

Sergey A. Kozmin

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University of Chicago
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<http://kozmin-group.uchicago.edu>

Born: July 30, 1971
Moscow, Russia

Education

1998 Ph.D. in Organic Chemistry
University of Chicago, Chicago, Illinois

1993 Diploma with Honors in Chemistry
Lomonosov Moscow State University, Moscow, Russia

Research Experience and Positions

2006-present Associate Professor
University of Chicago

2000-2006 Assistant Professor
University of Chicago

1998-2000 Postdoctoral Associate with Professor Amos B. Smith, III
University of Pennsylvania, Philadelphia, Pennsylvania

1993-1998 Graduate Research Assistant with Professor Viresh H. Rawal
University of Chicago, Chicago, Illinois

1991-1993 Undergraduate Research Assistant with Professor Irina P. Beletskaya
Lomonosov Moscow State University, Moscow, Russia

Honors and Awards

2008 Magomedov-Scherbinina Prize, University of Rochester

2007 Novartis Chemistry Lectureship

2006 SSOCJ Lectureship Award, Japan

2005 GlaxoSmithKline Chemistry Research Scholar

2005 NSF CAREER Award

2004 Camille Dreyfus Teacher-Scholar Award

2004 Amgen Young Investigator's Award

2004 American Cancer Society Research Scholar

2003 Alfred P. Sloan Fellow

1998 Elizabeth R. Norton Prize for Excellence in Graduate Research

1993 Diploma with Honors, Moscow State University

Research Interests

Organic Synthesis, Chemical Biology, Drug Discovery

Publications

1. Kozmin, S. A.; Bumagin, N. A.; Beletskaya, I. P. Vilsmeier Formylation of Aromatic Organomercury Compounds. *Russ. Chem. Bull.* **1993**, *42*, 584-585
2. Kozmin, S. A.; Rawal, V. H. Preparation and Diels-Alder Reactivity of 1-Amino-3-siloxy-1,3-butadienes. *J. Org. Chem.* **1997**, *62*, 5252-5253
3. Kozmin, S. A.; Rawal, V. H. Asymmetric Diels-Alder Reaction Employing Chiral 1-Amino-3-siloxy-1,3-butadienes: Application to Enantioselective Synthesis of (-)- α -Elemene. *J. Am. Chem. Soc.* **1997**, *119*, 7165-7166.
4. Kozmin, S. A.; Rawal, V. H. A General Strategy to Aspidosperma Alkaloids: Efficient, Stereocontrolled Synthesis of Tabersonine. *J. Am. Chem. Soc.* **1998**, *120*, 13523-13524.
5. Kozmin, S. A.; Janey, J. M.; Rawal, V. H. 1-Amino-3-siloxy-1,3-butadienes: Highly reactive Dienes for the Diels-Alder Reaction. *J. Org. Chem.* **1999**, *64*, 3039-3052
6. Kozmin, S. A.; Rawal, V. H. Chiral Amino Siloxy Dienes in the Diels-Alder Reaction: Applications to the Asymmetric Synthesis of 4-Substituted and 4,5-Disubstituted Cyclohexenones and the Total Synthesis of (-)- α -Elemene. *J. Am. Chem. Soc.* **1999**, *121*, 9562-9573
7. Kozmin, S. A.; Green, M. T.; Rawal, V. H. On the Reactivity of 1-Amino-3-siloxy-1,3-dienes: Kinetics Investigation and Theoretical Interpretation. *J. Org. Chem.* **1999**, *64*, 8045-8047
8. Iwama, T.; Birman, V. B.; Kozmin, S. A.; Rawal, V. H. Regiocontrolled Synthesis of Carbocycle-Fused Indoles via Arylation of Silyl Enol Ethers with o-Nitrophenylphenyl iodonium Fluoride. *Org. Lett.* **1999**, *1*, 673-676
9. Smith, A. B., III, Kozmin, S. A.; Paone, D. Total Synthesis of (-)-Cylindrocyclophane F. *J. Am. Chem. Soc.* **1999**, *121*, 7423-7424
10. He, S. W.; Kozmin, S. A.; Rawal, V. H. Highly Diastereoselective Asymmetric Thio-Claisen Rearrangements. *J. Am. Chem. Soc.* **2000**, *122*, 190-191.
11. Janey, J. M.; Iwama, T.; Kozmin, S. A.; Rawal, V. H. Racemic and Asymmetric Diels-Alder Reactions of 1-(2-Oxazolidinon-3-yl)-3-siloxy-1,3-butadienes. *J. Org. Chem.* **2000**, *65*, 9059-9068.
12. Kozmin, S. A.; He, S. W.; Rawal, V. H. Preparation of 1-Dimethyl-3-siloxy-1,3-butadiene. *Org. Syn.* **2000**, *78*, 152-159
13. Kozmin, S. A.; He, S. W.; Rawal, V. H. [4+2] Cycloaddition of 1-Dimethyl-3-siloxy-1,3-butadiene with Methyl Acrylate: Application to the Synthesis of 1-Hydroxymethyl-2-cyclohexen-1-one. *Org. Syn.* **2000**, *78*, 160-168
14. Smith, A. B., III; Kozmin, S. A.; Adams, C. M.; Assembly of (-)-Cylindrocyclophanes A and F via Remarkable Olefin Metathesis Dimerizations. *J. Am. Chem. Soc.* **2000**, *122*, 4984-4985

