

## CURRICULUM VITAE

### Christopher H. Contag

#### Mailing/Work Address (updated July 2018)

Department of Biomedical Engineering  
 Institute for Quantitative Health Science and Engineering  
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 East Lansing, MI 48824

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#### Academic Training:

Stanford University School of Medicine	Postdoctoral Fellow	1990 - 1995
University of Minnesota, Department of Microbiology	Postdoctoral Fellow	1988 - 1989
University of Minnesota, Department of Microbiology	Ph.D., Microbiology	1983 - 1988
University of Minnesota, College of Biological Sciences	B.S., Biology	1981 - 1982
Iowa State University		1978 - 1981

#### Academic Positions Held:

• Professor	Department of Biomedical Engineering, Michigan State University	2016-present
• Inaugural Chair	Department of Biomedical Engineering, Michigan State University	2016-present
• Founding Director	Institute for Quantitative Health Science and Engineering Michigan State University	2016-present
• Professor	Department of Microbiology and Molecular Genetics Michigan State University	2016-present
• Professor Emeritus	Neonatal and Developmental Medicine, Department of Pediatrics, Stanford University School of Medicine.	2016-present
• Faculty member	Program in Immunology, Stanford University	2001-2016
• Faculty member	Molecular Imaging Program Stanford (MIPS)	2003-2016
• Faculty member	BioX Program	2001-2016
• Professor	Neonatal and Developmental Medicine, Department of Pediatrics, Stanford University School of Medicine.	2012-2016
• Professor	Department of Microbiology and Immunology (secondary appt.) Stanford University School of Medicine.	2012-2016
• Professor	Department of Radiology (by courtesy)	2012-2016
• Professor	Department of Bioengineering (by courtesy)	2015-2016
• Director	Stanford Center for Innovation in <i>In Vivo</i> Imaging (SCI <sup>3</sup> ), Clark Center for Biomedical Engineering and the Bio-X Program, Stanford University	2000-2016
• Assoc Chief (Research)	Division of Neonatal and Developmental Medicine	2009-2016
• Co-director	Child Health Research Institute Stanford University	2015-2016
• Co-director	Molecular Imaging Program at Stanford (MIPS) Stanford University	2003-2016
• Director	Stanford Center for Military Photomedicine	2008-2013
• Director	Stanford Infrared Optical Science and FEL Center	2008
• Assoc. Professor	Neonatal and Developmental Medicine, Department of Pediatrics, Stanford University School of Medicine.	2005-2008
• Assoc. Professor	Department of Microbiology and Immunology (secondary appt.) Stanford University School of Medicine.	2005-2008
• Assoc. Professor	Department of Radiology (by courtesy) Stanford University School of Medicine.	2005-2008
• Asst. Professor	Department of Radiology (by courtesy) Stanford University School of Medicine.	2001-2005
• Asst. Professor	Department of Microbiology and Immunology (secondary) Stanford University School of Medicine.	2000-2005
• Asst. Professor	Neonatal and Developmental Medicine, Department of Pediatrics	

- Acting Assistant Professor  
Stanford University School of Medicine. Neonatal and Developmental Medicine, Department of Pediatrics, Stanford University School of Medicine. 2000-2005  
1997
- Pediatrics fellow  
Neonatal and Developmental Medicine, Department of Pediatrics, Stanford University School of Medicine. 1995-1996
- Postdoctoral fellow  
Department of Microbiology and Immunology, Stanford University School of Medicine. In the laboratory of Dr. James I. Mullins. 1989-1994
- Investigator  
Woods Hole Marine Biological Laboratory, Woods Hole, MA Summer 1991  
In collaboration with Dr. Harvey Fishman.
- Pre- and Postdoctoral fellow  
Department of Microbiology, University of Minnesota. 1983 - 1989  
In the laboratories of Dr. Peter G.W. Plagemann and Dr. Ashley T. Haase.

