

Contact Information

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Education

Postdoctorate, Molecular and Cell Biology, 2001 – 2003

University of California at Berkeley, Berkeley, CA
 Topic: Role of Export in Nonsense-Mediated Decay in *Saccharomyces cerevisiae*
 Mentor: Karsten Weis

Ph.D., Chemical Engineering, 2001

University of California at Berkeley, Berkeley, CA
 Thesis Topic: Engineering the Stabilities of Polycistronic mRNA
 Advisor: Jay D. Keasling

B.S., Chemical Engineering with Emphasis in Biology, 1997

University of Southern California, Los Angeles, CA

Professional Experience

2013-present Fellow, ChEM-H (Stanford University)
 2013-present Departmental Senator, School of Medicine (Stanford University)
 2012-present Associate Professor (Dept. Bioengineering and, by courtesy, Dept. Chemical Engineering, Stanford University)
 2012-present Associate Chair of Education (Dept. Bioengineering, Stanford University)
 2009-2012 Assistant Professor (Dept. Bioengineering, Stanford University)
 2006-2010 Adjunct Faculty (Comprehensive Cancer Center, City of Hope, Duarte)
 2003-2010 Assistant Professor (Dept. Chemical Engineering, Caltech, on leave 1/1/09-12/31/10)
 2001-2003 NIH Postdoctoral Research Fellow (Dept. Molecular and Cell Biology, UCB)
 1997-2001 Graduate Research Assistant / Student Instructor (Dept. Chemical Engineering, UCB)
 1997, 1995 Process & Facilities Engineer (Mobil Oil, CA)
 1993-1997 Undergraduate Research Assistant and Laboratory Instructor (USC and UCLA)

Teaching Experience

2014-present Instructor, undergraduate-level engineering biology fundamentals laboratory course (BioE 44; Stanford University)
 2012-2013 Instructor, undergraduate-level senior biodesign course (BioE 141 A/B; newly-developed course, Stanford University)
 2010-present Instructor, undergraduate/graduate-level advanced synthetic biology course (BioE 244; newly-developed course, Stanford University)
 2010-2012 Instructor, undergraduate-level introduction to bioengineering course (BioE/E 80; newly-developed course, Stanford University)

- 2004-2008 Instructor, graduate-level chemical thermodynamics course listed jointly in the Chemistry and Chemical Engineering Departments (ChE 165; Caltech)
- 2005-2008 Instructor, undergraduate-level biomolecular engineering laboratory (ChE 130; newly-developed course, Caltech)

Selected Membership / Services

- 2014-2015 Member, Defense Science Study Group
- 2014-present Member, Advisory Committee, JGI Synthetic Biology Program
- 2014-present Member, Scientific Advisory Board, Novo Nordisk Foundation Center for Biosustainability
- 2014-present Member, Editorial Board, Integrative Biology
- 2014-present Member, Editorial Board, Metabolic Engineering Communications
- 2014 Session Chair, “RNA Assemblies and DNA Origami”, 58th Annual Biophysical Society Meeting
- 2013-present Member, Steering Committee, ABMS (Advances in Biomedical Measurement Science) Program (Joint NIST and Stanford University Program)
- 2013-present Member, Editorial Board, Current Opinion in Chemical Biology
- 2012-2013 Member, Organizing Committee, SBE International Conference on Biomolecular Engineering
- 2012 Member, Organizing Committee, SBE International Conference on Bioengineering and Nanotechnology
- 2012-present Member, Editorial Board, Nucleic Acids Research
- 2011 Guest Editor, Special issue on Synthetic Biology, Metabolic Engineering Journal
- 2011-present Member, Editorial Board, FEMS Yeast Research
- 2010-present Member, Advisory Editorial Board, Molecular Systems Biology
- 2010 Member, Scientific Advisory Board, Metabolic Engineering VIII
- 2010 Track Chair, “New Frontiers in Bioengineering”, BMES Annual Meeting
- 2010 Session Chair, “Synthetic Biology”, ACS National Meeting
- 2009 Member, Steering Committee, NAKFI Synthetic Biology Symposium
- 2009 Member, Science Team, Innovations for Agricultural Value Chain in Africa Project, Meridian Institute (Gates Foundation)
- 2009 Symposium Organizer, “Synthetic Life”, AAAS Annual Meeting
- 2008-2009 President, Institute for Biological Engineering
- 2008 Conference Organizer, “Engineering Principles in Biological Systems”, CSHL Meeting
- 2008-2009 Session Chair, “Synthetic Biology”, IBE Annual Meeting
- 2007-2009 Member, Scientific Advisory Board, SynBERC (Synthetic Biology Engineering Research Center)
- 2007-2010 Judge, iGEM competition
- 2007 Session Chair, “Metabolic Engineering and Synthetic Biology”, Biochem Eng Conference XV
- 2007 Session Chair, “Metabolic Engineering”, IBC Life Sciences Synthetic Biology Conference: Transforming Life Science Research and Discovery
- 2007, 2011 Session Chair, “Synthetic Biology”, SBE Int’l Conference in Biomolecular Engineering
- 2007 President-Elect, Institute for Biological Engineering
- 2006-2009 Program Director, HHMI Undergraduate Science Education Program, Caltech
- 2006-present Proposal reviewer and panel member, National Science Foundation, National Institutes of Health, Department of Defense, Department of Energy, ARPA-E
- 2006-2010 Member, City of Hope NCI-sponsored Comprehensive Cancer Institute, Cancer Immunotherapeutics Group
- 2006 Organizer, “Synthetic Biology Workshop”, LSS Comp Sys Bioinformatics Conference

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| 2006 | Session Chair, “Microbial Metabolic Engineering I and II”, ACS National Meeting |
| 2006 | Session Chair, “Molecular Tools for the Metabolic Engineering”, Society of Industrial Microbiology Annual Meeting |
| 2005-2009 | Member, Scientific Advisory Board, Codon Devices |
| 2005-2008 | Session Chair, “Synthetic Systems Biology”, AIChE Annual Meeting |
| 2004-present | Steering Committee, Synthetic Biology Conference Series |
| 2004-20010 | Faculty Advisor, University iGEM team (Caltech, Stanford) |
| 2003, 2009 | Participant, DARPA-sponsored ISAT study group on “Synthetic Biology” |
| 2001-present | Ad Hoc Reviewer, journals including Nature, Science, Cell, PNAS, Nature Biotech, Nature Chem Biol, Mol Sys Biol, Nuc Acids Res, RNA, Met Eng, PLoS Comp Biol, Chem Biol |

