Research in this laboratory focuses on problems where deep insights into enzymology and metabolism can be harnessed to improve human health.

For the past two decades, we have studied and engineered enzymatic assembly lines called polyketide synthases that catalyze the biosynthesis of structurally complex and medicinally fascinating antibiotics in bacteria. An example of such an assembly line is found in the erythromycin biosynthetic pathway. Our current focus is on understanding the structure and mechanism of this polyketide synthase. At the same time, we are developing methods to decode the vast and growing number of orphan polyketide assembly lines in the sequence databases.

For more than a decade, we have also investigated the pathogenesis of celiac disease, an autoimmune disorder of the small intestine, with the goal of discovering therapies and related management tools for this widespread but overlooked disease. Ongoing efforts focus on understanding the pivotal role of transglutaminase 2 in triggering the inflammatory response to dietary gluten in the celiac intestine.

ACADEMIC APPOINTMENTS

- Professor, Chemical Engineering
- Professor, Chemistry
- Professor (By courtesy), Biochemistry
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Medicine Children’s Health Center for IBD and Celiac Disease
- Institute Scholar, Sarafan ChEM-H
- Director, Innovative Medicines Accelerator (IMA)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute
CURRENT RESEARCH AND SCHOLARLY INTERESTS
Research in this laboratory focuses on problems where deep insights into enzymology and metabolism can be harnessed to improve human health.

For the past two decades, we have studied and engineered enzymatic assembly lines called polyketide synthases that catalyze the biosynthesis of structurally complex and medicinally fascinating antibiotics in bacteria. An example of such an assembly line is found in the erythromycin biosynthetic pathway. Our current focus is on understanding the structure and mechanism of this polyketide synthase. At the same time, we are developing methods to decode the vast and growing number of orphan polyketide assembly lines in the sequence databases.

For more than a decade, we have also investigated the pathogenesis of celiac disease, an autoimmune disorder of the small intestine, with the goal of discovering therapies and related management tools for this widespread but overlooked disease. Ongoing efforts focus on understanding the pivotal role of transglutaminase 2 in triggering the inflammatory response to dietary gluten in the celiac intestine.

CLINICAL TRIALS
• COVID-19 Outpatient Pragmatic Platform Study (COPPS) - Camostat Sub-Protocol, Not Recruiting
• COVID-19 Outpatient Pragmatic Platform Study (COPPS) - Master Protocol, Not Recruiting
Teaching

COURSES

2023-24
• Biochemistry II: CHEM 183, CHEMENG 183, CHEMENG 283 (Win)
• Foundational Biology for Engineers: CHEMENG 55, ENGR 55 (Aut)

2022-23
• Special Topics in Biocatalysis: CHEMENG 503 (Aut)

2021-22
• Special Topics in Biocatalysis: CHEMENG 503 (Aut)

2020-21
• Graduate Practical Training: CHEMENG 299 (Sum)
• Special Topics in Biocatalysis: CHEMENG 503 (Aut, Win, Spr, Sum)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)
Lexie Adams, Xujun Cao, Sriya Chitti, Chiu-Chun Chou, L Handy, Alby Joseph, Christina Lee, Michelle Lee, Jack Liu, Micah Olivas, Elizabeth Park, Prima Dewi Sinawang

Postdoctoral Faculty Sponsor
Heewon Cho, Antonio Del Rio Flores, Ricardo Hernandez Arriaza, Lin Liu, Fu Chen Yang, Jinping Yang

Doctoral Dissertation Advisor (AC)
Harrison Besser, Krystal Brodsky, Nina Fatuzzo, Elizabeth Karas, Shreya Kishore, Seokyoung Lee, Dylan Reil, Agnele Sewa, Alex Soohoo

Doctoral Dissertation Co-Advisor (AC)
Katie Antilla

Postdoctoral Research Mentor
Xiaowen Ding

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

• Biochemistry (Phd Program)
• Biophysics (Phd Program)

Publications

PUBLICATIONS

• Enterocyte-derived and catalytically active transglutaminase 2 in the gut lumen of mice: Implications for celiac disease. *Gastroenterology*
  2024

• Structure and Mechanisms of Assembly-Line Polyketide Synthases. *Annual review of biochemistry*
  Soohoo, A. M., Cogan, D. P., Brodsky, K. L., Khosla, C.
  2024

• Past, present and future of non-invasive tests to assess gluten exposure, celiac disease activity, and end-organ damage. *Gastroenterology*
Chaitan Khosla
http://cap.stanford.edu/profiles/Chaitan_Khosla/

Silvester, J. A., Elli, L., Khosla, C., Tye-Din, J.
2024

- **Discovery and Characterization of the Fully Decorated Nocardiosis-Associated Polyketide Natural Product.** *Journal of the American Chemical Society*
  2024

- **Celiac disease: mechanisms and emerging therapeutics.** *Trends in pharmacological sciences*
  Besser, H. A., Khosla, C.
  2023

- **Targeted Lysosomal Degradation of Secreted and Cell Surface Proteins through the LRP-1 Pathway.** *Journal of the American Chemical Society*
  Loppinet, E., Besser, H. A., Lee, C. E., Zhang, W., Cui, B., Khosla, C.
  2023

- **Genomic mining and diversity of assembly line polyketide synthases.** *Open biology*
  Kishore, S., Khosla, C.
  2023; 13 (8): 230096

- **Discovery and Characterization of Antibody Probes of Module 2 of the 6-Deoxyerythronolide B Synthase.** *Biochemistry*
  2023

- **Evaluation of acebilustat, a selective inhibitor of leukotriene B4 biosynthesis, for treatment of outpatients with mild-moderate COVID-19 disease: A randomized, double-blind, placebo-controlled Phase 2 trial.** *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America*
  2023

- **Challenges in Harnessing Shared Within-Host Severe Acute Respiratory Syndrome Coronavirus 2 Variation for Transmission Inference.** *Open forum infectious diseases*
  2022; 10 (2): ofad001

- **LRP-1 links post-translational modifications to efficient presentation of celiac disease-specific T-cell antigens.** *Cell chemical biology*
  Loppinet, E., Besser, H. A., Sewa, A. S., Yang, F., Jabri, B., Khosla, C.
  2022