#### Other Positions Held:

- President World Molecular Imaging Society 2016
- President Elect World Molecular Imaging Society 2015
- Member Scientific Advisory Board, Bell Biosystems 2014-2017
- Member Scientific Advisory Board, In Vivo Analytics 2015-
- Secretary/Treasurer Center for Molecular Imaging Innovation and Translation Society for Nuclear Medicine and Molecular Imaging (SNMMI) 2012-2014
- Founder Skin Deep Diagnostics 2011
- Founder BioEclipse Therapeutics (previously ConcentRx Corp) 2010
- Founder PixelGear Inc. 2017
- President Society for Molecular Imaging 2002-2003
- President Elect Society for Molecular Imaging 2001-2002

Google Scholar h-index (2018): 74

i10-index (2018): 219

#### Honors and Awards:

- **John and Bette Klacsmann Visiting Professor**, Mayo Clinic, Jacksonville, Florida 2019
- **James and Kathleen Cornelius Chair**, Departments of Biomedical Engineering and Microbiology & Molecular Genetics, Michigan State University 2017
- **Britton Chance Award** for outstanding lifetime contributions to the field of biomedical optics through the development of innovative, high impact technologies, SPIE 2016
- **John A. Hannah Distinguished Professor** of Biomedical Engineering, Michigan State Univ. 2016
- **Hannah Visiting Professor**, Michigan State University 2016
- **Helen C. Levitt Visiting Professorship**, Department of Molecular Medicine, Mayo Clinic 2016
- **Distinguished Lecturer**, UC Irvine Medical Scientist Training Program (MSTP) 2014
- **Keynote Address**, Seeing is Believing and Beyond, National Cancer Center Korea 2014
- **Stanford Inventors' Hall of Fame** 2013
- **James C. Overall Lecturer in Pediatrics**, Vanderbilt University 2013
- **Keynote Address**, Imaging in Drug Development 2013
- **Fellow** of the World Molecular Imaging Society 2012
- **Invited Lecture**, European Society of Clinical Infectious Disease Milan, Italy 2011
- **Opening Plenary Lecture**, European Society for Molecular Imaging Warsaw Poland. 2010
- **Invited Lecture**, Regenerative Medicine Conference Hilton Head, South Carolina 2009
- **Invited Lecture**, British Society of Immunology, Cambridge University "Visions of Immunology" 2008
- **Distinguished Lecture**, UC Davis: In Vivo Applications of Bioluminescence 2008
- **Invited Lecture**, Nobel Symposium: Watching life through Molecular Imaging 2007
- **Invited Lecturer**, Wallenberg Neuroscience Center at Lund University 2007
- **Keynote Address**, Gordon Research Conference "Cancer Models and Mechanisms", 2007
- **Achievement Award**, Society for Molecular Imaging 2006
- **Poster of Distinction** during Digestive Disease Week Hemin-Activated Mesothelial Cells Home To the Pancreas and Protect From Pancreatitis 2005

- Article entitled "Advances in *in vivo* bioluminescence imaging of gene expression" as published in the journal "Annual Rev. Biomed. Eng." is one of the most cited papers in the field of engineering--ISI 2003

#### Postdoc

- Imaging of Single Living Cells, Cold Spring Harbor, Award 1996
- American Federation for Clinical Research (AFCR). Upjohn Infectious Disease Prize 1995
- Scholar of the American Foundation for AIDS Research (AmFAR) 1991 -1994
- National Research Service Award, Postdoctoral, NIAID training grant: Molecular Basis of Host Parasite Interactions. Stanford University School of Medicine 1989 -1991

#### Graduate School

- National Research Service Award; NCI Cancer Biology Training Grant University of Minnesota School of Medicine 1988 -1989
- Viral Research Grant, ViroMed and Minnesota Chapter of the National Foundation for Infectious Diseases 1987 -1988
- Bacaner Research Award, Minnesota Medical Foundation and Basic Science Departments, University of Minnesota. 1988
- National Research Service Award, NCI cancer biology training grant. University of Minnesota School of Medicine. 1984 -1988