Selected Honors

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| 2013 | Gilbreth Lecturer, National Academy of Engineering |
| 2012-2017 | NIH Director’s Pioneer Award |
| 2012-present | W.M. Keck Foundation Faculty Scholar |
| 2012 | Neekeyfar Lecturer, Harvard University |
| 2010, 2011 | Finalist, Agilent Early Career Professor Award |
| 2009 | World Technology Award in Biotechnology (Individual) |
| 2008 | Alfred P. Sloan Foundation Fellow |
| 2006 | National Science Foundation CAREER Award |
| 2005 | Beckman Young Investigator Award |
| 2004 | TR35 Top Young Innovators of the World |
| 2001-2003 | National Institute of Health Postdoctoral Fellowship |
| 1998-1999 | University Award for Outstanding Graduate Student Instructor |
| 1997-2000 | National Science Foundation Fellowship |
| 1997, 2001 | Graduated Summa Cum Laude |
| 1997 | University Salutatorian |
| 1993-1997 | Trustee Scholar and Merit Research Awards |

Patents

1. Bayer TS, Smolke CD. 2014. Aptamer regulated nucleic acids and uses thereof. Patent No. 8,772,464 (issued)
2. Culler SJ, Smolke CD. 2013. Protein-responsive RNA control devices and uses thereof. Patent No. 8,604,176 (issued)
3. Beisel CL, Win MN, Smolke CD. 2013. Modular polynucleotides for ligand-controlled regulatory systems. Patent No. 8,367,815 (issued)
4. Hawkins KM, Smolke CD. 2012. Engineered yeast cells and uses thereof. Patent No. 8,318,474 (issued)
5. Win MN, Galloway KE, Smolke CD. 2012. Modular aptamer-regulated ribozymes. Patent No. 8,158,595/8,603,996 (issued)
6. Chen YY, Jensen MC, Smolke CD. 2012. Genetic control of mammalian cells with synthetic RNA regulatory systems. Patent No. 8,329,882 (issued)
7. Chang AL, Smolke CD. 2014. Compositions and methods for regulation of gene expression with, and detection of, folinic acid and folates. App. No. 62/037,015 (pending)
8. Thodey C, Trenchard I, Galanie S, Smolke CD. 2014. Methods for constructing and culturing microbial strains to produce benzylisoquinoline alkaloids. App. No. 61/788,560 (pending)
9. Siddiqui MS, Smolke CD. 2013. Methods for constructing and culturing microbial strains to produce early benzylisoquinoline alkaloids. App. No. 61/899,496 (pending)

10. Liang JC, Smolke CD. 2012. Developing a high-throughput, high-efficiency, quantitative fluorescence-based screening strategy to generate genetic elements with specified regulatory activities. App. No. 13/350,597 (pending)
11. Beisel CL, Smolke CD. 2010. Integrated ligand-responsive miRNAs. App. No. 12/753,778 (pending)
12. Beisel CL, Win MN, Smolke CD. 2008. Higher order cellular information processing devices. App. No. 12/283,614 (pending)
13. Greenwood-Goodwin M, Chen YY, Brown A, Smolke CD. 2008. Selection of nucleic acid-based sensor domains within nucleic acid switch platform. App. No. 12/218,628 (pending)
14. Hawkins KM, Smolke CD. 2007. Compositions and methods for producing benzyloquinoline alkaloids. App. No. 11/875,814 (pending)

Refereed Publications

1. Bloom RJ, Winkler SM, Smolke CD. 2014. Synthetic feedback control using RNAi-based control device. *In review*.
2. Kennedy AB, Vowles JV, d'Espaux L, Smolke CD. 2014. Protein-responsive ribozyme switches in eukaryotic cells. *In press. Nuc. Acids Res*.
3. Siddiqui MS, Choksi A, Smolke CD. 2014. A system for multi-locus chromosomal integration and transformation-free selection marker rescue. *In press. Yeast FEMS Research*.
4. Bloom RJ, Winkler SM, Smolke CD. 2014. A quantitative framework for the forward design of synthetic miRNA circuits. *Nat. Methods*. doi: 10.1038/nmeth.3100
5. Thodey K, Galanie S, Smolke CD. 2014. A microbial biomanufacturing platform for natural and semi-synthetic opioids. *Nat. Chem. Biol*. doi: 10.1038/nchembio.1613
6. Chang AL, McKeague M, Liang JC, Smolke CD. 2014. Kinetic and equilibrium binding characterization of aptamers to small molecules using a label-free, sensitive, and scalable platform. *Anal. Chem*. 86: 3273-8.
7. Galloway KE, France, E, Smolke CD. 2013. Dynamically reshaping signaling networks to program cell fate via genetic controllers. *Science*. 341: 1235005. *Perspective: Cell signaling. Concentrating (on) native proteins to control cell fate*. 341: 1349-51.
8. Galanie S, Siddiqui MS, Smolke CD. 2013. Molecular tools for chemical biotechnology. *Curr. Opin. Biotech*. 24: 1000-9.
9. Wang YH, Wei KY, Smolke CD. 2013. Synthetic biology: advancing the design of diverse genetic systems. *Ann. Rev. of Chem. Biomol. Eng*. 4: 69-102.
10. Wei KY, Chen YY, Smolke CD. 2012. A yeast-based rapid prototype platform for gene-control elements in mammalian cells. *Biotech. Bioeng*. 110: 1201-10.
11. Michener JK, Nielsen J, Smolke CD. 2012. Identification and treatment of heme depletion due to over-expression of a lineage of evolved P450 monooxygenases. *Proc. Natl. Acad. Sci. USA*. 109: 19504-9.
12. Kennedy AB, Liang JC, Smolke CD. 2012. A versatile cis-blocking and trans-activation strategy for ribozyme characterization. *Nuc. Acids Res*. 41: e41.
13. Liang JC, Chang AL, Kennedy AB, Smolke CD. 2012. A high-throughput, quantitative, cell-based screen for efficient tailoring of RNA device activity. *Nuc. Acids Res*. 40: e154.
14. Michener JK, Smolke CD. 2012. Cover article: High-throughput enzyme evolution in *Saccharomyces cerevisiae* using a synthetic RNA switch. *Metab. Eng*. 14: 306-16.
15. Chang AL, Wolf JJ, Smolke CD. 2012. Synthetic RNA switches as a tool for temporal and spatial control over gene expression. *Curr. Opin. Biotech*. 23: 679-88.
16. Chen YY, Galloway KE, Smolke CD. 2012. Synthetic biology: advancing biological frontiers by building synthetic systems. *Genome Biol*. 13: 240.
17. Siddiqui M, Thodey K, Trenchard I, Smolke CD. 2012. Advancing secondary metabolite biosynthesis in yeast with synthetic biology tools. *Yeast FEMS Research*. 12: 144-70.

