Scott K. Silverman

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Born October 1972 in Los Angeles, CA

September 2009

Education

Ph.D. 08/97 Chemistry, California Institute of Technology, Pasadena, CA
Thesis: I. Conformational and Charge Effects on High-Spin Organic Polyradicals
II. Studies on the Atomic-Scale Basis of Ion Selectivity in Potassium Channels
Advisor: Dennis A. Dougherty

B.S. 06/91 Chemistry (*summa cum laude*), University of California, Los Angeles

Research

08/06-present	**Associate Professor of Chemistry**, University of Illinois at Urbana-Champaign
08/06-present	**Associate Professor of Biochemistry**, University of Illinois at Urbana-Champaign
08/06-present	**Associate Professor of Biophysics**, Center for Biophysics & Comp. Biol., U. of I.
08/00-08/06	**Assistant Professor of Chemistry**, University of Illinois at Urbana-Champaign
08/00-08/06	**Assistant Professor of Biochemistry**, University of Illinois at Urbana-Champaign
09/97-06/00	**Postdoctoral Researcher**, University of Colorado at Boulder (with T. R. Cech)
09/91-08/97	**Graduate Research Assistant**, California Institute of Technology
06/91-09/91	**Research Assistant** (summer), California Inst. of Technology (with A. G. Myers)
09/89-06/91	**Undergraduate Research Assistant**, UCLA (with C. S. Foote)

Honors, Awards, & Fellowships

Named to University of Illinois List of Teachers Ranked as Excellent (9 semesters):
2007 (FA), 2007 (SP), 2006 (FA), 2006 (SP), 2005 (FA), 2004 (SP), 2003 (FA), 2002 (SP), 2000 (FA)

2009	Eli Lilly Award, Division of Biological Chemistry, American Chemical Society
2007	Fellow, American Association for the Advancement of Science (AAAS)
2004 & 2001	Roger Adams Award for Excellence in Teaching, U of I School of Chem. Sciences
2004-2005	Fellow, University of Illinois Center for Advanced Study
2003-2008	Fellow, The David and Lucile Packard Foundation
2003-2005	March of Dimes Basil O'Connor Starter Scholar Research Award
2001-2004	Burroughs Wellcome Fund New Investigator Award
1998-2000	Postdoctoral Fellow, The Helen Hay Whitney Foundation
1998	Postdoctoral Fellow, American Cancer Society
1997	McKoy Award for Contributions to the Science of Chemistry, Caltech
1994-1995	American Chemical Society Division of Organic Chemistry Graduate Fellowship
1991-1994	National Science Foundation Predoctoral Fellow
1991-1992	Hertz Foundation Finalist and Research Fellowship Grant
1991	UCLA Chemistry Department highest honors upon graduation
1991	UCLA Dolores Cannon Southam Award for outstanding UG research

1991	Best organic paper, So. California ACS Undergrad. Research Conference
1990	UCLA Geissman prize for outstanding undergraduate in organic chemistry
1990	UCLA Undergraduate Research Award

External Service Activities

Reviewer	Journals: *Acc. Chem. Res.* • *Adv. Mater.* • *Anal. Chem.* • *Anal. Chim. Acta* • *Angew. Chem.* • *Biochem. Biophys. Res. Commun.* • *Biochemistry* • *Biomacromolecules* • *Bioorg. Med. Chem. Lett.* • *Biophys. J.* • *Biopolymers* • *Biotechniques* • *Chem. Asian J.* • *ChemBioChem* • *Chem. Commun.* • *Chem. Eur. J.* • *Chem. Soc. Rev.* • *Chemistry & Biology* • *EMBO J.* • *FEBS J.* • *IEE Proc. Nanobiotechnol.* • *JACS* • *J. Mol. Biol.* • *J. Org. Chem.* • *J. Phys. Chem.* • *Nat. Chem. Biol.* • *Nat. Protocols* • *Nat. Reviews (various)* • *Nucleic Acids Res.* • *Org. Biomol. Chem.* • *Org. Lett.* • *PNAS* • *Protein Sci.* • *RNA* • *Small* • *Structure* • *Synthesis* Agencies: ACS-PRF, Austrian Science Fund (FWF), CIHR (Canada), DTRA-DoD, Israel Sci. Found., NIH, NSF, NASA, Netherlands Organisation for Scientific Research, NSERC (Canada), Wellcome Trust (UK)
2009-2011	elected Treasurer, Division of Biological Chemistry, American Chemical Society
11/2009	organizing committee, NAS Kavli US Frontiers of Science Symposium, Irvine, CA
09/2009-present	editorial board, journal *Chemistry & Biology*
11/2008	organizing committee, NAS Kavli US Frontiers of Science Symposium, Irvine, CA
06/2007	member, NASA Exobiology & Evolutionary Biology review panel
05/2006-present	editorial board, journal *Current Opinion in Chemical Biology*
01/2006-present	editorial board, journal *Nucleic Acids Research*
10/2005	ad hoc member, Synth. & Biol. Chemistry A (SBCA) NIH study section
09/2004	ad hoc mail reviewer, Biophysical Chemistry B (BPCB) NIH study section
06/2004	session moderator, Bioorganic Chemistry Gordon Research Conference
02/2003	ad hoc member, Bioorganic and Natural Products (BNP) NIH study section
07/2001-present	charter member, Faculty of 1000 literature review (www.facultyof1000.com)