#### Teaching Experience:

- Lecturer, Summer School on the Discovery and Development of Diagnostics for Early Detection of Cancer Robinson College, **University of Cambridge, UK**: Optical Imaging for the Early Detection of Cancer 2019
- Course coordinator and lecturer, **BioEngineering 229**: Topics in Molecular Imaging 2015, 2016
- Lecturer, **BioEngineering 224**: Chemistry of Molecular Probes 2015
- Lecturer, **BioEngineering 222a** and **222b**: Multi-modality Molecular Imaging in Living Subjects 2012-2015
- Lecturer: Cancer Center Course, Stanford University Advanced imaging strategies 2013
- Instructor, **Advanced Molecular Imaging and Clinical Translation** Emerging Technologies for Molecular Imaging Harvard University, Boston, MA 2013
- Lectures on intravital microscopy for the study of the tumor microenvironment **BioEngineering 222c**: Multi-modality molecular imaging in living subjects 2013
- Course Director, **BioEngineering 222a, 222b, 222c**: Multi-modality molecular imaging in living subjects 2009-2011
- Lecture on immune cell therapies in Cancer Center Course, Stanford University 2008
- Lectures on stem cell imaging **Developmental Biology 202**: Stem cell biology and regenerative medicine 2008
- Lectures on i) metabolic enzymes as mediators of immune response, ii) the role of cell fusion in the immune response to infection, and iii) tumor immunology and the cancer stem cell. **Advanced Immunology 202**: Topics in Immunology 2006-2011
- Lecture on mini-microscopes and the emerging field of *in vivo* pathology **Medicine 217**: Technological Frontiers in Digestive Diseases 2008
- Lectures on tissue regeneration and cell fusion **BioEngineering 390**: Introduction to Bioengineering Research 2007
- Lectures on tissue optics, and reporter gene construction and uses *in vivo* **BioEngineering 222a**: Multi-modality molecular imaging in living subjects 2004-2012
- Lectures on imaging stem cell biology, miniaturized microscopes and cell fusion **BioEngineering 222c** 2007-2009
- Lectures on optical reporter genes **BioEngineering 222b**: Multi-modality molecular imaging in living subjects 2007-2009
- Lecture on novel methods of studying host pathogen interactions *in vivo* **Microbiology and Immunology 210**: Pathogenesis of Bacteria, Viruses and Eukaryotic Parasites 2004
- Lecturer on Optical Imaging in Medicine 2004

- Medicine 459: Frontiers in Digestive Diseases**
- Lecturer on Advancing animal models of human disease 2003
- Comparative Medicine 208: Animals Advancing Biomedical Technology**
- Lecturer on Molecular Imaging 2003
- Radiology 220: Introduction to Imaging and Image-based Human Anatomy**
- Lecturer, Small Animal Imaging Workshop at Stanford University 2006, 2007, 2008
- Organizer, Jackson Labs workshop on *in vivo* imaging 2002
- Instructor, Recent advances in cell-based and *in vivo* imaging, University of Bristol 2000
- Instructor, United Nations AIDS Course on Heteroduplex Analyses of HIV-1, Moscow, Russia 1996
- Instructor, WHO Course on Heteroduplex Analyses of HIV-1; Salvador, Brazil 1995
- Lectures on Toga-, Flavi- Reo- and Retroviruses in Animal Virology (graduate). 1990, 1993, 1996  
Stanford University School of Medicine.
- Virology Section of Medical Microbiology (undergraduate), University of Minnesota. 1987
- Teaching Assistant for laboratory courses at the University of Minnesota:
- Microbiology for Medical Students 1987
- Molecular Biology (graduate laboratory course) 1986
- Virology (undergraduate and graduate) 1985
- General Microbiology (undergraduate) 1984

**Service:**

**MSU**

- Chair, Search Committee, Director for the Center for Ethics and Humanities in the Life Sciences 2017

**Stanford University**

- Member, Administrative Panel on Biosafety (APB) 1999-2002
- Member, Molecular Imaging Faculty Search Committees – Dept. of Radiology 1999, 2003
- Member, Bone Marrow Transplant Faculty Search Committee – Dept. of Medicine 2000-2004
- Member, Graduate student admissions committee, Microbiology and Immunology 2000-2001
- Member, Medical Student Admissions Panel 1999-2004
- Member, Committee on Graduate Education and Research, Dept. of Biomedical Engineering 2002
- Member, Pediatric Cardiopulmonary Faculty Search Committee – Dept. of Pediatrics 2004
- Member, Administrative Committee for the Hansen Experimental Physics Laboratory 2004-
- Session Chair, Stanford Photonic Research Center Annual meeting 2005, 2006
- Member, Scientific advisory board, Children’s Health Research Program 2008
- Member, Pediatric Pulmonology Faculty Search Committee 2008
- Member, Pediatric Pulmonology Faculty Search Committee 2009
- Chair, Scientific advisory board, Children’s Health Research Program 2009-2013
- Member, BioEngineering Advancement and Promotions (A&P) committee 2013-
- Neonatology Fellowship Program Evaluation Committee 2013-
- Chair, Ob/Gyn and Reproductive Sciences Faculty Search Committee 2014-

