

Tarek Sammakia

Department of Chemistry and Biochemistry
University of Colorado
215 UCB
Boulder, Colorado 80309-0215

Office: (303) 492-7270
Lab: (303) 492-6615
Fax: (303) 492-0439
sammakia@colorado.edu

Career

Professor, Department of Chemistry and Biochemistry, University of Colorado Boulder (2005 – present)

Program Director, National Science Foundation, Division of Chemistry, Chemical Synthesis and Chemical Catalysis Programs, (Rotator from Sept 2017 – August 2019)

Chair, Department of Chemistry and Biochemistry, University of Colorado Boulder (July 2012 – June 2015)

Associate Professor, Department of Chemistry and Biochemistry, University of Colorado Boulder (1997 – 2005)

Assistant Professor, Department of Chemistry and Biochemistry, University of Colorado Boulder (1990 – 1997)

Head of Chemistry, SuviCa (2010 – 2017)

Consultant, Array BioPharma (2009 – 2012)

Consultant, Hauser Chemical Research Inc. (1992 – 1999, 2004 – 2009)

Visiting Scientist, Array BioPharma (2005 – 2006)

Education and Training

Harvard University: National Science Foundation Postdoctoral Fellow with Professor David A. Evans (January 1988 – July 1990)

Yale University: Ph.D. in organic chemistry with Professor Stuart L. Schreiber (September 1983 – January 1988)

University of North Carolina at Chapel Hill: B.S. in chemistry (September 1979 – June 1983)

Awards and Fellowships

Novartis Award / Lecturer (1997)

Alfred P. Sloan Research Fellow (1996)

American Cancer Society Junior Faculty Research Award (1994)

Colorado Council on Research and Creative Works Junior Faculty Development Award (1991)

Camille and Henry Dreyfus New Faculty Award (1990)

NSF Postdoctoral Fellow (1988 – 1990)

Berlex Predoctoral Fellow (1985 – 1987)

Research Interests

Since assuming my faculty position at the University of Colorado in 1990, my coworkers and I have studied a variety of problems in organic chemistry. We have developed new methods for accomplishing problematic organic transformations, studied the mechanisms of these and other methods with an emphasis on understanding the origin of stereoselectivity, and have applied our methods to the synthesis of complex natural and unnatural products. More recently, in

collaborative research, we have studied the rational design and synthesis of inhibitors for biochemical processes including bacterial membrane modification and bacterial colony formation, and the synthesis of molecules to probe the mechanistic requirements for singlet fission in geometrically constrained acene dimers. The common theme of this research is the design and study of molecules for a specific function, whether it be a chemical, biological, or materials function.