15. Smith, A. B., III; Adams, C. M.; Kozmin, S. A. On the Reversible Nature of the Olefin Cross Metathesis Reaction. *J. Am. Chem. Soc.* **2001**, *123*, 990-991
16. Smith, A. B., III; Adams, C. M.; Kozmin, S. A.; Paone, D. Total Synthesis of (–)-Cylindrocyclophanes A and F Exploiting the Reversible Nature of the Olefin Cross Metathesis Reaction. *J. Am. Chem. Soc.* **2001**, *123* 5925-5937
17. Kozmin, S. A. Efficient Stereochemical Relay en Route to Leucascandrolide A. *Org. Lett* **2001**, *3*, 755-758
18. Schramm, M. P.; Reddy, D. S.; Kozmin, S. A. Siloxyalkyne-Alkene Metathesis: Rapid Access to Highly Functionalized Enones. *Angew. Chem. Int. Ed. Engl.* **2001**, *40*, 4274-4277
19. Liu, D.; Kozmin, S. A. Catalytic Enantioselective Isomerization of Silacyclopentene Oxides: New Strategy for Stereocontrolled Assembly of Acyclic Polyols. *Angew. Chem. Int. Ed. Engl.* **2001**, *40*, 4757-4759
20. Kozmin, S. A.; Iwama, T.; Huang, Y.; Rawal, V. H. An efficient Approach to Aspidosperma Alkaloids via [4+2] cycloadditions of Amino Siloxy Dienes: Stereocontrolled Total Synthesis of (+/-)-Tabersonine. Gram-scale Catalytic Asymmetric Syntheses of (+)-Tabersonine and (+)-16-Methoxytabersonine. Asymmetric syntheses of (+)-aspidospermidine and (–)-quebrachamine. *J. Am. Chem. Soc.* **2002**, *124*, 4628-4641.
21. Smith, A. B., III; Pitram, S. M.; Gaunt, M. J.; Kozmin, S. A. Dithiane Additions to Vinyl Epoxides: Steric Control over the S_N2 and S_N2' Manifolds. *J. Am. Chem. Soc.* **2002**, *124*, 14516-14517
22. Liu, D.; Kozmin, S. A. Synthesis of (–)-Pinolidoxin: Divergent Synthetic Strategy Exploiting a Common Silacyclic Precursor. *Org. Lett* **2002**, *4*, 3005-3007
23. Wang, Y.; Janjic, J.; Kozmin, S. A. Synthesis of Leucascandrolide A via a Spontaneous Macrolactolization. *J. Am. Chem. Soc.* **2002**, *124*, 13670-13671
24. Kozmin, S. A.; Wang, Y. A Three-Dimensional Array for Multiparallel Synthesis. *Angew. Chem. Int. Ed. Engl.* **2003**, *42*, 903-905
25. Kozmin, S. A.; Liu, D. Breaking the Symmetry of Silacyclic Templates to Assemble Pinolidoxin and Herbarumin I. *Strategies and Tactics in Organic Synthesis, Ed. Harmata, M.* **2004**, Vol 5. (invited submission)
26. Reddy, D. S.; Kozmin, S. A. Efficient and General Approach to Eremophilanes Using Siloxyalkyne-Alkene Metathesis. *J. Org. Chem.* **2004**, *69*, 4860-4862
27. Sweis, R.; Schramm, M. P.; Kozmin, S. A. Silver-Catalyzed [2+2] Annulations of Siloxyalkynes with Simple Enones and Enoates. *J. Am. Chem. Soc.* **2004**, *126*, 7442-7443
28. Statsuk, A. V.; Liu, D.; Kozmin, S. A. Synthesis of Bistramide A. *J. Am. Chem. Soc.* **2004**, *126*, 9546-9547
29. Zhang, L.; Kozmin, S. A. Brønsted Acid-Promoted Cyclizations of Siloxyalkynes with Arenes and Alkenes. *J. Am. Chem. Soc.* **2004**, *126*, 10204-10205
30. Zhang, L.; Kozmin, S. A. Gold-Catalyzed Cycloisomerizations of Siloxy Enynes to Cyclohexadienes. *J. Am. Chem. Soc.* **2004**, *126*, 11806-11807