Memberships

1999	RNA Society
1991	American Chemical Society
1991	American Association for the Advancement of Science
1991	Phi Beta Kappa
1991	Sigma Xi
1990	Golden Key National Honor Society

University of Illinois – Courses Taught

2009 (Fall)	CHEM 532, Physical Organic Chemistry
2009 (Spring)	CHEM 575, Chemical Biology student seminar
2008 (Fall)	CHEM 532, Physical Organic Chemistry
2008 (Spring)	CHEM 575, Chemical Biology student seminar
2007 (Fall)	CHEM 532, Physical Organic Chemistry
2007 (Spring)	CHEM 535, Organic Chemistry student seminar
2006 (Fall)	CHEM 532, Physical Organic Chemistry
2006 (Spring)	CHEM 236, Fundamental Organic Chemistry I
2005 (Fall)	CHEM 532, Physical Organic Chemistry
2004 (Fall)	CHEM 590B, Chemical Biology of Nucleic Acids

2004 (Spring)	CHEM 336, Fundamental Organic Chemistry II
2003 (Fall)	CHEM 236, Fundamental Organic Chemistry I
2003 (Spring)	CHEM 436, Introduction to Organic Chemistry Research
2002 (Fall)	CHEM 236, Fundamental Organic Chemistry I
2002 (Spring)	CHEM 336, Fundamental Organic Chemistry II
2001 (Fall)	CHEM 236, Fundamental Organic Chemistry I
2001 (Spring)	CHEM 475, Chemical Biology student seminar
2000 (Fall)	CHEM 336, Fundamental Organic Chemistry II

University of Illinois – Mentored Students and Lab Members

(with next or current position, if known)

Graduate Students (B.S. or B.A. degree holders)

Rebecca L. [Coppins] Bunn	11/00-08/05 (Ph.D.); postdoc at Washington U. in St. Louis
David C. McKinney	11/00-12/03 (M.S.); industry position in Massachusetts
Chandrasekhar V. Miduturu	11/00-02/06 (Ph.D.); postdoc at Harvard Med./Dana Farber
Seth M. Parmley	11/06-04/08 (M.S.); industry position in Kentucky
Elizabeth D. Pratico	12/03-07/08 (Ph.D.); postdoc at Duke U.
Amit Sachdeva	11/06-present
Mary Smalley Scanlan	11/01-12/06 (Ph.D.); industry position in Wisconsin
Yangming Wang	12/01-01/06 (Ph.D.); postdoc at UCSF
Adrienne (On Yi) Wong	11/06-present
Ying Xiao	11/08-present
Elena Zelin	12/04-08/08 (Ph.D.); postdoc at UIUC

Postdoctoral Researchers (Ph.D. holders)

Dana A. Baum	08/05-08/08; Asst. Prof., Chemistry, Saint Louis U.
Amber F. Charlebois	06/01-08/07; Asst. Prof., Chemistry, Fairleigh Dickinson U.
Rachel A. Hellmann	starting 06/09
Claudia Höbartner	01/05-07/07; Jr. Group Leader, Max Planck Institute, Göttingen
Shengxi Jin	05/04-02/05; industry position in China
Madhavaiah Chandra	12/06-present
P. I. Pradeepkumar	07/04-08/07; Asst. Prof., Chemistry, IIT-Bombay