Publications and Patents

- 66 Gilligan, A. T.; Miller, E. G.; Sammakia, T.; Damrauer, N. H.; "Using Structurally Well-Defined Norbornyl-Bridged Acene Dimers to Map a Mechanistic Landscape for Correlated Triplet Formation in Singlet Fission" *J. Am. Chem. Soc.* **2019**, *141*, 5961–5971.
- 65 Carey, T. J.; Miller, E. G.; Gilligan, A. T.; Sammakia, T.; and Damrauer, N. H. Modular Synthesis of Rigid Polyacene Dimers for Singlet Fission *Org. Lett.* **2018**, *20*, 457.
- 64 Carey, T. J.; Snyder, J. L.; Miller, E. G.; Sammakia, T.; and Damrauer, N. H. Synthesis of Geometrically Well-Defined Covalent Acene Dimers for Mechanistic Exploration of Singlet Fission *J. Org. Chem.* **2017**, *82*, 4866.
- 63 Greenberg, J. A.; Sammakia, T. The Conversion of *tert*-Butyl Esters to Acid Chlorides Using Thionyl Chloride *J. Org. Chem.* **2017**, *82*, 3245.
- 62 Hartwig, W. T.; Sammakia, T. Doubly Vinylogous Aldol Reaction of Furoate Esters with Aldehydes and Ketones *J. Org. Chem.* **2017**, *82*, 759.
- 61 Michael, R. E.; Chando, K. M.; Sammakia, T. Synthesis of *N*-Vinyl Nitrones via 1,4-Conjugate Elimination *J. Org. Chem.* **2015**, 6930.
- 60 Lewis, S. S.; Hutchinson, M. R.; Frick, M. M.; Zhang, Y.; Maier, S. F.; Sammakia, T.; Rice, K. C.; Watkins, L. R. Select steroid hormone glucuronide metabolites can cause toll-like receptor 4 activation and enhanced pain *Brain, Behavior, and Immunity* **2015**, *44*, 128.
- 59 Su, T. T; Gladstone, M. N.; Zhang, G.; Sammakia, T., Bouvardin derivatives and therapeutic uses thereof WO 2013126617 A1 20130829 (2013).
- 58 Gazaille, J. A.; Sammakia, T. The Vinylogous Aldol Reaction of Unsaturated Esters and Enolizable Aldehydes Using the Novel Lewis Acid Aluminum Tris(2,6-di-2-naphthylphenoxide) *Org. Lett.* **2012**, *14*, 2678.
- 57 Gazaille, J. A.; Abramite, J. A.; Sammakia, T. Toward the Synthesis of (+)-Peloruside A via an Intramolecular Vinylogous Aldol Reaction *Org. Lett.* **2012**, *14*, 178.
- 56 Zhang, Y.; Arpin, C. C.; Cullen, A. J.; Mitton-Fry, M. J.; Sammakia, T. Total Synthesis of Dermostatin A *J. Org. Chem.* **2011**, *76*, 7641 (Featured Article).
- 55 Hao, X.; Nguyen, T.; Sammakia, T.; Kearns, D. B.; Fall, R. New Inhibitors of Colony Spreading in *Bacillus subtilis* and *Bacillus anthracis* *Bioorg. Med. Chem. Lett.* **2011**, *21*, 5583.
- 54 Crane, Z. D.; Nichols, P. J.; Sammakia, T.; Stengel, P. J. Synthesis of Methyl-1-(*tert*-butoxycarbonylamino)-2-vinylcyclopropanecarboxylate via a Hofmann Rearrangement Utilizing Trichloroisocyanuric Acid as an Oxidant *J. Org. Chem.* **2011**, *76*, 277.
- 53 Mai, C-K; Sammons, M. F.; Sammakia, T α -Arylation of 3-Aryloxindoles *Organic Letters* **2010**, *12*, 2306.
- 52 Mai, C-K.; Sammons, M. F.; Sammakia, T. A Concise Formal Synthesis of Diazonamide A via the Stereoselective Construction of the C10 Quaternary Center *Angew. Chem., Int. Ed. Engl.* **2010**, *122*, 2447.
- 51 Seiwert, S. D.; Blatt, L. M.; Andrews, S. W.; Martin, P.; Schumacher, A.; Barnett, B. R.; Eary, T. C.; Kaus, R.; Kercher, T.; Liu, W.; Lyon, M.; Nichols, P.; Wang, B.; Sammakia, T.;