31. Zhang, L.; Kozmin, S. A. Gold-Catalyzed Assembly of Heterobicyclic Systems. *J. Am. Chem. Soc.* **2005**, *127*, 6962-6963
32. Wang, Y.; Janjic, J.; Kozmin, S. A. Synthesis of Leucascandrolide A. *Pure Appl. Chem.* **2005**, *77*, 1161-1169 (invited submission, IUPAC ICOS-15, Nagoya, Japan)
33. Sun, J.; Kozmin, S. A. Brønsted Acid-Promoted Cyclizations of 1-Siloxy-1,5-diyne. *J. Am. Chem. Soc.* **2005**, *127*, 13512-13513
35. Statsuk, A. V.; Bai, R.; Baryza, J. L.; Verma, V. A.; Hamel, E.; Wender, P. A.; Kozmin, S. A. Actin is the Primary Cellular Receptor of Bistramide A. *Nature Chem. Biol.* **2005**, *1*, 383-388
36. Rizvi, S. A.; Tereshko, V.; Kossiakoff, A. A.; Kozmin, S. A. Structure of Actin-Bistramide A Complex at 1.35 Å Resolution. *J. Am. Chem. Soc.* **2006**, *128*, 3882-3883.
37. Sun, J.; Conley, M.; Zhang, L.; Kozmin, S. A. Gold and Platinum-Catalyzed Cycloisomerizations of 1,5-Enynes to Cyclohexadienes with a Broad Alkyne Scope. *J. Am. Chem. Soc.* **2006**, *128*, 4991-4993.
38. Sun, J.; Kozmin, S. A. Silver-Catalyzed Hydroamination of Siloxy Alkynes. *Angew. Chem. Int. Ed.* **2006**, *45*, 4991-4993.
39. Zhang, L.; Sun, J.; Kozmin, S. A. Brønsted Acid-Promoted Cyclizations of Siloxy Alkynes with Unactivated Arenes, Alkenes and Alkynes *Tetrahedron* **2006**, *62*, 11371-11380. (Symposium in Print)
40. Zhang, L.; Sun, J.; Kozmin, S. A. Gold and Platinum Catalysis of Enyne Cycloisomerization. *Adv. Synth. Catal.* **2006**, *348*, 2271-2296 (Special Issue)
41. Marjanovic, J.; Kozmin, S. A. Spirofungin A: Stereoselective Synthesis and Inhibition of Isoleucyl-tRNA Synthetase. *Angew. Chem. Int. Ed.* **2007**, *46*, 9010-9013.
42. Rizvi, S. A.; Courson, D. S.; Keller, V. A.; Rock, R. S.; Kozmin, S. A. The Dual Mode of Action of Bistramide A Entails Severing of Actin Filaments and Covalent Protein Modification. *Proc. Natl. Acad. Sci. USA.* **2008**, *105*, 4088-4092.
43. Matsumoto, K.; Kozmin, S. A. Eight-Step Synthesis of Routiennocin. *Adv. Synth. Catal.* **2008**, *350*, 557-560.
44. Ulanovskaya, O.; Janjic, J.; Matsumoto, K.; Schumacker, P. T.; Kron, S. J.; Kozmin, S. A. Synthesis Enables Identification of the Cellular Target of Leucascandrolide A and Neopeltolide. *Nature Chem. Biol.* **2008**, *4*, 418-424.
45. Cui, J.; Matsumoto, K.; Lee, H.; Suzuki, M.; Kozmin, S. A. General Strategy to High-Purity Chemical Libraries *Nature Chem. Biol.* in revision
46. Sun, J.; Kozmin, S. A. Silver-Catalyzed Olefination of Aldehydes Using Siloxy Alkynes. *In preparation*