18. Michener JK, Thodey K, Liang JC, Smolke CD. 2012. Applications of genetically-encoded biosensors for the construction and control of biosynthetic pathways. *Metab. Eng.* 14: 212-22.
19. Chen YY, Smolke CD. 2011. From DNA to targeted therapeutics: bringing synthetic biology to the clinic. *Science Transl. Med.* 3: 106ps42.
20. Liang JC, Bloom RJ, Smolke CD. 2011. Engineering biological systems with synthetic RNA molecules. *Mol. Cell.* 43: 915-26.
21. Babiskin AH, Smolke CD. 2011. Synthetic RNA modules for fine-tuning gene expression levels in yeast by modulating RNase III activity. *Nuc. Acids Res.* 39: 8651-64.
22. Smolke CD, Silver PA. 2011. Informing biological design by integration of systems and synthetic biology. *Cell.* 144: 855-9.
23. Babiskin AH, Smolke CD. 2011. Engineering ligand-responsive RNA controllers in yeast through the assembly of RNase III tuning modules. *Nuc. Acids Res.* 39: 5299-311.
24. Babiskin AH, Smolke CD. 2011. A synthetic library of RNA control modules for predictable tuning of gene expression in yeast. *Mol. Sys. Biol.* 7: 471.
25. Beisel CL, Culler SJ, Hoff KG, Smolke CD. 2011. Design of small molecule-responsive miRNAs based on structural requirements for Drosha processing. *Nuc. Acids Res.* 39: 2981-94.
26. Culler SJ, Hoff KG, Smolke CD. 2010. Reprogramming cellular behavior with RNA controllers responsive to endogenous proteins. *Science.* 330: 1251-5. *Perspective: Cell biology. The case for RNA.* 330: 1185-6.
27. Chen YY, Jensen MC, Smolke CD. 2010. Genetic control of mammalian T-cell proliferation with synthetic RNA regulatory systems. *Proc. Natl. Acad. Sci. USA.* 107: 8531-6.
28. Culler SJ, Hoff KG, Voelker RB, Berglund JA, Smolke CD. 2010. Feature Article: Functional selection and systematic analysis of intronic splicing elements identifies active sequence motifs and associated splicing factors. *Nuc. Acids Res.* 38: 5152-65.
29. Hoff KG, Culler SJ, Nguyen PQ, McGuire RM, Silberg JJ, Smolke CD. 2009. *In vivo* fluorescent detection of Fe-S clusters coordinated by human GRX2. *Chem. Biol.* 16: 1299-308. *Commentary: Lights on iron-sulfur clusters.* 16: 1213-4.
30. Beisel CL, Smolke CD. 2009. Design principles for riboswitch function. *PLoS Comp. Biol.* 5: e1000363.
31. Win MN, Liang JC, Smolke CD. 2009. Frameworks for programming biological function through RNA parts and devices. *Chem. Biol.* 16: 298-310.
32. Bayer TS, Hoff KG, Beisel CL, Lee JJ, Smolke CD. 2009. Synthetic control of a fitness tradeoff in yeast nitrogen metabolism. *J. Biol. Eng.* 3: 1.
33. Hoff KG, Goodlitt R, Li R, Smolke CD, Silberg JJ. 2009. Fluorescence detection of a protein-bound 2Fe2S cluster. *Chembiochem.* 10: 667-70.
34. Beisel CL, Bayer TS, Hoff KG, Smolke CD. 2008. Model-guided design of ligand-regulated RNAi for programmable control of gene expression. *Mol. Sys. Biol.* 4: 224. *News and Views: Small hairpin RNA as a small molecule sensor.* 4: 227.
35. Hawkins KM, Smolke CD. 2008. *Cover article: Production of benzyloquinoline alkaloids in Saccharomyces cerevisiae.* *Nat. Chem. Biol.* 4: 564-73. *News and Views: From yeast to alkaloids.* 4: 524-5.
36. Win MN, Smolke CD. 2008. Higher-order cellular information processing with synthetic RNA devices. *Science.* 322: 456-60. *Perspective: Cell biology. RNA computing in a living cell.* 322: 387-8.
37. Win MN, Smolke CD. 2007. *From the cover: A modular and extensible RNA-based gene-regulatory platform for engineering cellular function.* *Proc. Natl. Acad. Sci. USA.* 104: 14283-8. *Commentary: Targeted cleavage: tuneable cis-cleaving ribozymes.* 104: 14881-2.
38. Win MN, Klein JS, Smolke CD. 2006. Codeine-binding RNA aptamers and rapid determination of their binding constants using a direct coupling surface plasmon resonance assay. *Nuc. Acids Res.* 34: 5670-82.
39. Pflieger BF, Pitera DJ, Smolke CD, Keasling JD. 2006. Combinatorial engineering of intergenic regions in operons tunes expression of multiple genes. *Nat. Biotech.* 24: 1027-32.

40. Hawkins KM, Smolke CD. 2006. The regulatory roles of the galactose permease and kinase in the induction response of the GAL network in *Saccharomyces cerevisiae*. *J. Biol. Chem.* 281: 13485-92.
41. Bayer TS, Smolke CD. 2005. Programmable, ligand-controlled riboregulators of eukaryotic gene expression. *Nat. Biotech.* 23: 337-43. *News and Views: Plug and play with RNA.* 23: 306-7.
42. Smolke CD, Keasling JD. 2002. Effect of gene location, mRNA secondary structures, and RNase sites on expression of two genes in an engineered operon. *Biotech. Bioeng.* 80: 762-76.
43. Smolke CD, Keasling JD. 2002. Effect of copy number and mRNA processing and stabilization on transcript and protein levels from an engineered dual-gene operon. *Biotech. Bioeng.* 78: 412-24.
44. Smolke CD, Khlebnikov A, Keasling JD. 2001. Effects of transcription induction homogeneity and transcript stability on expression of two genes in a constructed operon. *Appl. Micro. Biotech.* 57: 689-96.
45. Smolke CD, Martin VJJ, Keasling JD. 2001. Controlling the metabolic flux through the carotenoid pathway using directed mRNA processing and stabilization. *Metab. Eng.* 3: 313-21.
46. Smolke CD, Carrier TA, Keasling JD. 2000. Coordinated, differential expression of two genes through directed mRNA cleavage and stabilization by secondary structures. *Appl. Environ. Microbiol.* 66: 5399-405.

Non-Refereed Publications

1. Church GM, Elowitz MB, Smolke CD, Voigt CA, Weiss R. 2014. Realizing the potential of synthetic biology. *Nat. Rev. Mol. Cell. Biol.* 15: 289-94.
2. Smolke CD, Tyo KE. 2012. Synthetic biology: emerging methodologies to catalyze the metabolic engineering design cycle. *Metab. Eng.* 14: 187-8.
3. Thodey KT, Smolke CD. 2011. Bringing it together with RNA. *Science.* 333: 412-3.
4. Smolke CD. 2009. Building outside of the box: iGEM and the BioBricks Foundation. *Nat. Biotech.* 27:1099-102.
5. Smolke CD. 2009. Cell Biology. It's the DNA that counts. *Science.* 324: 1156-7.
6. Win MN, Smolke CD. 2007. RNA as a versatile and powerful platform for engineering genetic regulatory tools. *Biotechnology and Genetic Engineering Reviews.* 24: 311-46.
7. Baker D, Church G, Collins J, Endy D, Jacobson J, Keasling J, Modrich P, Smolke C, Weiss R. 2006. Engineering life: building a Fab for biology. *Scientific American.* 294: 44-51.
8. Martin VJJ, Smolke CD, Keasling JD. 2002. Redesigning cells for the production of complex organic molecules. *ASM News.* 68: 336-43.