Technical Staff (B.S. or B.A. degree holders)

Tracey K. Prior	04/02-09/04
Elizabeth J. [Duvall] Schmidt	06/03-05/05; UIUC SCS Chemical Safety Coordinator

Undergraduate Students from University of Illinois

John M. Aguilar	08/09-present
Marissa J. Alcantara	06/04-11/05
Sarah C. Carter	12/03-12/04
Hillary D. Campbell	10/07-present
Kristin L. Garlanger	01/05-11/05
Joseph P. Gerdt	06/05-07/08; grad. student at U. Wisconsin
Kelly A. Hoadley	01/02-05/04; grad. student at U. Wisconsin
Andrew J. Hoover	05/06-05/07
Darshil T. Jhaveri	11/05-09/07
Rebecca S. Lahti	08/05-05/07; grad. student at U. Michigan
Christine S. Lee	08/07-present
Diana M. Kost	08/05-05/08; med. student at Northwestern U.
Jonathan J. Liu	01/08-present
Timothy P. Mui	06/05-07/08; grad. student at Caltech
Meha P. Patel	06/05-05/07; lab staff at The Scripps Research Institute

Kimberly J. [Peterson] Kaufman	02/02-05/04; grad. student at U. Wisconsin
Whitney E. Purtha	01/03-05/05; grad. student at Washington U. in St. Louis
Shilpa S. Ramesh	05/08-present
Imran Rashid	06/01-05/04; grad. student at U. of Washington
Benjamin L. Ricca	09/03-05/04; grad. student at U. Chicago
Daniel L. Semlow	01/03-05/05; grad. student at U. Chicago
Brian C. Smith	06/01-05/03; grad. student at U. Wisconsin; Ph.D. 08/08
Brian T. Young	06/01-05/02; grad. student at Case Western Reserve U.
Amanda C. [Wolf] Santoro	06/01-05/03; at Hospira (Chicago)

External Presentations While at University of Illinois

(invited speaker unless otherwise noted)

12/2010	Pacifichem 2010, Functional Nucleic Acids session (speaker & organizer)
08/2010	Telluride Workshop on Nucleic Acid Chemistry
06/2010	33rd Reaction Mechanisms Conference, University of Massachusetts Amherst
11/2009	NAS Kavli US Frontiers of Science Symposium, Irvine, CA (organizing committee)
10/2009	Northwestern University, Department of Chemistry
10/2009	Virginia Tech, Department of Chemistry
09/2009	3rd European Conference on Chemistry for Life Sciences (ECCLS), Frankfurt, Germany
08/2009	238th ACS National meeting, Washington, D.C. (Eli Lilly award address)
04/2009	Simon Fraser University, BC, Canada, Department of Molecular Biology & Biochemistry
01/2009	University of Frankfurt, Germany, Symposium on RNA-Ligand Interactions
11/2008	NAS Kavli US Frontiers of Science Symposium, Irvine, CA (organizing committee)
10/2008	Georgia Institute of Technology, Department of Chemistry
10/2008	NSF WaterCAMPWS, University of Illinois at Urbana-Champaign
09/2008	Packard Fellows Meeting, Park City, UT, oral presentation
07/2008	13th annual meeting of the RNA Society, Berlin, Germany: 2 posters
05/2008	Boston College, Department of Chemistry
05/2008	Saint Louis University, Department of Chemistry
04/2008	University of North Carolina, Division of Medicinal Chemistry & Natural Products
04/2008	University of Maryland, Department of Chemistry
11/2007	NAS Kavli US Frontiers of Science Symposium, Irvine, CA (invited participant)
10/2007	Southeastern Regional Meeting of the ACS (highlighted speaker)
10/2007	USB Corporation, Cleveland, OH
10/2007	Case Western Reserve University, Center for RNA Molecular Biology
09/2007	Packard Fellows Meeting, Monterey, CA, poster presentation
06/2007	12th annual mtg of the RNA Society, Madison, WI: 3 posters
04/2007	Albion College, Department of Chemistry
09/2006	University of Illinois at Urbana-Champaign, Department of Biochemistry
09/2006	Packard Fellows Meeting, Monterey, CA, poster presentation
06/2006	11th annual meeting of the RNA Society, Seattle, WA: 3 posters
06/2006	FASEB Conference on Nucleic Acid Enzymes, Saxtons River, VT
04/2006	McMaster University, Department of Biochemistry & Biomedical Sciences
04/2006	UIUC Nanohour at the Beckman Institute
12/2005	Pacifichem 2005, Functional Nucleic Acids session
11/2005	University of California, Berkeley, Department of Chemistry
11/2005	University of Colorado at Boulder, Department of Chemistry & Biochemistry
11/2005	Colorado State University, Department of Chemistry
10/2005	University of California, Davis, Department of Chemistry
09/2005	Packard Fellows Meeting, Monterey, CA, poster presentation
06/2005	Bioorganic Chemistry Gordon Research Conference
06/2005	10th annual mtg of the RNA Soc., Banff, Alberta, Canada: 1 oral pres. & 5 posters
04/2005	University of Wisconsin–Madison, Department of Biochemistry
04/2005	UC Irvine, Department of Chemistry