Research Support

Completed

ACS PRF 09/01/01 – 08/31/02
PI: Kozmin
Stereocontrolled Assembly of Polyol Motifs via Catalytic Asymmetric Desymmetrization of Cyclic Silanes
\$25,000

American Cancer Society Institutional Research Grant 12/01/01 – 11/30/02
PI: Kozmin
Generation of Chemical Libraries Incorporating Multiple Scaffolds
\$20,000

Virginia and D. K. Ludwig Fund 12/15/01 – 12/14/04
PI: Greene
Development of New Reagents for Breast Cancer Prevention and Treatment
\$749,549

NIH (NIGMS R01 GM066799) 06/01/03 – 05/30/07
PI: Kozmin
New Silacyclic Platforms for Complex Target Synthesis
\$954,642

NIH (NCI R01 CA93457) 12/31/01 – 12/31/05
PI: Kozmin
Synthesis of Leucascandrolide A, a Highly Cytotoxic Marine Macrolide
\$720,588

Alfred P. Sloan Foundation 09/01/03
PI: Kozmin
\$40,000

Amgen New Investigator's Award 03/02/04
PI: Kozmin
\$25,000

GlaxoSmithKline 10/25/04
PI: Kozmin
Chemistry Research scholar Award
\$40,000

Active

American Cancer Society 01/01/04 – 12/31/08
PI: Kozmin
The Bistramides: Development of Isotype Specific Modulators of PKC Function
\$539,000

Dreyfus Foundation 04/15/04
PI: Kozmin
Chemical Synthesis: From Molecular Complexity and Skeletal Diversity to Cell-Regulatory Function
\$60,000

NSF CAREER

01/01/05

PI: Kozmin

From New Reactivity to Complex and Diverse Molecular Architecture

\$400,000

Pending

NIH (NCI R01 CA135234-01)

07/01/2008- 06/30/2013

PI: Kozmin

Development of New Anti-Cancer Strategies Using Natural Product-Based Agents

\$2,374,283

NIH (NIGMS P50)

09/30/2008-09/30/2013

PI: Kozmin

Chicago Tri-Institutional Center for Chemical Methods and Library Development

\$10,472,832

Invited Lectures at Conferences

Gordon Research Conference on Natural Products, Short Talk, July 2001

Gordon Research Conference on Stereochemistry, June 2002

Gordon Research Conference on Organic Reactions and Processes, July 2002

Lab Automation 2003, Palm Springs, California, February 2003

NSF Workshop in Organic Synthesis, July 2003

Design and Synthesis of Target-Based Compound Libraries, San Diego, December 2003

ACS Regional Meeting, Symposium on Combinatorial Chemistry, June 2004

IUPAC ICOS-15, Japan, August 2004

GRAMS Symposium, Osaka, Japan, August 2004

Advances in Sciences for Drug Discovery, Moscow, Russia, July 2005

Gordon Research Conference on Organic Reactions and Processes, August 2005

Harry and Elsa Jiler American Cancer Society Professors Meeting, November 2005

Pacificchem, Prospects for Automated and Microreactor Synthesis, December 2005

222 ACS Meeting, Chicago, GSSPC Symposium, March 2007

Gordon Research Conference on Combinatorial Chemistry, June 2007

Gordon Research Conference on Natural Products, July 2007

Zing Drug Discovery Conference, Antigua, January 2008

ACS Meeting, Eli Lilly Award for Biological Chemistry Symposium, Philadelphia, August 2008