- **Carnitine octanoyltransferase is important for the assimilation of exogenous acetyl-L-carnitine into acetyl-CoA in mammalian cells.** *The Journal of biological chemistry*
  2022; 102848

- **Early immune markers of clinical, virological, and immunological outcomes in patients with COVID-19: a multi-omics study.** *elife*
  2022; 11

- **Structure-Based Prototyping of Allosteric Inhibitors of Human Uridine/Cytidine Kinase 2 (UCK2).** *Biochemistry*
  Mashayekh, S., Stunkard, L. M., Kienle, M., Mathews, I. I., Khosla, C.
  2022

- **In vivo visualization and molecular targeting of the cardiac conduction system.** *The Journal of clinical investigation*
  2022

- **Latiglutenase Protects the Mucosa and Attenuates Symptom Severity in Patients with Celiac Disease Exposed to a Gluten Challenge.** *Gastroenterology*
2022

- **A Mouse Model of Celiac Disease.** *Current protocols*
  Abadie, V., Khosla, C., Jabri, B.
  2022; 2 (8): e515

- **Engineering site-selective incorporation of fluorine into polyketides.** *Nature chemical biology*
  2022

- **Favipiravir for treatment of outpatients with asymptomatic or uncomplicated COVID-19: a double-blind randomized, placebo-controlled, phase 2 trial.** *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*
  2022

- **KIR+CD8+ T cells suppress pathogenic T cells and are active in autoimmune diseases and COVID-19.** *Science (New York, N.Y.)*
  2022: eabi9591

- **Fragment antigen binding domains (Fabs) as tools to study assembly-line polyketide synthases.** *Synthetic and systems biotechnology*
  Guzman, K. M., Khosla, C.
  1800; 7 (1): 506-512

- **An efficient urine peptidomics workflow identifies chemically defined dietary gluten peptides from patients with celiac disease.** *Nature communications*
  2022; 13 (1): 888

- **Early non-neutralizing, afucosylated antibody responses are associated with COVID-19 severity.** *Science translational medicine*
  2022: eabm7853

- **Solution Structure and Conformational Flexibility of a Polyketide Synthase Module.** *JACS Au*
  1800; 1 (12): 2162-2171

- **Prospects for Antibacterial Discovery and Development** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  2021; 143 (50): 21127-21142

- **Properties of a "Split-and-Stuttering" Module of an Assembly Line Polyketide Synthase** *JOURNAL OF ORGANIC CHEMISTRY*
  2021; 86 (16): 11100-11106

- **An Unusual "OR" Gate for Allosteric Regulation of Mammalian Transglutaminase 2 in the Extracellular Matrix** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Melkonian, A., Loppinet, E., Martin, R., Porteus, M., Khosla, C.
  2021; 143 (28): 10537-10540

- **The COVID-19 Outpatient Pragmatic Platform Study (COPPS): Study design of a multi-center pragmatic platform trial.** *Contemporary clinical trials*
  2021: 106509

- **GRINS: Genetic elements that recode assembly-line polyketide synthases and accelerate their diversification.** *Proceedings of the National Academy of Sciences of the United States of America*
  Nivina, A., Herrera Paredes, S., Fraser, H. B., Khosla, C.
  2021; 118 (26)

- **GRINS: Genetic elements that recode assembly-line polyketide synthases and accelerate their diversification** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Nivina, A., Paredes, S., Fraser, H. B., Khosla, C. 2021; 118 (26)

- 50 Years Ago in The Journal of Pediatrics: Association of Type 1 Diabetes Mellitus and Celiac Disease: Then and Now. The Journal of Pediatrics
  Ni, J., Khosla, C., Maahs, D. M.
  2021; 230: 70

- Association of Type 1 Diabetes Mellitus and Celiac Disease: Then and Now JOURNAL OF PEDIATRICS
  Ni, J., Khosla, C., Maahs, D. M.
  2021; 230: 70


- Mapping the catalytic conformations of an assembly-line polyketide synthase module. Science (New York, N.Y.)
  Cogan, D. P., Zhang, K., Li, X., Li, S., Pintilie, G. D., Roh, S. H., Craik, C. S., Chiu, W., Khosla, C.
  2021; 374 (6568): 729-734

- SARS-CoV-2 subgenomic RNA kinetics in longitudinal clinical samples Open Forum Infectious Diseases
  2021

- Structure and Mechanism of the Ketosynthase-Chain Length Factor Didomain from a Prototypical Polyunsaturated Fatty Acid Synthase. Biochemistry
  Santin, O., Yuet, K., Khosla, C., Moncalian, G.
  2020

- Antibody Probes of Module 1 of the 6-Deoxyerythronolide B Synthase Reveal an Extended Conformation During Ketoreduction. Journal of the American Chemical Society
  Cogan, D. P., Li, X., Sevillano, N., Mathews, I. I., Matsui, T., Craik, C. S., Khosla, C.
  2020

- Challenges and opportunities for engineering assembly-line polyketide biosynthesis in Escherichia coli. Metabolic engineering communications
  Yuet, K. P., Khosla, C.
  2020; 10: e00106

- When the Quest for a Cure Is Personal CELL
  Gordon, L., Khosla, C., Fajgenbaum, D.
  2020; 181 (1): 19

- Complete Reconstitution and Deorphanization of the 3 MDa Nocardiosis-Associated Polyketide Synthase JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  2020; 142 (13): 5952–57

- IL-15, gluten and HLA-DQ8 drive tissue destruction in coeliac disease. Nature
  2020

- Genome-wide analysis of targets of macrolide antibiotics in mammalian cells. The Journal of biological chemistry
  Gupta, A., Okesli-Armlovich, A., Morgens, D., Bassik, M. C., Khosla, C.
  2020

- Enhancing the Antiviral Efficacy of RNA-Dependent RNA Polymerase Inhibition by Combination with Modulators of Pyrimidine Metabolism. Cell chemical biology
  2020
• Evolution and Diversity of Assembly-Line Polyketide Synthases. *Chemical Reviews*
  Nivina, A., Yuet, K. P., Hsu, J., Khosla, C.
  2019; 119 (24): 12524–47