Books and Book Chapters

1. Chang AL, McKeague MM, Smolke CD. 2014. Facile characterization of aptamer kinetic and equilibrium binding properties using surface plasmon resonance. In: Burke-Aguero D, editor. *Methods in Enzymology. In press.*
2. Beisel CL, Bloom RJ, Smolke CD. 2014. Construction of ligand-responsive microRNAs that operate through inhibition of Drosha processing. In: Ogawa A, editor. *Methods in Molecular Biology.* 1111: 259-67.
3. Michener JK, Smolke CD. 2014. Synthetic RNA switches for yeast metabolic engineering. In: Mapelli V, editor. *Methods in Molecular Biology.* 1152: 125-36.
4. Liang JC, Smolke CD. 2012. Rational design and tuning of ribozyme-based devices. In: Hartig J, editor. *Methods in Molecular Biology.* 848: 439-54.
5. Win MN, Liang JC, Smolke CD. 2010. Frameworks for programming RNA devices. In: Mayer G, editor. *The Chemical Biology of Nucleic Acids.* U.K.: John Wiley & Sons, Ltd. pp. 323-38.
6. Win MN, Smolke CD. 2009. Regulating gene expression through engineered RNA technologies. In: Smolke CD, editor. *Handbook for Metabolic Pathway Engineering: Tools and Applications.* San Diego: CRC Press.

7. Smolke CD, Martin VJJ, Keasling JD. 2004. Tools for metabolic engineering in *Escherichia coli*. In: Baneyx F, editor. Protein Expression Technologies: Current Status and Future Trends. U.K.: Horizon Scientific Press.

Edited Works in Print

1. Smolke CD, Tyo KE, editors. 2012. Special Issue on Synthetic Biology: Metabolic Engineering Journal, Volume 14.
2. Smolke CD, editor. 2009. Handbook for Metabolic Pathway Engineering: Fundamentals (volume I). San Diego: CRC Press.
3. Smolke CD, editor. 2009. Handbook for Metabolic Pathway Engineering: Tools and Applications (volume II). San Diego: CRC Press.

Selected Invited Presentations

- Smolke, CD. 2014. A biological I/O platform: connecting into signaling and metabolic pathways. *FASEB SRC on Genome Engineering*. Nassau, Bahamas. (Invited Speaker)
- Smolke, CD. 2014. Designing synthetic regulatory RNAs: new tools for temporal and spatial control in biological systems. *University of British Columbia Department of Biochemistry and Molecular Biology Seminar Series*. Vancouver, Canada. (Invited Speaker)
- Smolke, CD. 2014. RNA synthetic biology: programmable genetic control systems for regulating cell fate decisions. *17th Annual Meeting of the American Society of Gene & Cell Therapy*. Washington DC. (Invited Speaker)
- Smolke, CD. 2014. RNA-based control systems for programming cell fate decisions. *ReMS Seminar Series*, Stanford, CA. (Invited Speaker)
- Smolke, CD. 2014. Synthetic biology platforms for natural product biosynthesis and discovery. *Novartis Seminar*, Cambridge, MA. (Invited Speaker)
- Smolke, CD. 2014. A biological I/O platform: connecting into signaling and metabolic pathways. *Q-BIO Meeting*, Kona, HI. (Invited Speaker)
- Smolke, CD. 2014. Designing synthetic regulatory RNAs: new tools for temporal and spatial control in biological systems. *58th Annual Biophysical Society Meeting*, San Francisco, CA. (Invited Speaker)
- Smolke, CD. 2014. Development and application of RNA-based devices. *AAAS Annual Meeting*, Chicago, IL. (Invited Speaker)
- Smolke, CD. 2013. Designing synthetic regulatory RNAs: new tools for temporal and spatial control in biological systems. *University of Colorado BioFrontiers Seminar*, Boulder, CO. (Invited Speaker)
- Smolke, CD. 2013. Biosynthesis and repairing the design gap. *NDIST Workshop*, St. John, US Virgin Islands. (Invited Speaker)
- Smolke, CD. 2013. Advancing biosynthesis through synthetic biology platforms. *Agilent Technologies Seminar*, Santa Clara, CA. (Invited Speaker)
- Smolke, CD. 2013. Advancing microbial biosynthesis through synthetic biology platforms. *Gordon Research Conference: Synthetic Biology*, Mount Snow, VT. (Invited Speaker)
- Smolke, CD. 2013. RNA-based control systems for controlling cell fate in human cells. *Mammalian Synthetic Biology Workshop*, Cambridge, MA. (Invited Speaker)
- Smolke, CD. 2012. Synthetic biology: the next generation of biotechnology. *Harvard University Neekeyfar Lecture*, Cambridge, MA. (Invited Speaker)
- Smolke, CD. 2012. Molecular tools for probing and manipulating biological pathways. *Gevo Seminar*, Denver, CO. (Invited Speaker)
- Smolke, CD. 2012. Molecular tools for probing and manipulating biological pathways. *Donald Danforth Center 14th Annual Fall Symposium*, St. Louis, MO. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: tools for temporal and spatial control in biological systems. *Wright-Patterson Air Force Base Seminar*, Dayton, OH. (Invited Speaker)