- Kennedy, A.; Jiang, Y. Novel Macrocyclic Inhibitors of Hepatitis C Virus Replication International Patent WO 2007/015824 A2 (2007).
- 50 Abramite, J. A.; Sammakia, T. Application of the Intramolecular Vinylogous Yamamoto Aldol Reaction to the Synthesis of Macrolides *Organic Letters* **2007**, *9*, 2103.
- 49 Mitton-Fry, M. J.; Cullen, A. J.; Sammakia, T. The Total Synthesis of the Oxopolyene Macrolide RK-397 *Angew. Chem., Int. Ed.* **2007**, *46*, 1066.
- 48 Sammakia, T.; Abramite, J. A.; Sammons, M. F. Enamines In *Science of Synthesis*, Trost, B. M., Molander, G. A., Eds.; Theime: Stuttgart, Germany, 2006; Vol. 33, pp 405.
- 47 Sammakia, T.; Abramite, J. A.; Sammons, M. F. Enamoniums In *Science of Synthesis*, Trost, B. M., Molander, G. A., Eds.; Theime: Stuttgart, Germany, 2006; Vol. 33, pp 443.
- 36 Zhang, Y.; Sammakia, T. Double Diastereoselective Acetate Aldol Reactions with Chiral *N*-Acetyl Thiazolidinethione Reagents *J. Org. Chem.* **2006**, *71*, 6262.
- 45 Notte, G. T.; Sammakia, T. Kinetic Resolution of Protected α -Amino Acid Derivatives by a Chiral *O*-Nucleophilic Acyl Transfer Catalyst *J. Am. Chem. Soc.* **2006**, *128*, 4230.
- 44 Notte, G. T.; Sammakia, T. Kinetic Resolution of α -Acetoxy *N*-Acyl Oxazolidinethiones by a Chiral *O*-Nucleophilic Acyl Transfer Catalyst *J. Am. Chem. Soc.* **2005**, *127*, 13502.
- 43 Sammakia, T.; Johns, D. M.; Kim, G.; Berliner, M. A. Remote Asymmetric Induction in an Intramolecular Ionic Diels-Alder Reaction: Application to the Total Synthesis of (+)-Dihydrocompactin *J. Am. Chem. Soc.* **2005**, *127*, 6504.
- 42 Sammakia, T.; Stangeland, E. L.; Whitcomb, M. C. Remote Functionalization of Pyridine Rings via the Halogen Dance Reaction: Application to the Total Synthesis of Caerulomycin and WS75624 B In *Strategies and Tactics in Organic Synthesis* Academic Press: New York, 2005; Vol 6, pp 415.
- 41 Zhang, Y.; Sammakia, T. Synthesis of a New *N*-Acetyl Thiazolidinethione Reagent and Its Application to a Highly Selective Asymmetric Acetate Aldol Reaction *Org Lett.* **2004**, *6*, 3139.
- 40 Cullen, A. J.; Sammakia, T. Highly Selective Reduction of Acyclic β -Alkoxy Ketones to Protected *syn*-1,3-Diols *Org Lett.* **2004**, *6*, 3143.
- 39 Zhang, Y.; Phillips, A. J.; Sammakia, T. Highly Selective Asymmetric Acetate Aldol Reactions of an *N*-Acetyl Thiazolidinethione Reagent *Org Lett.* **2004**, *6*, 23.
- 38 Stangeland, E. L.; Sammakia, T. Use of Thiazoles in the Halogen Dance Reaction: Application to the Total Synthesis of WS75624 B *J. Org. Chem.* **2004**, *69*, 2381.
- 37 Wayman, K. A.; Sammakia, T. *O*-Nucleophilic Amino-Alcohol Acyl-Transfer Catalysts: the Effect of Acidity of the Hydroxyl Group on the Activity of the Catalyst *Org Lett.* **2003**, *5*, 4105.
- 36 Sammakia, T.; Stangeland, E. L.; Whitcomb, M. C. Total Synthesis of Caerulomycin C via the Halogen Dance Reaction *Org. Lett.* **2002**, *4*, 2385.
- 35 Sammakia, T. Picolinic Acid. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.
- 34 Sammakia, T. 1-Diazo-2-Propene. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.
- 33 Sammakia, T. Diphenyldiazomethane. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.
- 32 Sammakia, T. Phenyldiazomethane. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.

- 31 Sammakia, T. 1,2-Bis(hydroxymethyl)benzene. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.
- 30 Sammakia, T. 5-Diazo-2,2-Dimethyl-1,3-Dioxane-4,6-Dione. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.
- 29 Sammakia, T. 2-Formyl-4-Pyrrolidino Pyridine. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.