• Latiglutenase Treatment for Celiac Disease: Symptom and Quality of Life Improvement for Seropositive Patients on a Gluten-Free Diet. *Gastrohep*
  2019; 1 (6): 293–301

• Discovery of small molecule inhibitors of human uridine-cytidine kinase 2 by high-throughput screening. *Bioorganic & Medicinal Chemistry Letters*
  2019

• Tunable Enzymatic Synthesis of the Immunomodulator Lipid IVA To Enable Structure-Activity Analysis. *Journal of the American Chemical Society*
  2019; 141 (24): 9474–78

• Engineering of Chimeric Polyketide Synthases Using SYNZIP Docking Domains. *ACS Chemical Biology*
  Klaus, M., D’Souza, A. D., Nivina, A., Khosla, C., Grininger, M.
  2019; 14 (3): 426–33

• From Active Sites to Machines: A Challenge for Enzyme Chemists. *Israel Journal of Chemistry*
  Khosla, C.
  2019; 59 (1-2): 37–40

• In Vivo Measurement of Redox-Regulated TG2 Activity. *Methods in Molecular Biology (Clifton, N.J.)*
  2019; 1967: 263–74

• Substrates, inhibitors, and probes of mammalian transglutaminase 2. *Analytical Biochemistry*
  Zhuang, R. n., Khosla, C. n.
  2019; 113560

• In Vivo Measurement of Redox-Regulated TG2 Activity. *Functional Disulphide Bonds: Methods and Protocols*
  Melkonian, A. V., Weng, N., Palanski, B. A., Khosla, C., Hogg, P.
  2019; 1967: 263–74

• A tribute to Professor Jay Bailey: A pioneer in biochemical engineering. *AICHE Journal*
  Khosla, C., Clark, D. S., Chen, W.
  2018; 64 (12): 4179–81

• A Tribute to James E. Bailey *AICHE Journal*
  Chen, W., Harold, M. P., Clark, D., Khosla, C.
  2018; 64 (12): 4178

• Discovery and Characterization of a Thioesterase-Specific Monoclonal Antibody That Recognizes the 6-Deoxyerythronolide B Synthase. *Biochemistry*
  Li, X., Sevillano, N., La Greca, F., Hsu, J., Mathews, I. I., Matsui, T., Craik, C. S., Khosla, C.
  2018; 57 (43): 6201–8

• Discovery and Characterization of a Thioesterase-Specific Monoclonal Antibody That Recognizes the 6-Deoxyerythronolide B Synthase. *Biochemistry*
  Li, X., Sevillano, N., La Greca, F., Hsu, J., Mathews, I. I., Matsui, T., Craik, C. S., Khosla, C.
  2018
• Interleukin 4 is inactivated via selective disulfide-bond reduction by extracellular thioredoxin. *Proceedings of the National Academy of Sciences of the United States of America*
  Plugis, N. M., Weng, N., Zhao, Q., Palanski, B. A., Maecker, H. T., Habtezion, A., Khosla, C.  
  2018; 115 (35): 8781-8786

• Interleukin 4 is inactivated via selective disulfide-bond reduction by extracellular thioredoxin.  
  Plugis, N. M., Weng, N., Zhao, Q., Palanski, B. A., Maecker, H. T., Habtezion, A., Khosla, C.  
  2018

• Cystamine and Disulfiram Inhibit Human Transglutaminase 2 via an Oxidative Mechanism  
  *Biochemistry*
  Palanski, B. A., Khosla, C.  
  2018; 57 (24): 3359–63

• Structure-Function Analysis of the Extended Conformation of a Polyketide Synthase Module  
  *Journal of the American Chemical Society*
  2018; 140 (21): 6518–21

• HEx: A heterologous expression platform for the discovery of fungal natural products  
  *Science Advances*
  2018; 4 (4): eaar5459

• Endoplasmic reticulum-resident protein 57 (ERp57) oxidatively inactivates human transglutaminase 2  
  *Journal of Biological Chemistry*
  Yi, M. C., Melkonian, A. V., Ousey, J. A., Khosla, C.  
  2018; 293 (8): 2640–49

• Transglutaminase 2 in pulmonary and cardiac tissue remodeling in experimental pulmonary hypertension  
  *American Journal of Physiology-Lung Cellular and Molecular Physiology*
  2017; 313 (5): L752–L762

• Biosynthesis and structure-activity relationships of the lipid a family of glycolipids  
  *Current Opinion in Chemical Biology*
  Xiao, X., Sankaranarayanan, K., Khosla, C.  
  2017; 40: 127–37

• The Conformational Flexibility of the Acyltransferase from the Disorazole Polyketide Synthase Is Revealed by an X-ray Free-Electron Laser Using a Room-Temperature Sample Delivery Method for Serial Crystallography  
  *Biochemistry*
  2017; 56 (36): 4751–56

• Latiglutase Improves Symptoms in Seropositive Celiac Disease Patients While on a Gluten-Free Diet  
  *Digestive Diseases and Sciences*
  Syage, J. A., Murray, J. A., Green, P. R., Khosla, C.  
  2017; 62 (9): 2428–32

• A B-Cell Gene Signature Correlates With the Extent of Gluten-Induced Intestinal Injury in Celiac Disease.  
  *Cellular and molecular gastroenterology and hepatology*
  2017; 4 (1): 1-17

• C-Thiourea.  
  *ACS Chemical Biology*
  Wibowo, A., Park, J. M., Liu, S., Khosla, C., Spielman, D. M.  
  2017

• Elucidation of the Stereospecificity of C-Methyltransferases from trans-AT Polyketide Synthases  
  *Journal of the American Chemical Society*
  Xie, X., Khosla, C., Cane, D. E.  
  2017; 139 (17): 6102-6105

• Human pyrimidine nucleotide biosynthesis as a target for antiviral chemotherapy.  
  *Current Opinion in Biotechnology*
  Oksli, A., Khosla, C., Bassik, M. C.
Heterologous expression of diverse propionyl-CoA carboxylases affects polyketide production in Escherichia coli. *journal of antibiotics*
2017

