE AND CYCLASE ENZYMES, RESPECTIVELY *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  McDaniel, R., EBERTKHOSLA, S., Hopwood, D. A., Khosla, C.
  1994; 116 (24): 10855-10859

• ENGINEERED BIOSYNTHESIS OF NOVEL POLYKETIDES - INFLUENCE OF A DOWNSTREAM ENZYME ON THE CATALYTIC SPECIFICITY OF A MINIMAL AROMATIC POLYKETIDE SYNTHASE *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  McDaniel, R., EBERTKHOSLA, S., Fu, H., Hopwood, D. A., Khosla, C.
  1994; 91 (24): 11542-11546

• ENGINEERED BIOSYNTHESIS OF NOVEL POLYKETIDES - STEREOCHEMICAL COURSE OF 2 REACTIONS CATALYZED BY A POLYKETIDE SYNTHASE *BIOCHEMISTRY*
  Fu, H., McDaniel, R., Hopwood, D. A., Khosla, C.
  1994; 33 (31): 9321-9326

• ENGINEERED BIOSYNTHESIS OF A COMPLETE MACROLACTONE IN A HETEROLOGOUS HOST *SCIENCE*
  Kao, C. M., Katz, L., Khosla, C.
  1994; 265 (5171): 509-512

• ENGINEERED BIOSYNTHESIS OF NOVEL POLYKETIDES - DISSECTION OF THE CATALYTIC SPECIFICITY OF THE ACT KETOREDUCTASE *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Fu, H., EBERTKHOSLA, S., Hopwood, D. A., Khosla, C.
  1994; 116 (10): 4166-4170

• EFFICIENT SAMPLING OF PROTEIN-SEQUENCE SPACE FOR MULTIPLE MUTANTS *BIO-TECHNOLOGY*
  Caren, R., Morkeberg, R., Khosla, C.
  1994; 12 (5): 517-520

• ENGINEERED BIOSYNTHESIS OF NOVEL POLYKETIDES - MANIPULATION AND ANALYSIS OF AN AROMATIC POLYKETIDE SYNTHASE WITH UNPROVED CATALYTIC SPECIFICITIES *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  McDaniel, R., EBERTKHOSLA, S., Hopwood, D. A., Khosla, C.
  1993; 115 (25): 11671-11675

• ENGINEERED BIOSYNTHESIS OF NOVEL POLYKETIDES *SCIENCE*
  McDaniel, R., EBERTKHOSLA, S., Hopwood, D. A., Khosla, C.
  1993; 262 (5139): 1546-1550

• GENETIC CONSTRUCTION AND FUNCTIONAL-ANALYSIS OF HYBRID POLYKETIDE SYNTHASES CONTAINING HETEROLOGOUS ACYL CARRIER PROTEINS *JOURNAL OF BACTERIOLOGY*
  1993; 175 (8): 2197-2204

• TARGETED GENE REPLACEMENTS IN A STREPTOMYCES POLYKETIDE SYNTHASE GENE-CLUSTER - ROLE FOR THE ACYL CARRIER PROTEIN *MOLECULAR MICROBIOLOGY*
  Khosla, C., EBERTKHOSLA, S., Hopwood, D. A.
  1992; 6 (21): 3237-3249

• EXPRESSION OF INTRACELLULAR HEMOGLOBIN IMPROVES PROTEIN-SYNTHESIS IN OXYGEN-LIMITED ESCHERICHIA-COLI *BIO-TECHNOLOGY*
  Khosla, C., Curtis, J. E., DeModena, J., Rinas, U., Bailey, J. E.
  1990; 8 (9): 849-853

• EXPRESSION OF RECOMBINANT PROTEINS IN ESCHERICHIA-COLI USING AN OXYGEN-RESPONSIVE PROMOTER *BIO-TECHNOLOGY*
  Khosla, C., Curtis, J. E., BYDALEK, P., Swartz, J. R., Bailey, J. E.
• STRATEGIES AND CHALLENGES IN METABOLIC ENGINEERING  *ANNALS OF THE NEW YORK ACADEMY OF SCIENCES*
  Bailey, J. E., Birnbaum, S., Galazzo, J. L., Khosla, C., Shanks, J. V.
  1990; 589: 1-15

• EVIDENCE FOR PARTIAL EXPORT OF *Vitreoscilla* HEMOGLOBIN INTO THE PERIPLASMIC SPACE IN *ESCHERICHIA-COLI* - IMPLICATIONS FOR PROTEIN FUNCTION *JOURNAL OF MOLECULAR BIOLOGY*
  Khosla, C., Bailey, J. E.
  1989; 210 (1): 79-89

• CHARACTERIZATION OF THE OXYGEN-DEPENDENT PROMOTER OF THE *Vitreoscilla* HEMOGLOBIN GENE IN *ESCHERICHIA-COLI* *JOURNAL OF BACTERIOLOGY*
  Khosla, C., Bailey, J. E.
  1989; 171 (11): 5995-6004

• A NEW OXYGEN-REGULATED PROMOTER FOR THE EXPRESSION OF PROTEINS IN *ESCHERICHIA-COLI* *BIOTECHNIQUES*
  Hughes, D. E., Curtis, J. E., Khosla, C., Bailey, J. E.
  1989; 7 (9): 1026-1028

• HETEROLOGOUS EXPRESSION OF A BACTERIAL HEMOGLOBIN IMPROVES THE GROWTH-PROPERTIES OF RECOMBINANT *ESCHERICHIA-COLI* *NATURE*
  Khosla, C., Bailey, J. E.
  1988; 331 (6157): 633-635