- Smolke, CD. 2012. Designing with RNA. *Molecular Programming Project Workshop*, Oxnard, CA. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: tools for temporal and spatial control in biological systems. *CAS Conference in Synthetic Biology*, Munich, Germany. (Invited Keynote Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: new languages for programming biological systems. *International Conference on Intelligent Systems for Molecular Biology: Biological Systems Design Workshop*, Long Beach, CA. (Invited Keynote Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: tools for temporal and spatial control in biological systems. *AACR conference in Chemical Systems Biology*, Boston, MA. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: new languages for programming biological systems. *SBE International Conference on Bioengineering and Nanotechnology*, Berkeley, CA. (Invited Keynote Speaker)
- Smolke, CD. 2012. Synthetic biology and medicine: long roads to the clinic. *Six Party Synthetic Biology Symposium*. Washington DC. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: tools for temporal and spatial control of biological systems. *KSBMB Annual Meeting*, Seoul, South Korea. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: tools for temporal and spatial control of biological systems. *KAIST Department of Chemistry Seminar Series*, Daejeon, South Korea. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: tools for temporal and spatial control of biological systems. *Case Western Reserve Department of Genetics Seminar Series*, Cleveland, OH. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: new tools for temporal and spatial control of biological systems. *Novartis Seminar*, Cambridge, MA. (Invited Speaker)
- Smolke, CD. 2012. Metabolic controllers and their applications to advancing metabolic network design in yeast. *ASBMB Annual Meeting*, San Diego, CA. (Invited Speaker)
- Smolke, CD. 2012. Synthetic regulatory RNAs: new tools for temporal and spatial control of biological systems. *EMBO Introduction to Synthetic Biology Course*, Buenos Aires, Argentina. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: new tools for temporal and spatial control of biological systems. *Neustar Seminar*, Mountain View, CA. (Invited Speaker)
- Smolke, CD. 2012. Designing synthetic regulatory RNAs: new languages for programming biological systems. *Joint Genome Institute 7th Annual User Meeting*, Walnut Creek, CA. (Invited Speaker)
- Smolke, CD. 2012. Programming cellular behavior with RNA controllers. *Indo-America Frontiers of Engineering Symposium*, Washington DC. (Invited Speaker)
- Smolke, CD. 2012. Design of (small) regulatory RNAs for synthetic biology. *Keystone Symposium on Gene Silencing for Small RNAs*, Vancouver, Canada. (Invited Speaker)
- Smolke CD, 2012. Designing synthetic regulatory RNAs: new tools for temporal and spatial control in biological systems. *Duke University Bioengineering Seminar Series*, Raleigh, NC. (Invited Speaker)
- Smolke CD, 2012. Designing synthetic regulatory RNAs: tools for temporal and spatial control in biological systems. *University of Washington Genome Sciences Seminar Series*, Seattle, WA. (Invited Speaker)
- Smolke CD, 2011. Synthetic RNA controllers for programming cell fate and function. *City of Hope Leading Edge Lecture Seminar*, Duarte, CA. (Invited Speaker)
- Smolke CD, 2011. Synthetic RNA controllers for programming cell fate and function. *University of Minnesota Chemical Biology Colloquium*, Minneapolis, MN. (Invited Speaker)
- Smolke CD, 2011. Designing with RNA: new tools for building input/output devices. *CSHL-Asia Design and Synthesis of Biological Systems*, Shanghai, China. (Invited Speaker)
- Smolke CD, 2011. Programming cellular behavior with RNA controllers. *Cell Symposium on Regulatory RNAs*, Chicago, IL. (Invited Speaker)

- Smolke CD, 2011. Molecular controllers and their application to advancing metabolic network design in yeast. *ESF-EMBO Symposium on Synthetic Biology of Antibiotic Production*, Sant Feliu de Guixols, Spain. (Invited Speaker)
- Smolke CD, 2011. Synthetic RNA controllers for programming cell fate and function. *Penn Genomics Frontier Institute Seminar*, Philadelphia, PA. (Invited Speaker)
- Smolke CD, 2011. Programming and probing cellular behavior with RNA controllers. *Yale Systems Biology Symposium*, New Haven, CT. (Plenary Speaker)
- Smolke CD, 2011. Synthetic RNA controllers for programming cell fate and function. *70th Harden Conference*, Manchester, England. (Plenary Speaker)
- Smolke CD, 2011. Synthetic RNA controllers for programming cell fate and function. *BioX Undergraduate Seminar Series*, Stanford, CA. (Invited Speaker)
- Smolke CD, 2011. Synthetic biology: the next generation of biotechnology. *NSF Wireless Molecular Computing Workshop*, Arlington, VA. (Invited Speaker)
- Smolke CD, 2011. Synthetic biology: the next generation of biotechnology. *12th Annual Engineering eDay*, Stanford, CA. (Invited Speaker)
- Smolke CD, 2011. Molecular tools for advancing metabolic network design. *Gordon Research Conference in Enzymes, Coenzymes, and Metabolic Pathways*, Waterville Valley, NH. (Invited Speaker)
- Smolke CD, 2011. Molecular controllers and their application in building integrated genetic systems. *BAL Seminar*, Berkeley, CA. (Invited Speaker)
- Smolke CD, 2011. Synthetic RNA controllers for programming cell fate and function. *IRIC Technological Advances in RNA Therapy Symposium*, Montreal, Canada. (Plenary Speaker)
- Smolke, CD. 2011. Building genetic languages for programming cells. *Synthetic Biology 5.0*, Stanford, CA. (Keynote Speaker)
- Smolke, CD. 2011. Synthetic genetic languages for probing and programming cells. *Department of Defense Engineering Biology Workshop*, Berkeley, CA. (Invited Speaker)
- Smolke, CD. 2011. Programming living systems with RNA. *NASA Synthetic Biology Seminar Series*, Mountain View, CA. (Invited Speaker)
- Smolke, CD. 2011. Programming living systems with RNA. *9th annual iNANO meeting*, Aarhus, Denmark. (Invited Speaker)
- Smolke CD, 2010. Molecular controllers and their application in building integrated genetic systems. *Genomatica Seminar*, San Diego, CA. (Invited Speaker)
- Smolke CD. 2010. RNA parts and devices and their implementation in integrated genetic systems. *TARPOL International Summer School on Synthetic Biology*, Basel, Switzerland. (Invited Speaker)
- Smolke CD. 2010. Programming cellular behavior with RNA controllers. *BIOSS Signalling Meets Synthetic Biology Symposium*, Freiburg, Germany. (Plenary Speaker)
- Smolke CD. 2010. Programming cellular behavior with RNA controllers. *National University of Mexico Frontiers in Genomics Seminar*, Cuernavaca, Mexico. (Invited Speaker)
- Smolke CD. 2010. Programming cellular behavior with RNA controllers. *University of Virginia Department of Biomedical Engineering Departmental Seminar*, Charlottesville, VA. (Invited Speaker)
- Smolke CD. 2010. Molecular controllers for programming and probing cells. *Amyris Seminar*, Emeryville, CA. (Invited Speaker)
- Smolke CD, 2010. Synthetic Biology: the next generation of biotechnology. *The Commonwealth Club: Jaw Droppers*, San Francisco, CA. (Invited Speaker)
- Smolke CD. 2010. Molecular controllers for programming and probing cells. *Genencor Seminar*, Palo Alto, CA. (Invited Speaker)
- Smolke CD. 2010. Programming cellular behavior with RNA controllers. *RoSBNet Synthetic Biology Workshop*, Oxford, England. (Keynote Speaker)
- Smolke CD. 2010. Engineering RNA controllers for programming cellular behavior. *FEBS 35th Congress*, Goteborg, Sweden. (Invited Speaker)