Reovirus infection triggers inflammatory responses to dietary antigens and development of celiac disease *SCIENCE*
2017; 356 (6333): 44-7

Combinatorial enzymatic synthesis of lipid A analogs
Sankar, K., Khosla, C.
AMER CHEMICAL SOC.2017

Exploring vectorial chain translocation in assembly line polyketide synthases
Ostrowski, M., Khosla, C.
AMER CHEMICAL SOC.2017

Cholesteryamine as a promising, strong anion exchange resin for direct capture of genetic biomarkers from raw pancreatic fluids *BIOTECHNOLOGY AND BIOENGINEERING*
Hilmer, A. J., Jeffrey, R. B., Park, W. G., Khosla, C.
2017; 114 (4): 934-938

Mechanism and Stereochemistry of Polyketide Chain Elongation and Methyl Group Epimerization in Polyether Biosynthesis. *Journal of the American Chemical Society*
Xie, X., Garg, A., Khosla, C., Cane, D. E.
2017; 139 (8): 3283-3292

Thioredoxin-1 Selectively Activates Transglutaminase 2 in the Extracellular Matrix of the Small Intestine: IMPLICATIONS FOR CELIAC DISEASE. *journal of biological chemistry*
Plugis, N. M., Palanski, B. A., Weng, C., Albertelli, M., Khosla, C.

Genetic Mapping and Biochemical Basis of Yellow Feather Pigmentation in Budgerigars. *Cell*
2017; 171 (2): 427–39.e21

Celiac Disease: Lessons for and from Chemical Biology. *ACS chemical biology*
Khosla, C. n.

Elucidation of the Cryptic Methyl Group Epimerase Activity of Dehydratase Domains from Modular Polyketide Synthases Using a Tandem Modules Epimerase Assay. *Journal of the American Chemical Society*
Xie, X. n., Garg, A. n., Khosla, C. n., Cane, D. E.
2017; 139 (28): 9507–10

Intracellular TG2 Activity Increases Microtubule Stability but is not Sufficient to Prompt Neurite Growth. *Neuroscience bulletin*
2017; 33 (1): 103–6

Cholesteryamine as a promising, strong anion exchange resin for direct capture of genetic biomarkers from raw pancreatic fluids. *Biotechnology and bioengineering*
Hilmer, A. J., Jeffrey, R. B., Park, W. G., Khosla, C.
2016

Partial In Vitro Reconstitution of an Orphan Polyketide Synthase Associated with Clinical Cases of Nocardiosis. *ACS chemical biology*
Kuo, J., Lynch, S. R., Liu, C. W., Xiao, X., Khosla, C.
2016; 11 (9): 2636-2641

Roles of Conserved Active Site Residues in the Ketosynthase Domain of an Assembly Line Polyketide Synthase. *Biochemistry*
Robbins, T., Kapilivsky, J., Cane, D. E., Khosla, C.  
2016; 55 (32): 4476-4484

- **Protein-Protein Interactions, Not Substrate Recognition, Dominate the Turnover of Chimeric Assembly Line Polyketide Synthases.**  *Journal of Biological Chemistry*  
  Klaus, M., Ostrowski, M. P., Austerjost, J., Robbins, T., Lowry, B., Cane, D. E., Khosla, C.  
  2016; 291 (31): 16404-16415

- **Recognition of acyl carrier proteins by ketoreductases in assembly line polyketide synthases.**  *Journal of Antibiotics*  
  Ostrowski, M. P., Cane, D. E., Khosla, C.  
  2016; 69 (7): 507-510

- **Structure and mechanism of assembly line polyketide synthases.**  *Current Opinion in Structural Biology*  
  Robbins, T., Liu, Y., Cane, D. E., Khosla, C.  
  2016; 41: 10-18

- **Editorial overview: Next-generation therapeutics: Breaking new ground and making a difference for patients**  *Current Opinion in Chemical Biology*  
  Khosla, C., Baryza, J.  
  2016; 32: 58-59

- **Parallel shRNA and CRISPR-Cas9 screens enable antiviral drug target identification**  *Nature Chemical Biology*  
  2016; 12 (5): 361-?

- **Epimerase and Reductase Activities of Polyketide Synthase Ketoreductase Domains Utilize the Same Conserved Tyrosine and Serine Residues.**  *Biochemistry*  
  2016; 55 (8): 1179-1186

- **A Turnstile Mechanism for the Controlled Growth of Biosynthetic Intermediates on Assembly Line Polyketide Synthases.**  *ACS Central Science*  
  Lowry, B., Li, X., Robbins, T., Cane, D. E., Khosla, C.  
  2016; 2 (1): 14-20

- **Gluten Introduction, Breastfeeding, and Celiac Disease: Back to the Drawing Board.**  *American Journal of Gastroenterology*  
  2016; 111 (12): 12-14

- **Thiol-Disulfide Exchange Reactions in the Mammalian Extracellular Environment**  *Annual Review of Chemical and Biomolecular Engineering, Vol 7*  
  Yi, M. C., Khosla, C.  
  2016; 7: 197-222

- **An unprecedented dual antagonist and agonist of human Transglutaminase 2.**  *Bioorganic & Medicinal Chemistry Letters*  
  Yi, M. C., Palanski, B. A., Quintero, S. A., Plugis, N. M., Khosla, C.  
  2015; 25 (21): 4922-4926

- **In Vitro Reconstitution of Metabolic Pathways: Insights into Nature’s Chemical Logic.**  *Synlett: Accounts and Rapid Communications in Synthetic Organic Chemistry*  
  Lowry, B., Walsh, C. T., Khosla, C.  
  2015; 26 (8): 1008-1025

- **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.
  2015; 29 (3): 503-521

• In Vitro Reconstitution of Metabolic Pathways: Insights into Nature's Chemical Logic *SYNLETT*
  Lowry, B., Walsh, C. T., Khosla, C.
  2015; 26 (8): 1008-1025