04/2005 The Scripps Research Institute, Department of Chemistry
03/2005 Caltech, Division of Chemistry & Chemical Engineering
03/2005 229th ACS National meeting, San Diego: 2 oral presentations and 1 poster
03/2005 UCLA, Department of Chemistry & Biochemistry
01/2005 University of Michigan, Department of Chemistry
11/2004 Purdue University, Department of Chemistry
11/2004 Indiana University, Department of Chemistry
10/2004 Johns Hopkins University, Department of Chemistry
10/2004 University of Chicago, Department of Biochemistry & Molecular Biology
09/2004 Packard Fellows Meeting, Monterey, CA, oral presentation
08/2004 BWF conference on the Host/Microbe Interface, Florida: invited participant
07/2004 Joint ACS/GDCh GAFOC 3 symposium, Seeon, Germany: invited participant
06/2004 Bioorganic Chemistry Gordon Research Conference: poster presentation
06/2004 9th annual mtg of the RNA Soc., Madison, WI: 2 oral presentations and 10 posters
05/2004 University of Minnesota, NIH Training Grant Symposium (Chemistry)
04/2004 Emory University, Department of Chemistry
04/2004 University of Pennsylvania, Department of Chemistry
09/2003 University of Illinois at Urbana-Champaign, Department of Biochemistry
07/2003 8th annual meeting of the RNA Society, Vienna, Austria; oral presentation
06/2003 Bioorganic Chemistry Gordon Research Conference; poster presentation
04/2003 Pennsylvania State University, Department of Chemistry
08/2002 EMBO workshop–Ribozymes & RNA Catalysis, Dundee, Scotland
05/2002 7th annual meeting of the RNA Society, Madison, Wisconsin; 5 posters

Funding Obtained While at University of Illinois

CURRENT

07/15/09-06/30/12 NSF grant (0842534; $455,500 total costs; $289,411 direct costs)
Development of DNA Catalysts for Synthetic Chemistry

05/01/09-04/30/13 NIH R01 grant (2R01GM065966; $1,393,068 total costs; $913,584 direct costs)
Deoxyribozymes for Bioorganic Chemistry

02/09/09-02/08/12 Defense Threat Reduction Agency (BRBAA08-L-2-0001; $748,891 total costs; $501,440 direct costs)
Development of DNA Catalysts for Covalent Protein Modification

COMPLETED

08/16/08-12/31/08 UIUC Research Board (08083; $12,987 total costs)
Deoxyribozymes for Bioorganic Chemistry

05/16/08-12/31/08 UIUC Research Board (08159; $17,296 total costs)
Photochemical Approach to Study RNA Folding Pathways and Misfolded RNAs

07/01/07-06/30/08 NSF STTR grant (IIP-0711622; $149,995 total costs; $129,318 direct costs)
PI: Silverman; Awardee: DzymeTech Inc. (co-PI: Juewen Liu), Champaign, IL
Allosteric DNAzyme Sensors for Practical Cyanotoxin Detection

02/01/07-01/31/08 NIH STTR grant (R41ES014746; $99,996 total costs; $80,501 direct costs)
PI: Silverman; Awardee: DzymeTech Inc., Champaign, IL
Allosteric DNAzyme Sensors for Practical Detection of Mycotoxins