- Smolke CD. 2010. Programming living systems with RNA. *DNA 16*, Clearwater Bay, Kowloon Hong Kong. (Keynote Speaker)
- Smolke CD. 2010. Molecular tools for advancing metabolic network design. *Metabolic Engineering VIII*, Jeju Island, Korea. (Plenary Speaker)
- Smolke CD. 2010. Programming cellular behavior with RNA controllers. *Agilent Technologies Seminar*, Santa Clara, CA. (Invited Speaker)
- Smolke CD. 2010. Frameworks for designing RNA controllers. *EC-US Workshop on Standards in Biotechnology*, Segovia, Spain. (Invited Speaker)
- Smolke CD. 2010. Programming cellular behavior with RNA controllers. *14th Human Genome Meeting*, Montpellier, France. (Plenary Speaker)
- Smolke CD. 2010. Programming cellular behavior with RNA control devices. *University of Iowa Department of Chemical and Biochemical Engineering Departmental Seminar*, Iowa City, IA. (Invited Speaker)
- Smolke CD. 2010. Molecular controllers supporting new disease treatment strategies. *National Institutes of Health Workshop on Synthetic Biology and Biomedicine*, Washington DC. (Invited Speaker)
- Smolke CD. 2010. Programming cellular behavior with RNA control devices. *Kyoto University Symposium on Synthetic Biology*, Kyoto, Japan. (Plenary Speaker)
- Smolke CD. 2010. Synthetic genetic languages for probing and programming cells. *Max Planck Institute for Terrestrial Microbiology Symposium on Synthetic Cells*, Marburg, Germany. (Plenary Speaker)
- Smolke CD. 2010. Programming cell-fate decisions with RNA controllers. *Clontech Seminar*, Mountain View, CA. (Invited Speaker)
- Smolke CD. 2010. Programming cell-fate decisions with RNA control devices. *University of Southern California Department of Chemical Engineering and Materials Science Distinguished Lecture Series*, Los Angeles, CA. (Invited Speaker)
- Smolke CD. 2009. Programming genetic systems. *American Society of Cell Biology Annual Meeting*, San Diego, CA. (Invited Speaker)
- Smolke CD. 2009. Programming cell-fate decisions with RNA control devices. *University of California at Berkeley Bioengineering Departmental Seminar*, Berkeley, CA. (Invited Speaker)
- Smolke CD. 2009. Programming cell-fate decisions with RNA control devices. *Institute of Systems and Synthetic Biology Symposium*, London, England. (Plenary Speaker)
- Smolke CD. 2009. Engineering molecular information processing devices to program cellular function. *University of Illinois Urbana-Champaign Chemical Engineering Departmental Seminar*, Urbana-Champaign, IL. (Invited Speaker)
- Smolke CD. 2009. Engineering molecular information processing devices to program cellular function. *Evolution and Design of Biomolecular Systems*, Majorca, Spain. (Plenary Speaker)
- Smolke CD. 2009. Engineering molecular information processing devices to program cellular function. *International Conference on Systems Biology*, Stanford, CA. (Invited Speaker)
- Smolke CD. 2009. Technologies and tools for programming genetic systems. *National Academy of Science Symposium on Synthetic Biology*, Washington DC. (Plenary Speaker)
- Smolke CD. 2009. Programming RNA devices to control cellular information processing. *IRIC Symposium – Systems Biology in Immunology and Cancer*, Montreal, Canada. (Plenary Speaker)
- Smolke CD. 2009. Advancing synthetic metabolic network design through embedded sensing-actuation devices. *Biochemical Engineering Conference XVI*, Burlington, VT. (Plenary Speaker)
- Smolke CD. 2009. Advancing synthetic metabolic network design through embedded sensing-actuation devices. *Summit on Systems Biology*, Richmond, VA. (Plenary Speaker)
- Smolke CD. 2009. Engineering molecular information processing devices to program cellular behavior. *Michigan State University Science at the Edge Seminar*, Lansing, MI. (Invited Speaker)
- Smolke CD. 2009. Programming RNA devices to control cellular information processing. *Los Alamos National Laboratory Center for Nonlinear Studies Seminar*, Los Alamos, NM. (Invited Speaker)
- Smolke CD. 2009. Programming RNA devices to control cellular information processing. *Stanford University Chemical Engineering Departmental Seminar*, Stanford, CA. (Invited Speaker)

- Smolke CD. 2009. Programming RNA devices to control cellular information processing. *Columbia University Chemical Engineering Departmental Seminar*, New York, NY. (Invited Speaker)
- Smolke CD. 2009. Programming RNA devices to control cellular information processing. *IET BioSysBio Conference*, Cambridge, England. (Plenary Speaker)
- Smolke CD. 2009. Sensing-actuation and optimization technologies. *DARPA ISAT Study Group on Synthetic Biology*, Stanford, CA. (Invited Speaker)
- Smolke CD. 2009. Programming RNA devices to control cellular information processing. *AAAS Symposium in Synthetic Life*, Chicago, IL. (Invited Speaker)
- Smolke CD. 2008. Engineering frameworks in biology: examples in RNA programming. *Engineering Principles in Biological Systems CSHL Meeting*, Cold Spring Harbor Labs, NY. (Plenary Speaker)
- Smolke CD. 2008. Genetically encoded technologies for programming integrated biosensing and bioactuation devices in living systems. *DTRA Seminar*, Fort Belvoir, VA. (Invited Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *Davidson College Seminar*, Davidson, NC. (Invited Speaker)
- Smolke CD. 2008. Programming RNA information processing and control devices. *Synthetic Biology 4.0*, Clearwater Bay, Kowloon Hong Kong. (Keynote Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *National Institute for Materials Science Symposium*, Kyoto, Japan. (Plenary Speaker)
- Smolke CD. 2008. Foundational technologies for programming integrated biosensing and bioactuation devices in living systems. *NSF-MEXT Young Researchers Exchange Program in Nanotechnology*, Tokyo, Japan. (Plenary Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *SynBERC Fall Retreat*, Cambridge, MA. (Invited Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *Beckman Young Investigator Symposium*, Newport Beach, CA. (Invited Speaker)
- Smolke CD. 2008. Emerging technologies: synthetic biology. *Gordon Research Conference in Governing Emerging Technologies*, Big Sky, MT. (Plenary Speaker)
- Smolke CD. 2008. Engineering biological circuits to program living cell behavior. *Caltech Summer Research Connection*, Pasadena, CA. (Invited Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *NSF Emerging Technologies Workshop*, Amherst, MD. (Invited Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *20th International Congress of Genetics*, Berlin, Germany. (Invited Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *Penn Bioengineering Departmental Seminar*, Philadelphia, PA. (Invited Speaker)
- Smolke CD. 2008. Engineering biological circuits to program living cell behavior. *Caltech Associates Program*, Pasadena, CA. (Invited Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *ASBMB Annual Meeting*, San Diego, CA. (Invited Speaker)
- Smolke CD. 2008. A framework for programming integrated RNA devices. *University of Chicago Committee on Genetics Annual Symposium: Synthetic Biology*, Chicago, IL. (Plenary Speaker)
- Smolke CD. 2008. Programming RNA devices to control cellular information processing. *EPFL ISIC Seminar Series*, Lausanne, Switzerland. (Invited Speaker)
- Smolke CD. 2008. Foundational advances in RNA engineering for constructing integrated biosensing and bioactuation devices in living systems. *Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, San Diego, CA. (Keynote Speaker)
- Smolke CD. 2008. A framework for programming integrated RNA devices. *Harvard University Woodward Lectures in the Chemical Sciences/Organic Chemistry*, Harvard, MA. (Invited Speaker)
- Smolke CD. 2008. Foundational advances in RNA engineering applied to control biosynthesis. *DOE-GTL-MEWG Workshop*, Bethesda, MD. (Invited Speaker)