• 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*
  2014; 307 (7): L576-L585

• Role of hypoxia-induced transglutaminase 2 in pulmonary artery smooth muscle cell proliferation. *American journal of physiology. Lung cellular and molecular physiology*
  2014; 307 (7): L576-85

• The Convergence of Chemistry & Human Biology *DAEDALUS*
  Khosla, C.
  2014; 143 (4): 43-48

• What can in vitro reconstitution of complex molecule metabolism teach the synthetic biologist?
  Khosla, C.
  AMER CHEMICAL SOC.2014

• Generation of food-grade recombinant Lactobacillus casei delivering Myxococcus xanthus prolyl endopeptidase *APPLIED MICROBIOLOGY AND BIOTECHNOLOGY*
  2014; 98 (15): 6689-6700

• Generation of food-grade recombinant Lactobacillus casei delivering Myxococcus xanthus prolyl endopeptidase. *Applied microbiology and biotechnology*
  2014; 98 (15): 6689-6700

• 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*
  2014; 136 (29): 10190-10193

• 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.
  2014; 53 (23): 3796-3806

• Comparative analysis of the substrate specificity of trans- versus cis-acyltransferases of assembly line polyketteid synthases. *Biochemistry*
  Dunn, B. J., Watts, K. R., Robbins, T., Cane, D. E., Khosla, C.
  2014; 53 (23): 3796-3806

• 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; 13: 210-?

• **Dihydroisoxazole inhibitors of Anopheles gambiae seminal transglutaminase AgTG3** *MALARIA JOURNAL*
  Le, B. V., Kloeck, 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.
  2014; 426 (11): 2229-2245

• **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

• **Stanford Institute for Chemical Biology: At the crossroad between molecular engineering and human biology**
  Khosla, C.
  AMER CHEMICAL SOC.2014

• 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

• **Rationale for Using Social Media to Collect Patient-Reported Outcomes in Patients with Celiac Disease.** Journal of gastrointestinal & digestive system
  Park, K., Harris, M., Khavari, N., Khosla, C.
  2014; 4 (1)

• **Architecture of Whole-Module and Bimodular Proteins from the 6-Deoxyerythronolide B Synthase**
  Edwards, A. L., Matsui, T., Khosla, C.
  CELL PRESS.2014: 466A

• **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

• **Macrolides and Antifungals via Biotransformation** NATURAL PRODUCTS IN MEDICINAL CHEMISTRY
  May, A. E., Khosla, C., Hanessian, S.
  2014; 60: 367-401

• **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., Klöck, 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

• **Coupled Methyl Group Epimerization and Reduction by Polyketide Synthase Ketoreductase Domains. Ketoreductase-Catalyzed Equilibrium Isotope Exchange** JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  Garg, A., Khosla, C., Cane, D. E.
  2013; 135 (44): 16324-16327

• **Working at the Triple Point** CHEMICAL ENGINEERING PROGRESS
* The stanford institute for chemical biology. ACS chemical biology
  Chen, J. K., Du Bois, J., Glenn, J., Herschlag, D., Khosla, C.
  2013; 8 (9): 1860-1861

* Assembly line antibiotic biosynthesis
  Khosla, C.
  AMER CHEMICAL SOC.2013

* Studies of the biosynthetic gene cluster of the guadinomines: Potent inhibitors of bacterial pathogenesis
  May, A. E., Khosla, C.
  AMER CHEMICAL SOC.2013

* 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

* 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
  Walsh, C. T., Brien, R. V., Khosla, C.
  2013; 52 (28): 7098-7124

* Stereochemistry of Reductions Catalyzed by Methyl-Epimerizing Ketoreductase Domains of Polyketide Synthases JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  You, Y., Khosla, C., Cane, D. E.
  2013; 135 (20): 7406-7409

* Molecular insights into the biosynthesis of guadinomine, a type III secretion system inhibitor
  Khosla, C., May, A. E.
  AMER CHEMICAL SOC.2013

* 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
  2013; 147 (1): 40-49

* Mechanism and Specificity of an Acyltransferase Domain from a Modular Polyketide Synthase BIOCHEMISTRY
  Dunn, B. J., Cane, D. E., Khosla, C.
  2013; 52 (11): 1839-1841

* 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*
DiRaimondo, T. R., Plugis, N. M., Jin, X., Khosla, C.
2013; 56 (3): 1301-1310

Engineering the acyltransferase substrate specificity of assembly line polyketide synthases. *Journal of the Royal Society, Interface / the Royal Society*
Dunn, B. J., Khosla, C.
2013; 10 (85): 20130297-

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

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*
2012; 134 (42): 17797-17806

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

Precedor Directed Biosynthesis of an Orthogonally Functional Erythromycin Analogue: Selectivity in the Ribosome Macrolide Binding Pocket. *Journal of the American Chemical Society*
Harvey, C. J., Puglisi, J. D., Pande, V. S., Cane, D. E., Khosla, C.
2012; 134 (29): 12259-12265

Role of transglutaminase 2 in celiac disease pathogenesis. *Seminars in Immunopathology*
Klock, C., DiRaimondo, T. R., Khosla, C.
2012; 34 (4): 513-522

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*
Wang, J., Jin, X., Liu, J., Khosla, C., Xia, J.
2012; 7 (5): 992-999

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

Interferon-gamma Activates Transglutaminase 2 via a Phosphatidylinositol-3-Kinase-Dependent Pathway: Implications for Celiac Sprue Therapy. *Journal of Pharmacology and Experimental Therapeutics*
DiRaimondo, T. R., Kloeck, C., Khosla, C.
2012; 341 (1): 104-114

Combinatorial biosynthesis of polyketides - a perspective. *Current Opinion in Chemical Biology*
Wong, F. T., Khosla, C.
2012; 16 (1-2): 117-123

* Probing the biosynthesis of the type II polyketide A-74528 through heterologous pathway reconstruction
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., Lowry, 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 ENZYMEOLOGY, VOL 502: PROTEIN ENGINEERING FOR THERAPEUTICS, PT A**
Bethune, M. T., Khosla, C.
2012; 502: 241-271