10/01/03-09/30/08	Fellowship from the The David and Lucile Packard Foundation (2003-25908; $625,000 total costs; $562,500 direct costs) *DNA as a Catalyst and as a Scaffold: Unconventional Applications of DNA in Chemistry, Biochemistry, and Nanotechnology*
05/01/03-04/30/08	NIH R01 grant (1R01GM065966; $1,306,599 total costs; $915,880 direct costs) *Deoxyribozymes that Ligate RNA*
02/01/03-01/31/05	March of Dimes Birth Defects Foundation Basil O'Connor Starter Scholar Research Award (5-FY02-271; $150,000 total costs; $135,000 direct costs) *The Structural Basis of RNA-Protein Interactions Underlying Fragile X Syndrome*
01/01/03-08/31/05	American Chemical Society Petroleum Research Fund Type G Grant for Individual Fundamental Research (38803-G4; $35,000 total & direct costs) *Deoxyribozymes with RNA Ligase Activity*
07/01/01-06/30/04	Burroughs Wellcome Fund New Investigator Award in the Basic Pharmacological Sciences (Proj. No. 1002567; $210,000 total & direct costs) *Phototriggered Folding Approaches to RNA Structure Motifs and RNA-Protein Interactions*
04/01	UIUC Research Board ($17,000 total & direct costs; co-PI on application for partial funding of a PhosphorImager instrument for the UIUC School of Chemical Sciences)

Independent career at University of Illinois

Manuscripts are peer-reviewed research publications unless denoted with *, which indicates a review, commentary, book chapter, or methods paper.

76. M. D. Brenner, M. S. Scanlan, M. K. Nahas, T. Ha, S. K. Silverman, "Multi-Vector Fluorescence Analysis of the *xpt* Guanine Riboswitch Aptamer Domain Reveals the Structural Role of Guanine", **2009**, submitted for publication.

* 75. S. K. Silverman, "Deoxyribozymes: Selection Design and Serendipity in the Development of DNA Catalysts", *Acc. Chem. Res.* **2009**, *42*, ASAP (invited review). DOI: 10.1021/ar900052y

74. M. Chandra, A. Sachdeva, S. K. Silverman, "DNA-Catalyzed Sequence-Specific Hydrolysis of DNA", *Nat. Chem. Biol.* **2009**, *5*, 718-720. DOI: 10.1038/nchembio.201

* 73. S. K. Silverman, D.A. Baum, "Use of Deoxyribozymes in RNA Research", *Methods Enzymol.* **2009**, in press (invited methodology review).

72. D. A. Heller, H. Jin, B. M. Martinez, D. Patel, B. M. Miller, T.-K. Yeung, P. V. Jena, C. Höbartner, T. Ha, S. K. Silverman, M. S. Strano, "Multimodal Optical Sensing and Analyte Specificity Using Single-Wall Carbon Nanotubes", *Nat. Nanotechnol.* **2009**, *4*, 114-120. DOI: 10.1038/nnano.2008.369

71. E. Zelin, S. K. Silverman, "Efficient Control of Group I Intron Ribozyme Catalysis By DNA Constraints", *Chem. Commun.* **2009**, 767-769. DOI: 10.1039/b820676g

70. D. M. Kost, J. P. Gerdt, P. I. Pradeepkumar, S. K. Silverman, "Controlling the Direction Of Site-Selectivity and Regioselectivity in RNA Ligation By Zn^{2+}-Dependent Deoxyribozymes That Use 2′,3′-Cyclic Phosphate RNA Substrates", *Org. Biomol. Chem.* **2008**, *6*, 4391-4398. DOI: 10.1039/b813566e

69. J. P. Gerdt, C. V. Miduturu, S. K. Silverman, "Selective Stabilization of Natively Folded RNA Structure by DNA Constraints", *J. Am. Chem. Soc.* **2008**, *130*, 14920-14921. DOI: 10.1021/ja8057277

68. T. P. Mui, S. K. Silverman, "Convergent and General DNA-Catalyzed One-Step Synthesis of Multiply Branched DNA", *Org. Lett.* **2008**, *10*, 4417-4420. DOI: 10.1021/ol801568q

* 67. S. K. Silverman, "Catalytic DNA (Deoxyribozymes) for Synthetic Applications—Current Abilities and Future Prospects", *Chem. Commun.* **2008**, 3467-3485 (invited review). DOI: 10.1039/b807292m

* 66. S. K. Silverman, "A Forced March Across an RNA Folding Landscape", *Chem. Biol.* **2008**, *15*, 211-213 (invited commentary). DOI: 10.1016/j.chem-biol.2008.02.014