**National and International**

- Associate Editor, **Molecular Imaging and Biology** 2012-
- Member, Editorial Board, **Molecular Imaging** 2001-
- Member, Editorial Board, **Molecular Imaging and Biology** 2010-
- Member, Editorial Board, **Cancer Biology and Therapy** 2006-
- Member, Editorial Board, **Disease Models and Mechanisms** 2008-
- Member, Editorial Board, **BMC Medical Physics** 2008-
- Member, Editorial Board, **Analytical Cellular Pathology** 2010-
- Member, Editorial Board, **Imaging in Medicine** 2010-
- Member, Editorial Board, **Current Opinion in Biomedical Engineering** 2016
- Co-Editor, **Current Opinion in Biotechnology**, 2008  
Analytical Biotechnology section (vol. 20, issue 1)

- Reviewer for: **Nature** **Nature Medicine** **Gene Therapy**  
**Science** **Molecular Imaging** **Neoplasia**  
**Nature Biotechnology,** **Cellular Microbiology** **PNAS**  
**European Journal of Cancer** **Molecular Therapy** **Virology**

<b>Journal Biomedical Optics</b>	<b>Genes and Development</b>	<b>Blood</b>
<b>Journal of Virology</b>	<b>Human Gene Therapy</b>	<b>Cancer Research</b>
<b>Nature Reviews Cancer</b>	<b>Nature Methods</b>	<b>Nature Protocols</b>
<b>International Immunology</b>	<b>BMC Immunology</b>	<b>Molecular Imaging Biol.</b>
<b>PLoS One</b>	<b>Scientific Reports</b>	<b>International Journal of Cancer</b>
<b>Cancer Prevention Research</b>	<b>Bioorganic &amp; Medicinal Chemistry Letters</b>	
<b>Journal of Chemistry and Biology</b>		

- NCI/Special Emphasis Study Section, Development and Application of Imaging in Therapeutic Studies. CA98-024; NIH-National Cancer Institute (NCI) 1999
- NCI/Special Emphasis Study Section, Diagnostic Imaging and Guided Therapy in Prostate Cancer. CA99-015; NIH-National Cancer Institute (NCI) 2000
- NCI/Special Emphasis Study Section, Diagnostic Imaging and Guided Therapy in Prostate Cancer. SBIR/STTR. PAR99-149; NIH-National Cancer Institute (NCI) 2000
- Founding Member of the Society for Molecular Imaging (SMI) 2000  
President elect 2002, President 2003, Board member 1999-
- External Advisory Board, Vanderbilt University Imaging Program (VIVID) 2001-2005
- Member, NIH/DMG Study Section, Diagnostic Imaging 2002
- Member, Steering Committee, Annual Meeting of the Society for Molecular Imaging (SMI) 2002
- Member, Scientific Program Committee, Annual Meeting of the Society for Molecular Imaging (SMI) 2002
- MOLI Board - National Cancer Institute Molecular Imaging Database 2002
- Member, organizing committee, NIDDK/JDFI Workshop. Imaging the Pancreatic Beta Cell 2003
- AdHoc member, CSR/NIH Biodefense and emerging infectious diseases 2003
- AdHoc member, CSR/NIH Cancer Genetic Study Section 2003  
Cancer Molecular Pathobiology (CAMP)
- AdHoc member, NIHM/NIH study section ZMH1 BRB-S 04 2003
- Reviewer, NIHM/NIH study section ZRG1 F05 50 R.1 2003
- External reviewer, The Netherlands Organization for Health Research and Development 2003
- Reviewer, European Commission Research Programme on Genomics 2003
- Reviewer, European Commission Research Programme on Molecular Imaging Centers 2003
- Chair, Steering Committee Annual Meeting of the Society for Molecular Imaging (SMI) 2003
- Member, Steering Committee Annual Meeting of the Society for Molecular Imaging (SMI) 2004
- NCI/Special Emphasis Study Section, Small Animal Imaging Resource Programs 2004  
CA 04-011.; NIH-National Cancer Institute (NCI)
- Session Chair. Imaging host pathogen interactions 2004  
Annual Meeting of the Society for Molecular Imaging (SMI)
- Co-Chair, Steering Committee, Network in Translational Research in Optical Imaging, NCI 2004
- Reviewer, Lymphoma Leukemia Society SCOR grants 2004
- Guest editor Journal Biomedical Optics Special Issue: Chemical and genetic biosensors for biomedical imaging 2005
- Member, Scientific Advisory Board Sandler Foundation for Asthma Research 2005-2007
- Program co-chair, Imaging in 2020, Jackson WY 2005
- Member, Advisory Board Washington University Molecular Imaging Program 2005-2010
- Chair, Steering Committee, Network in Translational Research in Optical Imaging, NCI 2006
- Member Program Committee, Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues III part of SPIE's International Symposium on Biomedical Optics 2006
- Reviewer, NIH Biomedical Imaging and Bioengineering, Medical Imaging (MEDI) 2005, 2006
- Advisory Board Member, NanoSafety Inc 2006
- Organizing committee, OSA Special Topics Meeting 2006
- Member, Medical Imaging Study Section (MEDI), Center for Scientific Review, NIH 2006-2010
- Member, Clinical Molecular Imaging Study Section (CMIP), Center for Scientific Review, NIH 2008-2010
- Member, Scientific Advisory Committee 2006  
International Society of Bioluminescence and Chemiluminescence
- Member, Special Emphasis Panel, Digestive Disease Research Core Centers ZDK1 GRB-4 [J1] 2006  
NIH/NIDDK