- 28 Sammakia, T. Diazomethane. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.
- 27 Sammakia, T. 1-(4,5-Dihydro-4-Phenyl-2-Oxazolyl)-2-(Diphenylphosphino) Ferrocene. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.
- 26 Sammakia, T. 2-Diazopropane. In *Encyclopedia of Reagents for Organic Synthesis*; John Wiley & Sons, Ltd, 2001.
- 25 Sammakia, T.; Hurley, T. B. Enhanced Selectivities for the Hydroxyl-Directed Methanolysis of Esters Using the 2-Acyl-4-Aminopyridine Class of Acyl Transfer Catalysts: Ketones as Binding Sites *J. Org. Chem.* **2000**, *65*, 974.
- 24 Sammakia, T.; Hurley, T. B. Studies of the Mechanism of Action of 2-Formyl-4-pyrrolidinopyridine (FPP): Evidence for General Base Catalysis *J. Org. Chem.* **1999**, *64*, 4652.
- 23 Sammakia, T.; Jacobs, J. S. Picolinic Acid as a Partner in the Mitsunobu Reaction and Subsequent Hydrolysis of Picolinate Esters Under Essentially Neutral Conditions with Copper Acetate in Methanol *Tetrahedron Lett.* **1999**, *40*, 2685.
- 22 Stangeland, E. L.; Sammakia, T. New Chiral Ligands for the Asymmetric Copper Catalyzed Conjugate Additions of Grignard Reagents to Enones *Tetrahedron* **1997**, *53*, 16503.
- 21 Sammakia, T.; Stangeland, E. L. Asymmetric Transfer Hydrogenation with Ruthenium Complexes of Chiral Ferrocenyl Oxazolines *J. Org. Chem.* **1997**, *62*, 6104.
- 20 Sammond, D. M.; Sammakia, T. A Mild Synthesis of Furans from γ -Hydroxy- α,β -Unsaturated Ketones *Tetrahedron Lett.* **1996**, *37*, 6065.
- 19 Sammakia, T.; Hurley, T. B. 2-Formyl-4-pyrrolidinopyridine (FPP): A New Catalyst for the Hydroxyl-Directed Methanolysis of Esters *J. Am. Chem. Soc.* **1996**, *118*, 8967.
- 18 Sammakia, T.; Hurley, T. B.; Sammond, D. M.; Smith, R. S.; Sobolov, S. B.; Oschger, T. R. Dihydroxylation and Oxidative Cleavage of Olefins in the Presence of Sulfur *Tetrahedron Lett.* **1996**, *37*, 4427.
- 17 Sammakia, T.; Latham, H. A. On the Mechanism of Oxazoline-Directed Metallations: Evidence for Nitrogen-Directed Metallation *J. Org. Chem.* **1996**, *61*, 1629.
- 16 Sammakia, T.; Berliner, M. A. Asymmetric Diels-Alder Reactions via Cyclic Vinyl-Oxocarbenium Ions *J. Org. Chem.* **1995**, *60*, 6652.
- 15 Sammakia, T.; Latham, H. A. On the Use of Ferrocenyl Cations as Chiral Lewis Acids: Evidence for Protic Acid Catalysis *Tetrahedron Lett.* **1995**, *36*, 6867.
- 14 Sammakia, T.; Latham, H. A. Ligand Effects on the Stereochemistry of the Metalation of Chiral Ferrocenyloxazolines *J. Org. Chem.* **1995**, *60*, 6002.
- 13 Sammakia, T.; Latham, H. A.; Schaad, D. R. Highly Diastereoselective Ortho Lithiations of Chiral Oxazoline Substituted Ferrocenes *J. Org. Chem.* **1995**, *60*, 10.
- 12 Sammakia, T.; Berliner, M. A. Asymmetric Diels-Alder Reactions with α,β -Unsaturated Acetals *J. Org. Chem.* **1994**, *59*, 6890.

- 11 Sammakia, T.; Smith, R. S. Evidence for an Oxocarbenium Ion Intermediate in Lewis Acid Mediated Reactions of Acyclic Acetals *J. Am. Chem. Soc.* **1994**, *116*, 7915.
- 10 Sammakia, T.; Smith, R. S. Direct Evidence for an Oxocarbenium Ion Intermediate in the Asymmetric Cleavage of Chiral Acetals *J. Am. Chem. Soc.* **1992**, *114*, 10998.
- 9 Sammakia, T.; Smith, R. S. On the Mechanism of the Lewis Acid Mediated Cleavage of Chiral Acetals *J. Org. Chem.* **1992**, *57*, 2997.
- 8 Nakatsuka, M.; Ragan, J. A. Sammakia, T.; Smith, D. B.; Uehling, D. E.; Schreiber, S. L. Total Synthesis of FK506 and an FKBP Probe Reagent, (C₈, C₉-¹³C₂)-FK506 *J. Am. Chem. Soc.* **1990**, *112*, 5583.
- 7 Schreiber, S. L.; Sammakia, T.; Uehling, D. E. Studies Relating to the Synthesis of the Immunosuppressive Agent FK-506: Synthesis of the Pyranose Moiety *J. Org. Chem.* **1989** *54*, 15.
- 6 Schreiber, S. L.; Kelly, S. E.; Porco, J. A. Jr.; Sammakia, T.; Suh, E. M. Structural and Synthetic Studies of the Germination Autoinhibitor, Gloesporone, *J. Am. Chem. Soc.* **1988**, *110*, 6210.
- 5 Schreiber, S. L.; Klimas, M. T.; Sammakia, T. Dynamic Behavior of Dicobalt Hexacarbonyl Propargyl Cations and their Reactions with Chiral Nucleophiles *J. Am. Chem. Soc.* **1987**, *109*, 5749.
- 4 Schreiber, S. L.; Goulet, M. T.; Sammakia, T. Stereochemical Studies of the Skipped-Polyol Polyene Class: NMR Studies of a Tetraformylal Derivative of Mycoticin A and B *Tetrahedron Lett.* **1987**, *28*, 6005.
- 3 Schreiber, S. L.; Sammakia, T.; Crowe, W. E. Lewis Acid Mediated Version of the Nicholas Reaction: Synthesis of Syn-Alkylated Products and Cobalt Complexed Cycloalkynes *J. Am. Chem. Soc.* **1986**, *108*, 3128.
- 2 Schreiber, S. L.; Sammakia, T.; Hulin, B.; Schulte, G. Epoxidation of Unsaturated Macrolides, Stereocontrolled Routes to Ionophore Subunits *J. Am. Chem. Soc.* **1986**, *108*, 2106.
- 1 Sammakia, T.; Harris, D. L.; Evans, S. A. Jr. Oxygen-17 Nuclear Magnetic Resonance Spectral Investigation of 3-Alkoxy-*trans*-3,4-Disubstituted-Thiolane 1,1-Dioxides and Related Compounds *Organic Magnetic Resonance* **1984**, *22*, 747.