* 65. D. A. Baum, S. K. Silverman, "Deoxyribozymes: Useful DNA Catalysts In Vitro and In Vivo", *Cell. Mol. Life Sci.* **2008**, *65*, 2156-2174 (invited review). DOI: 10.1007/s00018-008-8029-y

64. M. Chandra, S. K. Silverman, "DNA and RNA Can Be Equally Efficient Catalysts for Carbon-Carbon Bond Formation", *J. Am. Chem. Soc.* **2008**, *130*, 2936-2937. DOI: 10.1021/ja7111965

63. P. I. Pradeepkumar, C. Höbartner, D. A. Baum, S. K. Silverman, "DNA-Catalyzed Formation of Nucleopeptide Linkages", *Angew. Chem. Int . Ed.* **2008**, *47*, 1753-1757. DOI: 10.1002/anie.200703676

62. M. P. Patel, D. A. Baum, S. K. Silverman, "Improvement of DNA Adenylation Using T4 DNA Ligase with a Template and a Strategically Mismatched Acceptor Strand", *Bioorg. Chem.* **2008**, *36*, 46-56. DOI: 10.1016/j.bioorg.2007.10.001

* 61. C. Höbartner, S. K. Silverman, "Recent Advances in DNA Catalysis", *Biopolymers* **2007**, *87*, 279-292 (invited review). DOI: 10.1002/bip.20813

60. E. Zelin, S. K. Silverman, "Allosteric Regulation of Ribozyme Catalysis by Using DNA Constraints", *ChemBioChem* **2007**, *8*, 1907-1911. DOI: 10.1002/cbic.200700437

59. C. Höbartner, S. K. Silverman, "Engineering a Selective Small-Molecule Substrate Binding Site into a Deoxyribozyme", *Angew. Chem. Int. Ed.* **2007**, *46*, 7420-7424. DOI: 10.1002/anie.200702217

58. C. Höbartner, P. I. Pradeepkumar, S. K. Silverman, "Site-Selective Depurination by a Periodate-Dependent Deoxyribozyme", *Chem. Commun.* **2007**, 2255-2257. DOI: 10.1039/b704507g

57. E. D. Pratico, S. K. Silverman, "Ty1 Reverse Transcriptase Does Not Read Through the Proposed 2′,5′-Branched Retrotransposition Intermediate In Vitro", *RNA* **2007**, *13*, 1528-1536. DOI: 10.1261/rna.629607

56. D. A. Baum, S. K. Silverman, "Deoxyribozyme-Catalyzed Labeling of RNA", *Angew. Chem. Int. Ed.* **2007**, *46*, 3502-3504. DOI: 10.1002/anie.200700357

* 55. S. K. Silverman, "Artificial Functional Nucleic Acids: Aptamers, Ribozymes, and Deoxyribozymes Identified by In Vitro Selection", in *Functional Nucleic Acids for Analytical Applications*, eds. Y. Li and Y. Lu; Springer Science + Business Media, LLC (New York, NY), **2009**.

54. J. M. Blose, S. K. Silverman, P. C. Bevilacqua, "A Simple Molecular Model for Thermophilic Adaptation of Functional Nucleic Acids", *Biochemistry* **2007**, *46*, 4232-4240. DOI: 10.1021/bi0620003

* 53. S. K. Silverman, "Control of Macromolecular Structure and Function Using Covalently Attached Double-Stranded DNA Constraints", *Mol. BioSyst.* **2007**, *3*, 24-29 (invited review). DOI: 10.1039/b614116a

* 52. S. K. Silverman, "In Vitro Selection and Application of Nucleic Acid Enzymes (Ribozymes and Deoxyribozymes)", in *Wiley Encyclopedia of Chemical Biology*, T. P. Begley, ed.; John Wiley and Sons (Hoboken, NJ), **2009** (invited review). DOI: 10.1002/9780470048672.wecb406

* 51. S. K. Silverman, P. J. Hergenrother, "Tools for Molecular Diversification and Their Applications in Chemical Biology", *Curr. Opin. Chem. Biol.* **2006**, *10*, 185-187 (editorial overview of annual journal issue on combinatorial chemistry & molecular diversity). DOI: 10.1016/j.cbpa.2006.04.024