- Smolke CD. 2008. A framework for programming system behavior through integrated RNA devices. *Princeton University Quantitative and Computational Biology Seminar*, Princeton, NJ. (Invited Speaker)
- Smolke CD. 2007. Foundational advances in RNA engineering for constructing integrated biosensing and bioactuation devices in living systems. *NSF Biosensing and Bioactuation Workshop*, College Park, MD. (Invited Speaker)
- Smolke CD. 2007. Foundational advances in RNA engineering applied to control biosynthesis and T-cell proliferation. *University of Washington Biochemistry Departmental Seminar*, Seattle, WA. (Invited Speaker)
- Smolke CD. 2007. A framework for programming integrated RNA devices. *Joining Forces Symposium: Single Cell Analytics*, ETH Zurich, Switzerland. (Plenary Speaker)
- Smolke CD. 2007. Foundational advances in RNA engineering applied to control biosynthesis. *Brown University Chemistry Departmental Seminar*, Providence, RI. (Invited Speaker)
- Smolke CD. 2007. A framework for engineering integrated RNA devices. *Brown University Synthetic Biology Seminar*, Providence, RI. (Invited Speaker)
- Smolke CD. 2007. Foundational advances in RNA engineering applied to control biosynthesis. *University of Calgary Biological Sciences Departmental Seminar*, Calgary, Canada. (Invited Speaker)
- Smolke CD. 2007. A framework for programming system behavior through integrated RNA devices. *International Conference on Systems Biology*, Irvine, CA. (Invited Speaker)
- Smolke CD. 2007. Engineering RNA devices as general tools in programming cellular function. *Biomedical Engineering Society Annual Meeting*, Los Angeles, CA. (Invited Speaker)
- Smolke CD. 2007. A framework for programming integrated RNA devices. *UC Berkeley Chemical Engineering Departmental Seminar*, Berkeley, CA. (Invited Speaker)
- Smolke CD. 2007. A framework for programming integrated RNA devices. *MBI Metabolic Engineering Workshop*, Columbus, OH. (Invited Speaker)
- Smolke CD. 2007. A framework for programming integrated RNA devices. *Massachusetts Institute of Technology Biological Engineering Departmental Seminar*, Cambridge, MA. (Invited Speaker)
- Smolke CD. 2007. Foundational advances in RNA engineering applied to control biosynthesis and T-cell proliferation. *Caltech Alumni College*, Pasadena, CA. (Invited Speaker)
- Smolke CD. 2007. A framework for programming integrated RNA devices. *Systematic Biology Symposium*, Edinburgh, Scotland. (Plenary Speaker)
- Smolke CD. 2007. Foundational advances in RNA engineering applied to the control of microbial biosynthesis. *SIM Annual Meeting*, Denver, CO. (Invited Speaker)
- Smolke CD. 2007. Molecular tools for optimizing pathway engineering applied to alkaloid production in yeast. *Plant Metabolic Engineering Gordon Conference*. Tilton, NH. (Plenary Speaker)
- Smolke CD. 2007. RNA devices as general tools for advancing molecular medicine. *City of Hope Cancer Immunotherapeutics Seminar*. Duarte, CA. (Invited Speaker)
- Smolke CD. 2007. Foundational advances in RNA engineering applied to control biosynthesis and T-cell proliferation. *Arizona State University Biodesign Center Seminar*. Tempe, AZ. (Invited Speaker)
- Smolke CD. 2007. Engineering RNA devices as general tools in programming cellular function. *Nucleic Acids Gordon Conference*. Newport, RI. (Plenary Speaker)
- Smolke CD. 2007. Foundational advances in RNA engineering applied to control biosynthesis and T-cell proliferation. *Stanford Bioengineering Departmental Seminar*. Stanford, CA. (Invited Speaker)
- Smolke CD. 2007. Programmable molecular sensors as general tools for optimizing flux through synthetic metabolic networks. *ASM Annual Meeting*, Toronto, Canada. (Invited Speaker)
- Smolke CD. 2007. Engineering RNA devices as communication and control systems. *Design Principles for Biological Systems, Banbury Center Meeting*, Cold Spring Harbor Laboratory, NY. (Plenary Speaker)
- Smolke CD. 2007. Advances in building RNA devices for programming cellular function. *Pierce College Frontiers in Science Seminar Series*, CA. (Invited Speaker)

- Smolke CD. 2007. Engineering RNA devices as communication and control systems. *UC Berkeley SynBERC Seminar*, Berkeley, CA. (Invited Speaker)
- Smolke CD. 2007. *De novo* synthesis of circuit elements: novel RNA devices. *Tianjin University-sponsored iGEM Workshop*, Tianjin, China. (Invited Speaker)
- Smolke CD. 2007. Engineering RNA devices for probing and programming cellular systems. *California State University Los Angeles Chemistry and Biochemistry Departmental Seminar*, Los Angeles, CA. (Invited Speaker)
- Smolke CD. 2007. Engineering RNA devices as general tools for programming cellular function. *Institute of Biological Engineering Annual Conference*, Saint Louis, MO. (Invited Speaker)
- Smolke CD. 2007. Engineering RNA devices as general tools in cellular engineering applications. *IBC Life Sciences Synthetic Biology Conference: Transforming Life Science Research and Discovery*, Boston, MA. (Plenary Speaker)
- Smolke CD. 2007. Design principles for building RNA devices. *Massachusetts Institute of Technology Synthetic Biology Working Group Lunch Seminar*, Cambridge, MA. (Invited Speaker)
- Smolke CD. 2007. Engineering RNA devices for programming and probing cellular systems. *Wayne State Medical University Molecular Medicine and Genetics Departmental Seminar*, Detroit, MI. (Invited Speaker)
- Smolke CD. 2007. Engineering molecular sensors for probing and programming cellular systems. *Harvard Medical School Systems Biology Departmental Seminar*, Boston, MA. (Invited Speaker)
- Smolke CD. 2007. Engineering molecular sensors for probing and programming cellular systems. *UCSF Systems Biology Departmental Seminar*, San Francisco, CA. (Invited Speaker)
- Win MN, Smolke CD. 2007. Engineering new molecular sensors and switches for programming cellular systems. *SBE 1st International Conference in Biomolecular Engineering*, Coronado Island, CA. (Invited Speaker)
- Smolke CD. 2006. Engineering molecular control systems for programming biological systems. *Workshop on the Computational Worldview and the Sciences*, Princeton, NJ. (Invited Speaker)
- Smolke CD. 2006. Engineering new molecules for programming cellular behavior. *Engineering Principles in Biological Systems*, Cold Spring Harbor Laboratory, NY. (Plenary Speaker)
- Smolke CD. 2006. Engineering new molecules for studying and programming cellular systems. *Japan-America Frontiers of Engineering Symposium*, Tsukuba, Japan. (Plenary Speaker)
- Smolke CD. 2006. Molecular sensors for optimizing production of alkaloid molecules in *Saccharomyces cerevisiae*. *Metabolic Engineering VI*, NH Leeuwenhorst, Noordwijkerhout, Netherlands. (Plenary Speaker)
- Smolke CD. 2006. Engineering new molecules for probing and programming cellular systems. *Rice University Bioengineering Departmental Seminar*, Houston, TX. (Invited Speaker)
- Smolke CD. 2006. Engineering nucleic acid-based sensors for programming and probing cellular systems. *LSS Computational Systems Bioinformatics Conference*, Stanford, CA. (Plenary Speaker)
- Smolke CD. 2006. Programmable nucleic acid sensors as general tools for optimizing flux through synthetic metabolic networks. *SIM Annual Meeting*, Baltimore, MD. (Invited Speaker)
- Smolke CD. 2006. Engineering new molecules for programming complex cellular systems. *15th International Workshop on Logic and Synthesis*, Vail, CO. (Plenary Speaker)
- Smolke CD. 2006. Engineering new molecules for studying and programming cellular systems. *Northwestern University Chemical and Biological Engineering Departmental Seminar*, Evanston, IL. (Invited Speaker)
- Smolke CD. 2006. Programmable molecular switches and sensors: applications in metabolic engineering and intelligent therapeutics. *Synthetic Biology 2.0*, Berkeley, CA. (Plenary Speaker)
- Smolke CD. 2006. Engineering new molecules for programming cellular systems. *Design Principles for Biological Systems, Banbury Center Meeting*, Cold Spring Harbor Laboratory, NY. (Plenary Speaker)
- Smolke CD. 2006. Programmable molecular switches and sensors: applications in metabolic engineering and intelligent therapeutics. *Massachusetts Institute of Technology Chemical Engineering Departmental Seminar*, Cambridge, MA. (Invited Speaker)