Seminars, Conferences, and Symposia Presentations

- | | | |
|----|---|--------------|
| 89 | American Chemical Society National Meeting & Exposition | (03/31/2019) |
| 88 | NOBCChE, Orlando, Florida | (09/22/2018) |
| 87 | Florida Annual Meeting and Exposition (FAME) conference | (04/05/2018) |
| 86 | GRC, High Throughput Chemistry & Chemical Biology | (06/25/2017) |
| 85 | National Science Foundation, Arlington, VA | (05/23/2017) |
| 84 | Metropolitan State University of Denver | (09/16/2016) |
| 83 | Telluride Science Research Mtg (Accelerating Rxn Discovery) | (08/01/2016) |
| 82 | University of Michigan | (03/26/2015) |
| 81 | Regis University | (10/17/2014) |
| 80 | Yale University | (9/12/2013) |
| 79 | University of Texas, San Antonio | (11/09/2012) |
| 78 | Albert I. Meyers Memorial Symposium,
Colorado State University | (10/27/2012) |
| 77 | Gordon Research Conference: Natural Products | (07/22/2012) |
| 76 | University of Toronto | (11/11/2011) |

75	Denver University	(05/20/2010)
74	Colorado Science Conference	(11/20/2009)
73	Butcher Symposium on Genomics and Biotechnology	(11/6/2009)
72	North Dakota State University	(9/17/2009)
71	21st International Symposium on Chirality	(7/14/2009)
70	Indiana University	(1/12/2009)
69	University of Northern Colorado	(4/18/2008)
68	University of New Mexico	(2/15/2008)
67	Syracuse University	(8/18/2007)
66	University of Iowa	(4/10/2007)
65	Gordon Conference: Organic Reactions and Processes	(7/16/2006)
64	UT Southwestern Medical Center, Dallas, TX	(4/04/2006)
63	Array BioPharma, Boulder, CO	(5/27/2005)
62	Gilead Pharmaceuticals, Foster City, CA	(3/16/2005)
61	Schering Plough, Kenilworth, NJ	(5/12/2004)
60	Marquette University	(3/5/2004)
58	Pfizer, Ann Arbor, MI	(12/12/2003)
59	University of Michigan	(12/11/2003)
57	Dow AgroSciences, Indianapolis, IN	(10/22/2003)
56	Array BioPharma, Boulder, CO	(11/20/2003)
55	Pfizer, Groton, CT	(4/9/2003)
54	Allegheny College	(4/10/2003)
53	University of Nebraska	(3/13/2003)
52	Pharmacia, Skokie, IL	(11/6/2002)
51	University of Arkansas	(11/4/2002)
50	Michigan State University	(9/12/2002)
49	University of Denver	(1/24/2002)
48	University of Pennsylvania	(9/10/2001)
47	Gordon Conference: Organic Reactions and Processes	(7/22-7/26/2001)
46	Roche Biosciences, Palo Alto, CA	(3/9/2000)
45	Stanford University	(3/8/2000)
44	The University of California, Berkeley	(3/7/2000)
43	University of Rochester	(2/4/2000)
42	Abbott, North Chicago, IL	(9/22/1999)
41	Swarthmore College	(9/20/1999)
40	NSF Workshop on Organic Chemistry	(5/22 to 5/26/1999)
39	Bristol Meyers-Squibb, Wallingford, CT	(4/8/1999)
39	Carleton College	(4/2/1999)
38	University of Chicago	(4/10/1998)
37	Novartis, Vienna, Austria	(10/10/1997)
36	Novartis, Basel, Switzerland	(10/8/1997)
35	Novartis, Horsham, England	(10/6/1997)
34	University of Delaware	(9/10/1997)
33	Bristol Meyers-Squibb, Princeton, NJ	(3/14/1997)
32	Zeneca Pharmaceuticals, Wilmington, DE	(1/8/1997)
31	The University of Michigan	(10/22/1996)
30	Gordon Research Conference: Stereochemistry	(6/9 to 6/14/1996)