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 and in vivo activity of frenolicin B against Plasmodium falciparum and *P. berghei*

**JOURNAL OF ANTIBIOTICS**
2011; 64 (12): 799-801

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., Shiou-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 therapies for coeliac disease

**JOURNAL OF INTERNAL MEDICINE**
Sollid, L. M., Khosla, C.
2011; 269 (6): 604-613

Novel chemo-sensitizing agent, ERW1227B, impairs cellular motility and enhances cell death in glioblastomas

**JOURNAL OF NEURO-ONCOLOGY**
2011; 103 (2): 207-219


**Bioorganic & medicinal chemistry letters**
2011; 21 (9): 2692-2696
• Acylideneoxindoles: 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

• Biosynthetic Engineering of Antibacterial Natural Products EMERGING TRENDS IN ANTIBACTERIAL DISCOVERY: ANSWERING THE CALL TO ARMS
  Fitzgerald, J., Lee, Y., Khosla, C., Miller, A. A., Miller, P. F.
  2011: 171–92

• 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.
2010; 1217 (25): 4167-4183

• 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 Stereochirality 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
• THE DIVERSITY OF NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY NATO Advanced Study Institute on Biophysics and the Challenges of Emerging Threats
SPRINGER.2009: 65–81

• Protein engineering of improved prolyl endopeptidases for celiac sprue therapy PROTEIN ENGINEERING DESIGN & SELECTION
Ehren, J., Govindarajan, S., Moron, B., Minshull, 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 transgluaminase 2 expression in meningiomas JOURNAL OF NEURO-ONCOLOGY
Yuan, L., Behbad, 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–?

• 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 9th Tetrahedron Symposium on Challenges in Organic and Bioorganic Chemistry
Kapur, S., Worthington, A., Tang, Y., Cane, D. E., Burkart, M. D., Khosla, C.
PERGAMON-ELSEVIER SCIENCE LTD.2008: 3034–38

• 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


Substrate tolerance of module 6 of the epothilone synthetase *BIOCHEMISTRY*
Tse, M. L., Watts, R. E., Khosla, C.
2007; 46 (11): 3385-3393

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

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

Bioassay-Guided evolution of glycosylated macrolide antibiotics in *Escherichia coli* *PLOS BIOLOGY*
Lee, H. Y., Khosla, C.
2007; 5 (2): 243-250

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*
Chaitan Khosla
http://cap.stanford.edu/profiles/Chaitan_Khosla/

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., Strohmeyer, 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

- Stereochemical 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): 687-694

• 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. I., 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 CHEMIE-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., Kinosita, 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
• Engineered biosynthesis of polyketides in heterologous hosts. *18th International Symposium on Chemical Reaction Engineering*
  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): 888-893

• 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

• Kinetic study of the ketoacyl-ACP synthase of the erythromycin polyketide synthase. *227th National Meeting of the American-Chemical Society*
  Wu, J. Q.
  AMER CHEMICAL SOC. 2004: U241–U241

• 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

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

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

Kumar, P., Koppisch, A. T., Cane, D. E., Khoslaa, 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

Admiraal, S. J., Khosla, C., Walsh, C. T.
2003; 125 (45): 13664-13665

Precursor-directed polyketide biosynthesis in Escherichia coli

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

2003; 69 (11): 6698-6702

Understanding substrate specificity of polyketide synthase modules by generating hybrid multimodular synthases

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

Tang, Y., Tsai, S. C., Khosla, C.
2003; 125 (42): 12708-12709

Structure-based mutagenesis of the Malonyl-CoA : Acyl carrier protein transacylase from Streptomyces coelicolor

Koppisch, A. T., Khosla, C.
2003; 42 (37): 11057-11064

Engineered biosynthesis of an ansamycin polyketide precursor in Escherichia coli

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

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

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

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

Hans, M., Hornung, A., Dziarnowski, A., Cane, D. E., Khosla, C.
• 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.
  2003; 42 (16): 4648-4657

• 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 macrolactonization 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

• **Engineering of molecular and cellular biocatalysts: Selected contributions by James E. Bailey** *BIOTECHNOLOGY AND BIOENGINEERING*
  Dordick, J. S., Khosla, C.
  2002; 79 (5): 490-495

• **Kinetic and structural analysis of a new group of acyl-CoA carboxylases found in Streptomyces coelicolor A3(2)** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Diacovich, L., Peiru, S., Kurth, D., Rodriguez, E., Podesta, F., Khosla, C., Gramajo, H.
  2002; 277 (34): 31228-31236

• **Process and metabolic strategies for improved production of Escherichia coli-derived 6-deoxyetythronolide B** *APPLIED AND ENVIRONMENTAL MICROBIOLOGY*
  Pfeifer, B., Hu, Z. H., Licari, P., Khosla, C.
  2002; 68 (7): 3287-3292

• **Biochemistry-engineering interface in biochemical engineering** *AIChE JOURNAL*
  Khosla, C.
  2002; 48 (7): 1366-1368

• **Metabolic engineering of a methylmalonyl-CoA mutase-epimerase pathway for complex polyketide biosynthesis in Escherichia coli** *BIOCHEMISTRY*
  2002; 41 (16): 5193-5201

• **The loading and initial elongation modules of rifamycin synthetase collaborate to produce mixed aryl ketide products-1** *BIOCHEMISTRY*
  Admiraal, S. J., Khosla, C., Walsh, C. T.
  2002; 41 (16): 5313-5324

• **Quantitative analysis of the relative contributions of donor acyl carrier proteins, acceptor ketosynthases, and linker regions to intermodular transfer of intermediates in hybrid polyketide synthases** *BIOCHEMISTRY*
  Wu, N., Cane, D. E., Khosla, C.
  2002; 41 (15): 5056-5066

• **Structural and mechanistic studies on the interactions between human tissue transglutaminase and immunodominant peptides: Implications for Celiac Sprue**
  W B SAUNDERS CO.2002: A15

• **High selectivity of human tissue transglutaminase for immunoactive gliadin peptides: Implications for Celiac Sprue** *BIOCHEMISTRY*
  Piper, J. L., Gray, G. M., Khosla, C.
  2002; 41 (1): 386-393