Gordon Research Conference on Bioorganic Chemistry, June 2009

16th European Symposium on Organic Chemistry, Prague, Czech Republic, July 2009

Invited Seminars at Universities and Companies

Illinois Institute of Technology, October 2000

Pew Undergraduate Research Symposium, Chicago, November 2001

Abbott Laboratories, May 2002

Pharmacia, March 2003

Texas A&M, April 2003

Northern Illinois University, April 2003

Johnson & Johnson, April 2003

Merck & Co, May 2003

Schering-Plough, June 2003

University of Toronto, *NPS Lectureship*, June 2003

Bristol-Myers Squibb, Princeton, July 2003

Bristol-Myers Squibb, New Brunswick, July 2003
Eli Lilly & Co, July 2003
University of Texas Southwestern Medical School, September 2003
University of Chicago, September 2003
University of Delaware, October 2003
Loyola University, October 2003
University of Notre Dame, October 2003
Scripps Research Institute, February 2004
Astra Zeneca, March 2004
Harvard University, *Pfizer Symposium Speaker*, May 2004
University of Tokyo, August 2004
Tokyo Institute of Technology, August 2004
Sankyo Company, Japan, August 2004
Fuji Film, Japan, August 2004
Toyohashi University of Technology, August 2004
Ono Pharmaceutical Company, Japan, August 2004
Kyoto University, August 2004
Amgen, Inc. *Young Investigator's Symposium Speaker*, September 2004
Wright State University, October 2004
Illinois Institute of Technology, October 2004
Abbott Laboratories, October 2004
University of Pennsylvania, *Amos B. Smith, III Symposium Speaker*, October 2004
Merck & Co, October 2004
Indiana University, November 2004
Emory University, November 2004
University of California at San Diego, November 2004
Millennium Pharmaceuticals, December 2004
University of Texas at Arlington, April 2005
California Institute of Technology, March 2005
Boston University, April 2005
GlaxoSmithKline, April 2005
Genentech, April 2005
University of California at Berkeley, April 2005
Roche Palo Alto, May 2005
Purdue University, April 2005
Stanford University, May 2005
Cornell University, September 2005
GlaxoSmithKline, *Chemistry Research Scholar Symposium Speaker*, September 2005
University of Illinois, Urbana-Champaign, October 2005
University of Wisconsin-Madison, October 2005
University of Rochester, November 2005
Drug Discovery Incyte Corporation, November 2005
Bristol-Myers Squibb, CT, February 2006
Johnson & Johnson, NJ, April 2006
Hamilton College, February 2006
SUNY Buffalo, *Graduate Student Symposium, Keynote Lecture*, May 2006
University of Illinois, Chicago, May 2006
Hokkaido, Japan, September 2006, *SSOCJ Lectureship Award*
Tohoku University, Japan, September 2006
Kyushu University, Japan, September 2006
GlaxoSmithKline, *Chemistry Research Scholar Symposium Speaker*, September 2006
Bayer Pharmaceuticals, CT, April 2007
Merck, Rahway, April 2007
Sepracor, April 2007

Novartis, Emeryville, CA, April 2007
University of Nevada, Reno, April 2007
University of Tokyo, Japan, May 2007
Keio University, Japan, May 2007
RIKEN Institute, Japan, May 2007
Novartis, Tsukuba, Japan, May 2007
Astra Zeneca, Boston, Sept 2007
University of Arkansas, Sept 2007
University of Virginia, Sept 2007
University of Bern, Nov 2007
University of Lausanne, Nov 2007
University of Basel, Nov 2007
University of Fribourg, Nov 2007
Yale University, *Connecticut Organic Chemistry Symposium*, January 2008
Northwestern University, February 2008
Novartis, Cambridge, MA, *Novartis Chemistry Lectureship*, March 2008
Novartis, Basel,, *Novartis Chemistry Lectureship*, March 2008
UIC, Department of Pharmacology, Sept 2008
UCLA, October 2008
University of Rochester, *Magomedov-Scherbinina Prize*, October 2008
Merck, Boston, January 2009

Journal Referee Service

Science
Nature Chemical Biology
Journal of the American Chemical Society
Angewandte Chemie International Edition
ACS Chemical Biology
Organic Letters
Journal of Organic Chemistry
Organometallics