29	CU-Syntex Symposium on Synthetic Chemistry	(5/22 to 5/24/1996)
28	Hoffmann-La Roche, Nutley, NJ	(5/19/1996)
27	The University of California, Santa Barbara	(4/25/1996)
26	The University of California, Irvine, CA	(4/24/1996)
25	The University of California, San Diego	(4/23/1996)
24	Colorado State University	(4/22/1996)
23	Ohio State University	(3/7/1996)
22	The University of Wisconsin, Madison	(3/5/1996)
21	The University of Utah	(2/22/1996)
20	The University of Wyoming	(2/16/1996)
19	Northeastern University	(1/18/1996)
18	MIT, Cambridge, MA	(1/17/1996)
17	Boston College	(1/16/1996)
16	Boston University	(1/15/1996)
15	Amgen, Boulder, CO	(12/12/1995)
14	The University of Iowa	(10/13/1995)
13	Eli Lilly, Indianapolis, IN	(5/15/1995)
12	University of Minnesota	(4/21/1995)
11	3M Corporation, St. Paul, MN	(4/20/1995)
10	University of Texas, Austin	(4/7/1995)
9	Texas A&M University	(4/6/1995)
8	Ciba-Geigy, Summit, NJ	(2/16/1995)
7	Yale University	(2/15/1995)
6	Michigan State University	(1/26/1995)
5	NSF Workshop on Organic Chemistry	(7/13 to 7/17/1994)
4	Pfizer Inc., Groton, CT	(4/7/1994)
3	Wesleyan University	(3/25/1994)
2	Merck Research Laboratories, West Point, PA	(3/22/1994)
1	Gordon Research Conference: Natural Products	(7/18 to 7/23/1993)

Current External Research Support:

- National Science Foundation, award 1665375, PI: Niels Damrauer; Co-PI: Tarek Sammakia, SusChEM: Design Principles Inspired by Symmetry for Controlling Singlet Fission in Structurally Well-Defined Covalent Dimers \$480,000 total costs for period May 1, 2017 to April 30, 2020.
- ACS Petroleum Research Fund, award 57843-ND4, PI: Tarek Sammakia; Co-PI: Niels Damrauer, Acene Dimers: Synthesis, Structure, and Photochemical Properties, \$110,000 total costs for period 7/1/2017 through 8/31/2020.

Prior Research Support:

- National Science Foundation, award 1665375, New Methods for the Synthesis of Hindered Quaternary Carbons, \$425,000 total costs for period May 1, 2013 to April 30, 2017.
- Colorado Clinical and Translational Sciences Institute. PI: Marcelo Sousa; Co-PI: Tarek Sammakia, ArnA inhibitors to defeat Pseudomonas antibiotic resistance in Cystic Fibrosis \$60,000 total costs for period 06/01/2013 – 05/31/2014.