• **Precursor-directed biosynthesis: Biochemical basis of the remarkable selectivity of the erythromycin polyketide synthase toward unsaturated triketides** *CHEMISTRY & BIOLOGY*
  Cane, D. E., Kudo, F., Kinoshita, K., Khosla, C.
  2002; 9 (1): 131-142

• **Crystal structure of the macrocycle-forming thioesterase domain of the erythromycin polyketide synthase: Versatility from a unique substrate channel** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Tsai, S. C., Miercke, L. J., Krucinski, J., Gokhale, R., Chen, J. C., Foster, P. G., Cane, D. E., Khosla, C., Stroud, R. M.
  2001; 98 (26): 14808-14813

• **In vitro reconstitution and analysis of the chain initiating enzymes of the R1128 polyketide synthase** *BIOCHEMISTRY*
  Meadows, E. S., Khosla, C.
  2001; 40 (49): 14855-14861

• **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
• Molecular cloning and sequence analysis of the complestatin biosynthetic gene cluster \textit{PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA}
2001; 98 (15): 8548-8553

• Assessing the balance between protein-protein interactions and enzyme-substrate interactions in the channeling of intermediates between polyketide synthase modules \textit{JOURNAL OF THE AMERICAN CHEMICAL SOCIETY}
Wu, N., Tsuji, S. Y., Cane, D. E., Khosla, C.
2001; 123 (27): 6465-6474

• Enhancing the atom economy of polyketide biosynthetic processes through metabolic engineering \textit{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 \textit{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 \textit{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 \textit{BIOCHEMISTRY}
Admiraal, S. J., Walsh, C. T., Khosla, C.
2001; 40 (20): 6116-6123

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

• Precursor-directed biosynthesis of 16-membered macrolides by the erythromycin polyketide synthase \textit{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 \textit{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 \textit{MICROBIOLOGY AND MOLECULAR BIOLOGY REVIEWS}
Pfeifer, B. A., Khosla, C.
2001; 65 (1): 106-?

• Intermolecular communication in polyketide syntheses: Comparing the role of protein-protein interactions to those in other multidomain proteins \textit{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 \textit{BIOCHEMISTRY}
Tsuji, S. Y., Cane, D. E., Khosla, C.
2001; 40 (8): 2326-2331

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

• Structure-activity relationships within a family of selectively cytotoxic macrolide natural products \textit{ORGANIC LETTERS}
Salomon, A. R., Zhang, Y. B., Seto, H., Khosla, C.
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.
2001; 73: 31-52

Understanding and exploiting the mechanistic basis for selectivity of polyketide inhibitors of F0F1-ATPase. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
2000; 97 (26): 14766-14771

Natural product biosynthesis: A new interface between enzymology and medicine. *JOURNAL OF ORGANIC CHEMISTRY*
Khosla, C.
2000; 65 (24): 8127-8133

Dissecting the chain length specificity in bacterial aromatic polyketide synthases using chimeric genes. *TETRAHEDRON*
Burson, K. K., Khosla, C.
2000; 56 (48): 9401-9408

Cloning, nucleotide sequence, and heterologous expression of the biosynthetic gene cluster for R1128, a non-steroidal estrogen receptor antagonist - Insights into an unusual priming mechanism. *JOURNAL OF BIOLOGICAL CHEMISTRY*
2000; 275 (43): 33443-33448

Substrate specificity of the loading didomain of the erythromycin polyketide synthase. *BIOCHEMISTRY*
Lau, J., Cane, D. E., Khosla, C.
2000; 39 (34): 10514-10520

Analysis of the molecular recognition features of individual modules derived from the erythromycin polyketide synthase. *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Wu, N., Kudo, F., Cane, D. E., Khosla, C.
2000; 122 (20): 4847-4852

Isolation and characterization of the epothilone biosynthetic gene cluster from Sorangium cellulosum. *GENE*
2000; 249 (1-2): 153-160

Directed transfer of large DNA fragments between Streptomyces species. *APPLIED AND ENVIRONMENTAL MICROBIOLOGY*
Hu, Z. H., Hopwood, D. A., Khosla, C.
2000; 66 (5): 2274-2277

Role of the substrate specificity of loading end extender unit acyltransferase domains in the erythromycin polyketide synthase. *AMER CHEMICAL SOC.* 2000: U158–U158

Mechanistic analysis of a type II polyketide synthase. Role of conserved residues in the beta-ketoacyl synthase-chain length factor heterodimer. *BIOCHEMISTRY*
Dreier, J., Khosla, C.
2000; 39 (8): 2088-2095

Role of linkers in communication between protein modules. *CURRENT OPINION IN CHEMICAL BIOLOGY*
Gokhale, R. S., Khosla, C.

Cloning and heterologous expression of the epothilone gene cluster. *SCIENCE*
Tang, L., Shah, S., Chung, L., Carney, J., Katz, L., Khosla, C., Julien, B.
Heterologous expression, purification, reconstitution and kinetic analysis of an extended type II polyketide synthase. *Chemistry & Biology*

Zawada, R. J., Khosla, C.
1999; 6 (2): 607-615

A host-vector system for analysis and manipulation of rifamycin polyketide biosynthesis in Amycolatopsis mediterranei. *Microbiology-SGM*

Hu, Z. H., Hunziker, D., Hutchinson, C. R., Khosla, C.
1999; 145: 2335-2341

Kinetic analysis of the actinorhodin aromatic polyketide synthase. *Journal of Biological Chemistry*

Dreier, J., Shah, A. N., Khosla, C.
1999; 274 (35): 25108-25112

Harnessing the biochemical potential of natural product biosynthetic pathways

Khosla, C.
*Federation Amer Soc Exp Biol.* 1999: A1334

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

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.
Chaitan Khosla
http://cap.stanford.edu/profiles/Chaitan_Khosla/

- **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*
  Jacobsen, J. R., Cane, D. E., Khosla, C.
  1998; 37 (14): 4928-4934

- **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*
  1998; 120 (5): 1092-1093

