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

2009-present	Assistant Professor (Dept. Bioengineering, Stanford University)
2006-present	Adjunct Faculty (Comprehensive Cancer Center, City of Hope, Duarte)
2003-present	Assistant Professor (Dept. Chemical Engineering, Caltech, currently on leave)
2001-2003	NIH Postdoctoral Research Fellow (Dept. Molecular and Cell Biology, UCB)
1998-2000	Graduate Student Instructor (Dept. Chemical Engineering, UCB)
1997-2001	Graduate Research Assistant (Dept. Chemical Engineering, UCB)
1997	Process Engineer (Mobil Oil, Torrance, CA)
1996	Undergraduate Research Assistant (Dept. Chemical Engineering, UCLA)
1995	Facilities Engineer (Mobil Oil, Bakersfield, CA)
1994-1997	Laboratory Instructor (Information Technology Dept., USC)
1993-1997	Undergraduate Research Assistant (Dept. Chemical Engineering, USC)

Teaching Experience

2004-2008	Instructor, graduate-level chemical thermodynamics course listed jointly in the Chemistry and Chemical Engineering Departments (Caltech)
2005-2008	Instructor, undergraduate-level biomolecular engineering laboratory (Caltech) *This is a newly-developed laboratory course that includes lectures and research projects on the design, construction, and characterization of engineered biological systems. Lectures cover background in engineering biological systems and current technologies and experimental techniques that support project execution. A training period is also incorporated to train students in required laboratory techniques. Research projects fall*

into the general areas of cellular engineering and synthetic biology. The course involves open-ended, individual research projects emphasizing experimental and theoretical techniques in biological engineering, and oral presentation and written scientific reports.

2000-2003 University GSI Teaching and Orientation Workshop Leader (UCB)

1998-2000 Graduate Student Instructor, graduate engineering mathematics course and undergraduate separations course (Dept. Chemical Engineering, UCB)

1994-1997 Laboratory Instructor (Information Technology Programming Dept., USC)

Membership / Services

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

2009 Faculty Mentor of Stanford's iGEM team

2008-present President, Institute for Biological Engineering

2008-present Member, Editorial Board, Synthetic Biology Journal

2008 Conference Organizer, "Engineering Principles in Biological Systems", CSHL Meeting

2008-2009 Session Chair, "Synthetic Biology", IBE Annual Meeting

2007-present Member, Scientific Advisory Board, SynBERC (Synthetic Biology Engineering Research Center)

2007-present 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 Session Chair, "Synthetic Biology", 1st 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, Department of Defense

2006-present Member, City of Hope NCI-sponsored Comprehensive Cancer Institute, Cancer Immunotherapeutics Group

2006 Organizer, "Synthetic Biology Workshop", LSS Comp Sys Bioinformatics Conference

2006 Session Chair, "Microbial Metabolic Engineering I and II", ACS 232nd National Meeting

2006 Session Chair, "Molecular Tools for the Metabolic Engineering", Society of Industrial Microbiology Annual Meeting

2006 Judge, TR35 (Technology Review's Top 35 Young Innovators)

2006 Invited Summer School Instructor, "Quantitative approaches to gene regulatory systems", Center for Theoretical Biological Physics, University of California, San Diego

2006-present Member, Institute for Biological Engineering

2005-2009 Member, Scientific Advisory Board, Codon Devices

2005-2009 Member, Kavli Nanoscience Institute (Caltech)

2005-2008 Session Chair, "Synthetic Systems Biology", AIChE Annual Meeting

2004-present Steering Committee, Synthetic Biology Conference Series

2004-2008 Lead Faculty Organizer/Mentor of Caltech's iGEM team

2004-present Member, American Chemical Society

2004-present Member, RNA Society

2004-2009 Member, Center for Biological Circuit Design (Caltech)

2003, 2009 Participant, DARPA-sponsored ISAT study group on "Synthetic Biology"

2001-present	Ad Hoc Reviewer, Nature, Cell, Nature Biotech, Nature Chem Biol, Mol Sys Biol, Nuc Acids Res, RNA, Met Eng, PLoS Comp Biol, Chem Biol, Biotech & Bioeng
2000	Co-organizer/Mentor, NSF-sponsored MarBEC summer undergraduate research program
1997-present	Member, American Institute of Chemical Engineers