- University of Colorado Office of Technology Transfer and State of Colorado Bioscience Award, Linda Watkins PI, Tarek Sammakia Co-PI, A Unique Approach for Treating Chronic Pain and Increasing the Clinical Efficacy of Opioids \$125,000 total costs for March 1, 2010 – June 30, 2012.
- National Institutes of Health NIGMS, RO1 GM48498 (years 12-15) New Methods for Stereoselective Additions to Carbonyls, \$1,111,432 total costs for period September 2005 to August 2010.
- The Butcher Foundation, Linda Watkins PI, Tarek Sammakia Co-PI, Transforming Clinical Pain Control by Targeting a Novel Non-Neuronal Receptor \$100,000 total costs requested for period June 2008-May 2010
- State of Colorado and University of Colorado Technology Transfer Office Bioscience Discovery Evaluation Grant Program, Natalie Ahn PI, Tarek Sammakia Co-PI, Linda Watkins, Co-PI Pharmacophore Optimization for Targeted Therapeutics, University of Colorado Foundation Sammakia share Direct Costs \$100,000 for period July 2009 - October 2010
- University of Colorado/IGP Seed Grant Program, Richard R. Fall PI, Tarek Sammakia Co-PI, Discovery and Synthesis of Novel Antibacterials for Biodefense and New Therapeutics \$50,000 direct costs for period July 2006 to June 2007.
- National Science Foundation Chemistry Research Instrumentation and Facilities (CRIF) Program CHE 0131003, Co-PI with 5 other faculty members, Acquisition of a 400 MHz NMR Spectrometer, \$192,060 total costs for period February, 2002 to January, 2005.
- National Institutes of Health NIGMS, RO1 GM48498 (years 8-11) New Methods for Stereoselective Additions to Carbonyls, \$927,568 total costs for period April 2000 to March 2004.
- Array BioPharma, \$20,000 unrestricted gift, 2001.
- National Institutes of Health NIGMS, RO1 GM48498 (years 4-7) New Methods for Stereoselective Additions to Carbonyls, \$584,260 total costs for period October 1996 to March 2000.
- National Science Foundation Industry University Cooperative Research Center for Separations Using Thin Films, Carl Koval PI, Tarek Sammakia Co-PI, Rich Noble Co-PI, Development of Novel Acid-Base Facilitated Transport Membranes for Separation of Ketones, Alcohols, and Thiophenes \$105,000 direct costs for period January 1997 to December 1999.
- Novartis Pharmaceuticals, \$30,000 unrestricted gift, 1997.
- Pfizer Inc., unrestricted \$7,500 gift, 1996.
- Alfred P. Sloan Research Fellow, \$35,000 direct costs for period September 1996-September 1998.
- American Cancer Society Junior Faculty Research Award, \$90,500 direct costs for period July 1994 to June 1999.
- National Institutes of Health NIGMS, RO1 GM48498 (years 1-3) New Methods for Stereoselective Additions to Carbonyls \$312,078 direct costs, \$418,096 total costs for period July 1993 to September 1996.

- National Science Foundation Chemistry Research Instrumentation and Facilities (CRIF) Program CHE 9523034, Co-PI with 4 other faculty members, Purchase of a 500 MHz NMR spectrometer, \$312,900 direct costs for period December 1995 to November 1997.
- Petroleum Research Fund, type G award The Design of New Asymmetric Reaction Processes \$18,000 direct costs for period September 1992 to September 1994.
- Camille and Henry Dreyfus Foundation New Faculty Award, \$24,500 direct costs for period August 1990 to August 1995.
- National Science Foundation Chemistry Research Instrumentation and Facilities (CRIF) Program CHE 9115596, Co-PI with 4 other faculty members, Upgrade of a 250 MHz NMR spectrometer \$147,300 direct costs for period November 1991 to March 1993.
- National Science Foundation CHE 9019060, The Design of Chiral Lewis Acids and Chiral Silane Reagents, \$30,000 direct costs for period October 1990 to September 1992.