- Member, Advisory Board University Pennsylvania, Network in Optical Imaging 2005-2010
- Member, Advisory Board University California, Irvine, Small Animal Imaging Program 2007-
- Chair, Steering Committee, Network in Translational Research in Optical Imaging, NCI 2007-2008
- Member Review Committee, Cancer Imaging Centers for the Cancer Research UK (CR-UK) and the Engineering & Physical Sciences Research Council (EPSRC) 2008
- Member Program Committee AACR National Meeting Molecular Imaging Section 2009
- Member, NCI Special Emphasis Panel: Mouse models of human cancer consortium 2009
- Member, Advisory Board for imaging cancer stem cells, NCI 2009
- Member, Scientific Review Committee for AACR Basic Cancer Research Fellowships 2010
- Category Co-chair and Session Chair, World Molecular Imaging Congress 2010
- Adhoc Reviewer, ZRG1 SBIB-D (01) M Member Conflict: Clinical Molecular Imaging Study Section (CMIP), Center for Scientific Review, NIH 2010
- Adhoc Reviewer, ZRG1 F15-D (20) L Fellowships: Biomedical Imaging and Bioengineering, Center for Scientific Review, NIH 2010
- Adhoc Reviewer, ZRG1 SBIB-E (02) M Member Conflict: SAT and BTSS Study Sections, Center for Scientific Review, NIH 2010
- Member, SNM Molecular Imaging Curriculum Task Force 2010
- Member, SNM Molecular Imaging Center of Excellence 2010
- Member, Board of Directors, SNM Center for Molecular Imaging Innovation and Translation 2011-present
- Member, NCI Experimental Therapeutics (NExT) Program Special Emphasis Panel 2011-present
- Adhoc Reviewer, ZRG1 F15-P; Fellowships Surgical Sciences, Biomedical Imaging and Bioengineering 2011, 2012
- Adhoc Reviewer, ZRG1 F15-P(20)L Special Emphasis Panel Fellowships Surgical Sciences, Biomedical Imaging and Bioengineering 2011, 2012
- Member, American Association of Cancer Research (AACR) Scientific Program Committee 2012
- Chairperson, *In Vivo Imaging* Subcommittee of the Tumor Biology Section AACR Program Committee 2012
- Program Committee, BioNanophotonics and Molecular Probes" OSA BIOMED Topical Meeting 2012
- Member, Program Committee, AACR-SNM joint meeting on Imaging of Cancer Biology 2013
- Reviewer, ZRG1 DTCS A81--Clinical and Translational Imaging Applications 2012, 2013
- Co-chair, Society of Nuclear Medicine and Molecular Imaging Optical Imaging Task Force 2012
- Member, Lynbrook Excellence in Education (LExE) Board of Directors 2010-present
- Member, Four Elements Earth Education (4EEE) Board of Directors 2012-present
- Session Chair, World Molecular Imaging Congress 2013
- Chair, Fellowship Grant Review, Special Emphasis Panel ZRG1 F15-P (20) L Center for Scientific Review (CSR) National Institutes of Health (NIH), DHHS 2013
- Reviewer, ZRG1 SBIB-D 57 R, PAR-13-169: Academic Industrial Partnership 2014
- Reviewer, ZCA1 TCRB-9 J1 S, Revisions Early Stage Informatics Technologies, Revisions Early Stage Informatics Technologies, Revisions Early Stage Informatics Technologies, Advanced Stage Informatics technologies 2014
- Organizer, AACR-SNMMI Joint Conference on Cancer Imaging 2015
- Reviewer, ZRG1 DTCS-A 81 S, Clinical and Translational Imaging Applications 2015
- Member, MD Anderson Center for Advanced Imaging Multi-Investigator Imaging (MI-2) Research Award Scientific Review Panel 2015
- Chair, NCI Provocative Questions 7 Review Committee ZCA1 RPRB-0 (J6) S 2015
- Reviewer, ZRG1 F15-D (20) L Fellowships: Biomedical Imaging and Bioengineering, Center for Scientific Review, NIH 2016
- Panel Member, NIH Advisory Panel on Review of Imaging Science Review of study section structure for imaging study sections: BMIT-A, BMIT-B, MEDI, CMIP and NOIT 2017
- Member, Program Committee, Third AACR-SNMMI Joint Conference on State-of-the-Art Molecular Imaging in Cancer Biology and Therapy 2018