Selected Honors

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	TR100, Technology Review's Top 100 Young Innovators of the World
2001-2003	National Institute of Health Postdoctoral Fellowship
2001	Graduated Summa Cum Laude
2000-2001	UC Dissertation Year Fellowship
2000-2001	Shell Doctoral Fellowship
1999-2000	Chemical Engineering Departmental Citation for Outstanding Teaching
1998	DOW Prize for Excellence in Teaching
1998-1999	University Award for Outstanding Graduate Student Instructor
1997-2000	National Science Foundation Fellowship
1997	Tau Beta Pi Fellowship (Declined)
1997	Eugene Cota-Robles Fellowship (Declined)
1997	Graduated Summa Cum Laude
1997	Salutatorian
1997	Emma Josephine Bradely Bovard Student Award
1997	School of Engineering's Outstanding Service and Student Awards
1996	Golden Key Peat Marwick Junior Scholarship
1996	Unocal Scholarship
1996	Excellence Award in Biochemistry
1995	Southern California Section AIChE Outstanding Junior Award
1994	Outstanding Achievement Award in General Chemistry
1993-1997	Trustee Scholar and Merit Research Awards

Patents

2009 Regulating T-cell proliferation and activation with regulated RNA switch control systems (preliminary filed)
2009 Methods for the design and construction of integrated ligand-controlled miRNAs (preliminary filed)
2007 Higher order signal processing with integrated RNA devices (pending)
2007 General composition framework for ligand-controlled RNA regulatory systems (pending)
2007 In vitro selection of nucleic acid-based sensor domains within nucleic acid switch platform (pending)
2007 Metabolic engineering for the biosynthesis of benzylisoquinoline alkaloids in the microorganism *Saccharomyces cerevisiae* (pending)
2007 Modular aptamer-regulated ribozymes (pending)
2006 Engineered yeast cells and uses thereof (pending)
2005 Aptamer regulated nucleic acids and uses thereof (pending)

Peer-Reviewed Publications

1. Culler SJ, Hoff KG, Smolke CD. 2009. Engineering complex phenotypes by programming alternative splicing. *In submission.*
2. Culler SJ, Hoff KG, Voelker RB, Berglund JA, Smolke CD. 2009. Functional selection of intronic splicing elements provides insight into their regulatory mechanism. *In submission.*
3. Hoff KG, Culler SC, Nguyen PQ, McGuire RM, Silberg JJ, Smolke CD. 2009. *In vivo* fluorescent detection of Fe-S cluster biosynthesis reactions. *Under review.*
4. Chen YY, Aguilar B, Win MN, Jensen MC, Smolke CD. 2009. Genetic control of mammalian T-cell proliferation with synthetic RNA regulatory systems. *Under review.*
5. Beisel CL, Culler SJ, Hoff KG, Smolke CD. 2009. Design of small molecule-responsive miRNAs based on structural requirements for Drosha processing. *Under review.*
6. Smolke CD. 2009. Cell Biology. It's the DNA that counts. *Science.* 324: 1156-7.
7. Beisel CL, Smolke CD. 2009. Design principles for riboswitch function. *PLoS Comp. Biol.* 5: e1000363.
8. Win MN, Liang JC, Smolke CD. 2009. Frameworks for programming biological function through RNA parts and devices. *Chem. Biol.* 16: 298-310.
9. 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.
10. Hoff KG, Goodlitt R, Li R, Smolke CD, Silberg JJ. 2009. Fluorescence detection of a protein-bound 2Fe2S cluster. *Chembiochem.* 10: 667-70.
11. 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.
12. Hawkins KM, Smolke CD. 2008. *Cover article:* Production of benzylisoquinoline alkaloids in *Saccharomyces cerevisiae. Nat. Chem. Biol.* 4: 564-73. *News and Views:* From yeast to alkaloids. 4: 524-5.
13. 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.
14. 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.
15. Win MN, Klein JS, Smolke CD. 2006. RNA aptamers to the benzylisoquinoline alkaloid codeine and the rapid characterization of their binding properties using surface plasmon resonance. *Nuc. Acids Res.* 34: 5670-82.
16. Pfleger 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.
17. 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.
18. 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.
19. 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.
20. 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.
21. 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.
22. Smolke CD, Martin VJJ, Keasling JD. 2001. Controlling the metabolic flux through the carotenoid pathway using directed mRNA processing and stabilization. *Met. Eng*. 3: 313-21.
23. 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-Peer-Reviewed Publications

1. Beisel CL, Liang JC, Smolke CD. 2009. Design principles for constructing RNA devices and their implementation in regulating cellular function. *PLoS Comp. Biol. In preparation.*
2. Smolke CD, editor. 2009. Handbook for Metabolic Pathway Engineering (volumes I and II). San Diego: CRC Press.
3. 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.
4. 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.
5. 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.
6. Smolke C. 2005. Molecular switches for cellular sensors. *Engineering and Applied Science.* 4: 28-37.
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.
8. Martin VJJ, Smolke CD, Keasling JD. 2002. Redesigning cells for the production of complex organic molecules. *ASM News* 68: 336-43.