Proposal Referee Service

National Institute of Health, adhoc member of Medicinal Chemistry Study Section, July 2004
National Institute of Health, member of the NIH BPC-B Special Emphasis Panel, July 2004
National Science Foundation
Petroleum Research Fund
US Department of State for the Science Centers

Teaching

Fall 2001	Chem 322. Advanced Organic Synthesis (Graduate)
Spring 2002	Chem 222. Organic Chemistry (Undergraduate)
Fall 2002	Chem 322. Advanced Organic Synthesis (Graduate)
Winter 2003	Chem 221. Organic Chemistry (Undergraduate)
Fall 2003	Chem 322. Advanced Organic Synthesis (Graduate)
Winter 2004	Chem 231. Honors Organic Chemistry (Undergraduate)
Fall 2004	Chem 322. Advanced Organic Synthesis (Graduate)
Winter 2005	Chem 231. Honors Organic Chemistry (Undergraduate)

Winter 2006	Chem 231. Honors Organic Chemistry (Undergraduate)
Spring 2006	Chem 113-A General Chemistry (Undergraduate)
Winter 2007	Chem 221. Organic Chemistry (Undergraduate)
Winter 2007	Chem 324. Physical Organic Chemistry (Graduate)
Fall 2007	Chem 322. Advanced Organic Synthesis (Graduate)
Spring 2008	Chem 113-A General Chemistry (Undergraduate)

Departmental/University Committees

2000 – 2001	Graduate Recruiting Committee New Building Planning Departmental Colloquia
2001 – 2002	Graduate Recruiting Committee The Louis Block Board Graduate Admissions Committee
2002 – 2003	Graduate Recruiting Committee The Louis Block Board
2003 – 2004	Graduate Recruiting Committee Chemistry-Biology Training Grant Steering Committee The Louis Block Board Departmental Instruments
2004 – 2005	New Building Interior Design Organic Graduate Program Departmental Instruments Safety
2005 – 2006	Graduate Admissions Committee Departmental Instruments
2006 – 2007	Organic Graduate Program Departmental Colloquia

Postdoctoral, Graduate and Undergraduate Students

Masato Suzuki	Postdoc 2006-2008, Currently at the University of Illinois at Chicago
Kenji Matsumoto	Postdoc, 2005-2007, Currently Assistant Professor, Kyoto University
Valerie Keller	Postdoc 2005-2006, Currently Senior Lecturer, University of Chicago
Liming Zhang	Postdoc 2003-2005, Currently Assistant Professor University of Nevada, Reno
Ying Wang	Postdoc 2001-2003, Currently at Abbott Laboratories
Troy Kleckley	Postdoc 2001-2002, Currently at Leydig Volt & Mayer, Ltd
D. Srinivasa Reddy	Postdoc 2000-2001, Currently at Reddy & Company, India
Michael P. Schramm	Graduate Student 2000-2005, Currently Assistant Professor, California State University, Long Beach.
Dong Liu	Graduate Student 2000-2005, Currently at Elanta, Boston, MA

Alexander V. Statsiouk	Graduate Student 2001-2006, Currently postdoc with Shokat, UCSF
Jelena Janjic	Graduate Student 2000-2006, Currently at McDonnell Boehnen Hulbert & Berghoff, LLP
Ha Joong Lee	Graduate Student 2002-2008, Currently employed in Korea
Jianwei Sun	Graduate Student 2004-2008, Currently postdoc with Gregory Fu, MIT
Syed Rizvi	Current Graduate Student
Jasmina Marjanovic	Current Graduate Student
Jiayue Cui	Current Graduate Student
Sergey Pronin	Current Graduate Student
Olesia Ulenovskaya	Current Graduate Student
Song Liu	Current Graduate Student
Laura Stone	Current Undergraduate Student
Valeriy Shubinets	Undergraduate Student 2005-1008
Alison Wendlandt	Undergraduate Student 2005-2007
Erin Moran	Undergraduate Student 2005-2007
Isaac Marx	Undergraduate Student 2004-2006
Rachel Frank	Undergraduate Student 2002-2004
Randy Sweis	Undergraduate Student 2002-2004