- Smolke CD. 2006. Ligand-regulated nucleic acid switches as programmable molecular sensors. *Workshop on Biological Large Scale Integration (BioLSI-2)*, Pasadena, CA. (Invited Speaker)
- Smolke CD. 2006. The application of programmable nucleic acid switches to cellular engineering strategies. *Regenerate World Congress on Tissue Engineering and Regenerative Medicine*, Philadelphia, PA. (Invited Speaker)
- Smolke CD. 2006. Engineering new molecules for studying and programming cellular systems. *Caltech Discovery Day*, Pasadena, CA. (Invited Speaker)
- Bayer TS, Hawkins KH, Kimura Y, Lee H, Lee J, Win M-N, Smolke CD. 2006. Spatial patterning and hardwired memory: engineering biomolecules as cellular input/output devices. *Institute of Biological Engineering Annual Meeting*, Tuscon, AZ. (Invited Speaker)
- Smolke CD. 2006. The National Academies Keck *Futures Initiative*: Genomics and Life Engineering Conferences. *Board of Directors and Beckman Center Advisory Board Meeting*, Irvine, CA. (Invited Speaker)
- Smolke CD. 2006. Strategies for programming cellular behavior through molecular sensors and switches. *Caltech Bioengineering Retreat*, Warner Springs, CA. (Invited Speaker)
- Smolke CD. 2005. Programmable molecular sensors and switches: applications in intelligent therapeutics, biosensors, and metabolic engineering. *Rensselaer Polytechnic Institute Chemical and Biological Engineering Departmental Seminar*, Troy, NY. (Invited Speaker)
- Smolke CD. 2005. Programmable molecular sensors and switches: applications in intelligent therapeutics, biosensors, and metabolic engineering. *Cargill Incorporated Seminar*, Minneapolis, MN. (Invited Speaker)
- Smolke CD. 2005. Smart nucleic acid devices for converting diverse biochemical inputs into programmed cell behavior. *National Academies Keck Futures Initiative Genomics Conference*, Irvine, CA. (Invited Participant and Poster)
- Smolke CD. 2005. From programmable nucleic acid devices to intelligent cells. *National Academy of Science Frontiers of Science Symposium*, Irvine, CA. (Invited Participant and Poster)
- Smolke CD. 2005. Programmable nucleic acid molecules. *National Academy of Engineering Frontiers of Engineering Symposium*, Albany, NY. (Invited Participant and Poster)
- Smolke CD. 2005. Programmable molecular sensors and switches: applications in metabolic engineering, intelligent therapeutics, and biosensors. *Lawrence Berkeley National Laboratory Synthetic Biology Seminar*, Berkeley, CA. (Invited Speaker)
- Smolke CD. 2005. Programmable molecular sensors and switches: devices for converting biochemical information into biological function. *Caltech Kavli Nanoscience Inaugural Symposium*, Pasadena, CA. (Invited Speaker)
- Smolke CD. 2005. Programmable molecular sensors and switches: applications in metabolic engineering, intelligent therapeutics, and biosensors. *Caltech Bioengineering Departmental Seminar*, Pasadena, CA. (Invited Speaker)
- Smolke CD. 2005. Programmable molecular sensors and switches: applications in metabolic engineering, intelligent therapeutics, and biosensors. *University of Southern California Chemical Engineering Departmental Seminar*, Los Angeles, CA. (Invited Speaker)
- Smolke CD. 2005. Engineering alkaloid biosynthesis in *Saccharomyces cerevisiae*: the application of programmable molecular switches to pathway optimization. *SIM Annual Meeting*, Chicago, IL. (Invited Speaker)
- Smolke CD. 2005. Programming dynamic cellular response with engineered molecular sensors. *NAKFI Life Engineering Symposium*, San Francisco, CA. (Plenary Speaker)
- Smolke CD. 2005. Programmable molecular sensors and switches: applications in ‘intelligent’ therapeutics and biosensors. *Caltech Alumni College*, Pasadena, CA. (Invited Speaker)
- Smolke CD. 2005. Programmable molecular sensors and switches: applications in ‘intelligent’ therapeutics and biosensors. *DARPA: Biological Input-Output Systems Program Meeting*, Arlington, VA. (Invited Speaker)

- Smolke CD. 2005. Programmable molecular sensors and switches: applications in intelligent therapeutics, biosensors, and metabolic engineering. *Stanford Chemical Engineering Departmental Colloquium*, Palo Alto, CA. (Invited Speaker)
- Smolke CD. 2005. Programming dynamic cellular response with molecular sensors. *Caltech Alumni Seminar Day*, Pasadena, CA. (Invited Speaker)
- Smolke CD. 2004. Programmable RNA regulators of gene expression: applications in cellular sensors, therapeutics, and metabolic circuits. *Caltech Biology Division Retreat*, Redondo Beach, CA. (Invited Speaker)