## Extramural Funding

### Current Federal funding:

- **Dynamic Imaging of EMT in the Breast Cancer Microenvironment** 2013 – 2018  
1R01CA172895-01 (Principle Investigator, **C.H. Contag**) NIH/NCI
- **Raman Molecular Imaging for Early Detection of Colon Cancer** 2014 – 2019  
1R01 CA182043-01 (Principal Investigator: **C.H. Contag**) NIH/NCI

### Pending Federal Grants:

- **Artificial Endosymbiogenesis for Directed Neuronal Regeneration to Treat Parkinson's Disease** 2017 – 2022  
1U01EB021190-01 (Principal Investigator: **C.H. Contag**) NIH/NIBIB

### Recent Past:

- **In vivo and Molecular Imaging Center @ Stanford** 2010 – 2015  
P50CA114747 (Principle Investigator, S.S. Gambhir)
- **Cancer Imaging Program – Cancer Center, NIH/NCI** 2009 – 2015  
3 P30 CA124435 (Principal Investigator: B. Mitchell)
- **(PQC2) High-content pathology with confocal microscope arrays** 2013 – 2017  
1R01CA180152-01 (Principle Investigator, **C.H. Contag**) NIH/NIBIB/NCI
- **HER2-targeted exosomal delivery of therapeutic mRNA for enzyme pro-drug therapy** 2013 – 2018  
1UH2TR000902-0 (Matin, Stanford University) NIH/NCI
- **Targeted therapy in type 1 diabetes** 2013 – 2018  
R24DK096465-01 (Moore, Harvard Univ.) NIH/NIDDK
- **Targeting the Breast Cancer Metastatic Niche** 2014 – 2016  
State of California 20IB-0141 (Principle Investigator, **C.H. Contag**)
- **Image guided resection of medulloblastoma** 2011 – 2015  
Center for Children's Brain Tumors at Stanford (Principal Investigator: **C.H. Contag**)
- **Adaptation of a Miniature Microscope for the Noninvasive In Vivo Detection of Rare Circulating Tumor Cells in the Vasculature** 2012 – 2014  
BioX IIP6-51 (Principal Investigator: **C.H. Contag**)
- **Mechanisms of fetal bradycardia** 2013 – 2014  
Cardiovascular Institute at Stanford (Principal Investigator: **C.H. Contag**)
- Culture methods for studying the tumor microenvironment 2011 – 2014  
ARDF (Principle Investigator, **C.H. Contag**)
- Development of Single Cell MRI Technology using Genetically-Encoded Iron-Based Reporters 2011 – 2014  
CIRM RT2-02018 (Rutt, Stanford University)
- Multimodality Imaging of GI Cancers for Diagnosis and Directed Therapy, NIH/NCI 2008 – 2014  
U54 CA136465 (Principal Investigator: **C.H. Contag**)
- Tools for tracking breast cancer progression, NIH/NCI 2011 – 2014  
Supplement to U54 CA136465 (Principle Investigator, **C.H. Contag**)
- Engineering stem cell allografts for 'operational tolerance', CIRM 2010 – 2013  
RM0101706 (Principal Investigator: **C.H. Contag**)
- Stanford Center for Military Photomedicine, DOD 2007 – 2013  
F9550-04-1-0075 (Principal Investigator: **C.H. Contag**)
- CCL5 & CCR5: a role in CD8 T cell trafficking into adipose tissue and insulin resistance 2011 – 2012  
Pediatric Research Fund at Stanford (Principal Investigator: **C.H. Contag**)
- Mechanisms of preterm birth caused by infection, March of Dimes 2011 – 2012  
Pilot project on March of Dimes Center grant (Principal Investigator: **C.H. Contag**)
- Molecular Pathogenesis of Digestive Diseases 2006 – 2012  
P30 DK056339-06 (Principle Investigator, H. Greenberg)
- Bone Marrow grafting for leukemia and lymphoma, NIAID/NIH 2002 – 2012  
PO1 CA49605-14 (Principal Investigator: R. Negrin)
- Development of Probes for Fluorogenic In Vivo Imaging of Tuberculosis 2007 – 2011  
S080047 Bill & Melinda Gates Foundation ((Principle Investigator, Rao)
- Genetic engineering of the IC2 antibody for imaging of pancreatic beta cell mass 2010 – 2011  
Pediatric Research Fund at Stanford (Principal Investigator: **C.H. Contag**)
- Delivery of Biologically Active Nucleic Acid to Epidermal Cells, NIH/NIAMS 2009 – 2011