Current and Former Graduate Students / Current Positions

Brianna Callahan	Current graduate student; matriculated Fall-2018
Micah Ohlhausen	Current graduate student; matriculated Fall-2018
Chance Brandt	Current graduate student; matriculated Fall-2017
Ethan Miller	Current graduate student; matriculated Fall-2015
Garret Cairo	Current graduate student; matriculated Fall-2015
Matthew Farmer	M.S. 2018: Bolt Threads
Jacob Greenberg	Ph.D. 2017: Instructor, Humboldt State University
Katelyn Chando	Ph.D. 2016: AMPAC Fine Chemicals, Rancho Cordova, California
Will Hartwig	Ph.D. 2014: Legislative Associate at American Chemical Society
Ryan Michael	Ph.D. 2013: C4 Therapeutics
Jeffery Gazaille	Ph.D. 2012: Chevron Oronite, Richmond, CA
Cheng-Kang Mai	Ph.D. 2012: Phenomenex, Torrance, CA
Carolynn Chin Arpin	Ph.D. 2012: Assistant Professor, California State Univ. Chico
Morin Frick	M.S. 2011: Research Associate, Gilead Sciences, San Mateo, CA
Xin Hao	Ph.D. 2010: Scientist, GlaxoSmithKline, Shanghai, China
Clemente Du Castel	M.S. 2009: Chemist, PeptiDream, Inc., Tokyo, Japan
Patricia Bailey	M.S. 2009: Senior Program Analyst, US Dept. of Agriculture
Joseph Abramite	Ph.D. 2008: Pfizer, La Jolla, CA
Mathew Sammons	Ph.D. 2008: Pfizer, Boston, MA
Greg Notte	Ph.D. 2006: Gilead, Foster City, CA
Aaron Cullen	Ph.D. 2006: Queen's Center for Biomedical Research, Honolulu, HI
Yingchao Zhang	Ph.D. 2005: Founder of Elite Ivy Education
Tim Minger	Ph.D. 2005: Associate Professor, Mesa State Community College
Dan Parker	M.S. 2004: AvidXchange, Salt Lake City, UT
Deidre Johns	Ph.D. 2004: Assistant Professor, Oregon State University College of Veterinary Medicine
Christian Clarke	M.S. 2004: Eli Lilly, Indianapolis, IN
Mark Whitcomb	Ph.D. 2003: Gilead, Foster City, CA
Wendy Richmond	M.S. 2002: Novartis Research Foundation, San Diego, CA
Sarah Strong	M.S. 2002: N30, Louisville, CO

Mark Mitton-Fry	Ph.D. 2002: Assistant Professor, The Ohio State University
David Soulsby	Ph.D. 2001: Professor, University of Redlands
Ganghyeok Kim	Ph.D. 2001: Array BioPharma, Boulder, CO
Kjirsten A. Wayman	Ph.D. 2000: Professor, Humboldt State University
Jon Jacobs	M.S. 2000
Eric L. Stangeland	Ph.D. 1999: Numerate, Inc., San Bruno, CA
T. Brian Hurley	Ph.D. 1999: Novartis, Cambridge, MA
Douglas M. Sammond	M.S. 1997: Formerly at Array BioPharma, Boulder, CO
Saleh N. Al-Busafi	M.S. 1994: Professor, Sultan Qaboos University, Oman.
Hallie A. Latham	Ph.D. 1996: Formerly at Proligo, Boulder, CO
Martin A. Berliner	Ph.D. 1996: Pfizer, Groton, CT
Randall S. Smith	Ph.D. 1994: Illumina, San Diego, CA

Former Postdoctoral Coworkers:

Dr. Hallie Latham	1997: Formerly at Proligo, Boulder, CO
Dr. David R. Schaad	1993-1994: Ferro Pfanstiehl, Waukegan, IL
Dr. Tom Imiolczyk	1994-1995: Metropolitan State College of Denver

Selected Recent Departmental, Campus, and Professional Service

CU Wizards Presentation with Professor Niels Damrauer titled, "Baking Bread (or How I Learned to Stop Worrying and Love Gluten and Flaming Gummy Worms)" 2019

Chair, American Chemical Society Annual Report committee

Program Director, National Science Foundation (2017 – 2019)

Member, National Science Foundation review panel (Winter 2017)

Member, National Science Foundation review panel (Winter 2016)

University of Colorado Boulder Vice Chancellor's Advisory Committee (2015 – 2017)

Provost's Faculty Communication Committee (2015 – 2017)

Dept. of Chemistry and Biochemistry IT Committee (2015 – 2017)

Dept. of Chemistry and Biochemistry Governance Committee (2015 – 2017)

Dept. of Chemistry and Biochemistry Organic Faculty Search Committee (2015-2016)

CU Wizards Outreach (1995 – 2016)

College of Arts and Sciences Chairs and Directors Advisory Committee (2012 – 2016)

Chair, Dept. of Chemistry and Biochemistry (2012 – 2016)

Chair, Dept. of Chemistry and Biochemistry Graduate Admissions (2011 – 2012; 2016 – 2017)

Chair, Dept. of Chemistry and Biochemistry Organic Faculty Search Committee (2012-2013)

Local Chair, ACS Division of Organic Chemistry Graduate Research Symposium (2012)

University of Colorado Prehealth Advisory Committee (2009-2012)

Local Chair, 41st National Organic Chemistry Symposium (2009)