- **New directions in metabolic engineering** *Current Opinion in Chemical Biology*
  Jacobsen, J. R., Khosla, C.
  1998; 2 (1): 133-137

- **Gain of function mutagenesis of the erythromycin polyketide synthase II. Engineered biosynthesis of eight-membered ring tetraketide lactone** *Journal of the American Chemical Society*
  Kao, C. M., McPherson, M., McDaniel, R. N., Fu, H., Cane, D. E., Khosla, C.
  1997; 119 (46): 11339-11340

- **Molecular recognition of diketide substrates by a beta-ketooacyl-acyl carrier protein synthase domain within a bimodular polyketide synthase** *Chemistry & Biology*
  1997; 4 (10): 757-766

- **Utilization of enzymatically phosphopantetheinyalted acyl carrier proteins and acetyl-acyl carrier proteins by the actinorhodin polyketide synthase** *Biochemistry*
  Carreras, C. W., Gehring, A. M., Walsh, C. T., Khosla, C.
  1997; 36 (39): 11757-11761

- **Engineered intermodular and intramodular polyketide synthase fusions** *Chemistry & Biology*
  McDaniel, R., Kao, C. M., Hwang, S. J., Khosla, C.
  1997; 4 (9): 667-674
- Precursor-directed biosynthesis of erythromycin analogs by an engineered polyketide synthase *SCIENCE*
  Jacobsen, J. R., Hutchinson, C. R., Cane, D. E., Khosla, C.
  1997; 277 (5324): 367-369

- 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*
  McDaniel, R., Kao, C. M., Fu, H., Hevezi, P., Gustafsson, C., Betlach, M., Ashley, G., Cane, D. E., Khosla, C.
  1997; 119 (18): 4309-4310

- 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*
  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. n.
  1997; 97 (7): 2577–90

- The chemistry and biology of fatty acid, polyketide, and nonribosomal peptide biosynthesis *BIOORGANIC CHEMISTRY DEOXYSGURS, 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., Zuber, P., LaCelle, M., Marahiel, M. A., Reid, R., Khosla, C., Walsh, C. T.
  1996; 3 (11): 923-936

- Evolutionally guided enzyme design *Biochemical Engineering IX - Interdisciplinary Foundations for Creating New Biotechnology*
  Khosla, C., Caren, R., Kao, C. M., McDaniel, R., Wang, S. W.
  JOHN WILEY & SONS INC. 1996: 122–28

- 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-?

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

• Erythromycin biosynthesis: Exploiting the catalytic versatility of the modular polyketide synthase  
  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  
  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  
  Fu, H., Alvarez, M. A., Khosla, C., Bailey, J. E.  
  1996; 35 (21): 6527-6532

• Combinatorial chemistry and biology: An opportunity for engineers  
  Khosla, C.  
  1996; 7 (2): 219-222

• Engineered biosynthesis of novel polyketides: Properties of the whiE aromatase/cycloase  
  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  
  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  
  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  
  Fu, H., Khosla, C.  
  1996; 1 (2): 121-124

• Engineering of novel polyketides - Progress and prospects  
  Kramer, P. J., Khosla, C.  
  NEW YORK ACAD SCIENCES.1996: 32–45

• CELL-FREE SYNTHESIS OF POLYKETIDES BY RECOMBINANT ERYTHROMYCIN POLYKETIDE SYNTHASES  
  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  
  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  
  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  
  McDaniel, R., Hutchinson, C. R., Khosla, C.  
  1995; 117 (26): 6805-6810
• **ERYTHROMYCIN BIOSYNTHESIS - HIGHLY EFFICIENT INCORPORATION OF POLYKETIDE CHAIN ELONGATION INTERMEDIATES INTO 6-DEOXYERYTHRONOLIDE-B IN AN ENGINEERED STREPTOMYCES 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.
  1994; 116 (25): 11612-11613

  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

• **RELAXED SPECIFICITY OF THE OXYTETRACYCLINE POLYKETIDE SYNTHASE FOR AN ACETATE PRIMER IN THE ABSENCE OF A MALONAMYL PRIMER** JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
  FU, H., EBERTKHOSLA, S., HOPWOOD, D. A., KHOSLA, C.
  1994; 116 (14): 6443-6444

• **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.
ENGINEERED BIOSYNTHESIS OF NOVEL POLYKETIDES

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

1993; 175 (8): 2197-2204

TARGETED GENE REPLACEMENTS IN A STREPTOMYCES POLYKETIDE SYNTHASE GENE-CLUSTER - ROLE FOR THE ACYL CARRIER PROTEIN

Khosla, C., EBERTKHOSLA, S., Hopwood, D. A.
1992; 6 (21): 3237-3249

EXPRESSION OF INTRACELLULAR HEMOGLOBIN IMPROVES PROTEIN-SYNTHESIS IN OXYGEN-LIMITED ESCHERICHIA-COLI

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

Khosla, C., Curtis, J. E., BYDALEK, P., Swartz, J. R., Bailey, J. E.
1990; 8 (6): 554-558

STRATEGIES AND CHALLENGES IN METABOLIC ENGINEERING

Bailey, J. E., Birnbaum, S., Galazzo, J. L., Khosla, C., Shanks, J. V.
NEW YORK ACAD SCIENCES.1990: 1–15

EVIDENCE FOR PARTIAL EXPORT OF VITREOSCILLA HEMOGLOBIN INTO THE PERIPLASMIC SPACE IN ESCHERICHIA-COLI - IMPLICATIONS FOR PROTEIN FUNCTION

Khosla, C., Bailey, J. E.
1989; 210 (1): 79-89

CHARACTERIZATION OF THE OXYGEN-DEPENDENT PROMOTER OF THE VITREOSCILLA HEMOGLOBIN GENE IN ESCHERICHIA-COLI

Khosla, C., Bailey, J. E.
1989; 171 (11): 5995-6004

A NEW OXYGEN-REGULATED PROMOTER FOR THE EXPRESSION OF PROTEINS IN ESCHERICHIA-COLI

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

Khosla, C., Bailey, J. E.
1988; 331 (6157): 633-635