Selected Invited Presentations

Smolke CD. 2009. TBD. *American Society of Cell Biology Annual Meeting,* San Diego, CA. (Invited Speaker)

Smolke CD. 2009. TBD. *University of Illinois Urbana-Champaign Chemical Engineering Departmental Seminar,* Urbana-Champaign, IL. (Invited Speaker)

Smolke CD. 2009. TBD. *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. (Invited Speaker)

Smolke CD. 2009. Programming RNA devices to control cellular information processing. *IRIC Symposium – Systems Biology in Immunology and Cancer,* Montreal, Canada. (Invited Speaker)

Smolke CD. 2009. Advancing synthetic metabolic network design through embedded sensing-actuation devices. *Biochemical Engineering Conference XVI ,* Burlington, VT. (Invited Speaker)

Smolke CD. 2009. Advancing synthetic metabolic network design through embedded sensing-actuation devices. *Summit on Systems Biology,* Richmond, VA. (Invited 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. *BioSysBio Conference,* Cambridge, England. (Invited Keynote 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 (Invited 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. (Invited Keynote Speaker)
Smolke CD. 2008. Programming RNA devices to control cellular information processing. *National Institute for Materials Science Symposium,* Kyoto, Japan. (Invited 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. (Invited 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 Skye, MT. (Invited 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. (Invited 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. (Invited 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. (Invited 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. (Invited 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. (Invited 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. (Invited 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. (Invited 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. (Invited 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. *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. (Invited Speaker)

Smolke CD. 2006. Engineering new molecules for studying and programming cellular systems. *Japan-America Frontiers of Engineering Symposium*, Tsukuba, Japan. (Invited Speaker)

Smolke CD. 2006. Molecular sensors for optimizing production of alkaloid molecules in *Saccharomyces cerevisiae. Metabolic Engineering VI,* NH Leeuwenhorst, Noordwijkerhout, Netherlands. (Invited 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. (Invited 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. (Invited 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. (Invited Speaker)

Smolke CD. 2006. Engineering new molecules for programming cellular systems. *Design Principles for Biological Systems*, *Banbury Center Meeting*, Cold Spring Harbor Laboratory, NY. (Invited 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. Expanding the frontiers of molecular medicine through programmable nucleic acid sensors. *Caltech Division of Chemistry Visiting Committee Presentation*, Pasadena, 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)

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. (Invited 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)

Selected Presentations

Chen YY, Smolke CD. 2009. Genetic control of mammalian T-cell proliferation with synthetic RNA-based regulatory systems. *IBE Annual Conference,* Santa Clara, CA. (Oral Presentation)

Chen F, Hsiao V, Lim A, Ovadia R, Tischer D, Beisel CL, Michener JK, Smolke CD. 2009. Engineering multi-functional probiotic bacteria. *IBE Annual Conference,* Santa Clara, CA. (Oral Presentation)

Win MN, Smolke CD. 2009. Programming synthetic RNA devices for cellular information processing. *SBE 2nd International Conference on Biomolecular Engineering,* Santa Barbara, CA. (Oral Presentation)

Culler SJ, Hoff KG, Smolke CD. 2009. Engineering complex phenotypes by reprogramming alternative splicing. *SBE 2nd International Conference on Biomolecular Engineering,* Santa Barbara, CA. (Poster; received the Genentech first place award for best poster presentation)

Culler SJ, Hoff KG, Smolke CD. 2009. Engineering complex phenotypes by reprogramming alternative splicing. *Caltech Graduate Student Council 1st Annual Graduate Student Poster Session,* Pasadena, CA. (Poster)

Galloway KE, Smolke CD. 2008. Ligand-dependent regulation of transcriptional feedback and phenotype in a MAPK pathway via RNA control elements. *Engineering Principles in Biological Systems CSHL Meeting,* Cold Spring Harbor Laboratory, NY. (Oral Presentation)

Michener JK, Smolke CD. 2008. Construction and control of biosynthetic pathways. *Engineering Principles in Biological Systems CSHL Meeting,* Cold Spring Harbor Laboratory, NY. (Poster)

Chen F, Hsiao V, Lim A, Ovadia R, Tischer D, Beisel CL, Michener JK, Smolke CD. 2008. Engineering multi-functional probiotic bacteria. *iGEM Jamboree,* Cambridge, MA. (Oral Presentation; team awarded second runner up for grand prize)

Hawkins KM, Smolke CD. 2008. Production of benzylisoquinolines in engineered yeast. *Synthetic Biology 4.0,* Clearwater Bay, Kowloon Hong Kong. (Oral Presentation)

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