50. Y. Wang, S. K. Silverman, "Experimental Tests of Two Proofreading Mechanisms for 5′-Splice Site Selection", *ACS Chem. Biol.* **2006**, *1*, 316-324. DOI: 10.1021/cb6001569

49. C. V. Miduturu, S. K. Silverman, "Synthesis and Application of a 5′-Aldehyde Phosphoramidite for Covalent Attachment of DNA to Biomolecules", *J. Org. Chem.* **2006**, *71*, 5774-5777. DOI: 10.1021/jo060723m

48. Y. Wang, S. K. Silverman, "Efficient RNA 5′-Adenylation By T4 DNA Ligase To Facilitate Practical Applications", *RNA* **2006**, *12*, 1142-1146. DOI: 10.1261/rna.33106

47. E. Zelin, Y. Wang, S. K. Silverman, "Adenosine is Inherently Favored as the Branch-Site RNA Nucleotide in a Structural Context That Resembles Natural RNA Splicing", *Biochemistry* **2006**, *45*, 2767-2771. DOI: 10.1021/bi052499l

46. M. K. Smalley, S. K. Silverman, "Fluorescence of Covalently Attached Pyrene as a General RNA Folding Probe", *Nucleic Acids Res.* **2006**, *34*, 152-166. DOI: 10.1093/nar/gkj420

45. C. V. Miduturu, S. K. Silverman, "Modulation of DNA Constraints That Control Macromolecular Folding", *Angew. Chem. Int. Ed.* **2006**, *45*, 1918-1921. DOI: 10.1002/anie.200504124

44. Y. Wang, S. K. Silverman, "A General Two-Step Strategy to Synthesize Lariat RNAs", *RNA* **2006**, *12*, 313-321. DOI: 10.1261/rna.2259406

* 43. S. K. Silverman, "In Vitro Selection, Characterization, and Application of Deoxyribozymes That Cleave RNA", *Nucleic Acids Res.* **2005**, *33*, 6151-6163 (invited review). DOI: 10.1093/nar/gki930

42. C. Höbartner, S. K. Silverman, "Modulation of RNA Folding by Incorporation of Caged Nucleotides", *Angew. Chem. Int. Ed.* **2005**, *44*, 7305-7309. DOI: 10.1002/anie.200502928

41. W. E. Purtha, R. L. Coppins, M. K. Smalley, S. K. Silverman, "General Deoxyribozyme-Catalyzed Synthesis of Native 3′–5′ RNA Linkages", *J. Am. Chem. Soc.* **2005**, *127*, 13124-13125. DOI: 10.1021/ja0533702

40. R. L. Coppins, S. K. Silverman, "Mimicking the First Step of RNA Splicing: An Artificial DNA Enzyme Can Synthesize Branched RNA Using an Oligonucleotide Leaving Group as a 5′-Exon Analogue", *Biochemistry* **2005**, *44*, 13439-13446. DOI: 10.1021/bi0507229

39. C. V. Miduturu, S. K. Silverman, "DNA Constraints Allow Rational Control of Macromolecular Conformation", *J. Am. Chem. Soc.* **2005**, *127*, 10144-10145. DOI: 10.1021/ja051950t

38. Y. Wang, S. K. Silverman, "Efficient One-Step Synthesis of Biologically Related Lariat RNAs by a Deoxyribozyme", *Angew. Chem. Int. Ed.* **2005**, *44*, 5863-5866. DOI: 10.1002/anie.200501643

37. E. D. Pratico, Y. Wang, S. K. Silverman, "A Deoxyribozyme That Synthesizes 2′,5′-Branched RNA With Any Branch-Site Nucleotide", *Nucleic Acids Res.* **2005**, *33*, 3503-3512. DOI: 10.1093/nar/gki656

36. K. A. Hoadley, W. E. Purtha, A. C. Wolf, A. Flynn-Charlebois, S. K. Silverman, "Zn^{2+}-Dependent Deoxyribozymes That Form Natural and Unnatural RNA Linkages", *Biochemistry* **2005**, *44*, 9217-9231. DOI: 10.1021/bi050146g

35. S. Jin, C. V. Miduturu, D. C. McKinney, S. K. Silverman, "Synthesis of Amine- and Thiol-Modified Nucleoside Phosphoramidites for Site-Specific Introduction of Biophysical Probes into RNA", *J. Org. Chem.* **2005**, *70*, 4284-4299. DOI: 10.1021/jo0500611

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