- A subcontract from Transderm Inc. (Principal Investigator: **C.H. Contag**)
- NSF Center for Biophotonics Science & Technology 2001 – 2011  
002865-SU (Principal Investigator: D. Mathews, UC Davis)
- Hematopoietic Defect due to Heme Oxygenase 1 Deficiency; NIH/NIDDK 2007 – 2011  
1KO1 DK071716-01; (Principle Investigator, Y-A Cao)
- Extracellular replication of Listeria, NIH/NIAID 2009 – 2011  
R01 DK070749 (Principal Investigator: **C.H. Contag**)
- Development of siRNA Delivery methodologies using In vivo Imaging Models 2009 – 2011  
1R44AR055881 (**C.H. Contag**)
- Delivery of Biologically active nucleic acids to epidermal cells 2009 – 2011  
1RC2AARR058955-02 (Kaspar and **C.H. Contag**)
- Detection of neoplasia in the esophagus, NIH/NCI 2005 – 2010  
U54 CA105296-01 (Principal Investigator: **C.H. Contag**)
- Use of dual axes confocal microscopy to visualize tumor margins in medulloblastoma 2008 – 2010  
Children’s Brain Cancer Center (Principal Investigator: **C.H. Contag**)
- Multi-modality Cellular Imaging of Vascular Inflammation 2006 – 2010  
RO1HL078678 (Principle Investigator, M. McConnell)
- Effect of statins on heme oxygenase-1 regulation, NIH/NICHD 2007 – 2010  
1R21 HD050351-01A2 (Principle Investigator: Stevenson)
- Nanoparticle delivery of siRNA; SPARK Internal Stanford award 2009  
(Principal Investigator: **C.H. Contag**)
- Small Animal Imaging Core Resource. Stanford University Program in Biomed. Engineering 2005  
and Child Health Initiative-Lucille Packard Foundation.  
(Principal Investigators: **C. H. Contag**)
- Nanoparticle Formation and Biodistribution for Optimizing Therapy  
1 R21 CA125467 (Principle Investigator: R. Zare)

**Past:**

- Mobilized dendritic cells for lung cancer, NIH  
PO1HL57443-06 (Principal Investigator: E. Engleman)
- Regulation of heme oxygenase in neonatal animals, NIH/NICHD  
RO1 HL58013 (Principal Investigators: D.K. Stevenson and **C.H. Contag**)
- Monitoring tumor progression in living animals, NIH/NCI  
RO1 CA80006-01 (Principal Investigators: R.S. Negrin and **C.H. Contag**)
- Therapeutic Use of Heme Analogs: Absorption in Intestine, NHLB/NIH  
RO1 HL 68703 (Principal Investigators: D.K. Stevenson and **C.H. Contag**)
- Spatiotemporal analysis of neoplastic disease. NCI/NIH  
R24 CA 92862 (Principal Investigators: **C. H. Contag**, M. Bednarski, M. Moseley)
- Therapeutic Radionuclide Tumor-Targeting Strategy for Breast Cancer; DOE  
95382 (Principal Investigator: B. Franc, UCSF)
- Visible Models of Neoplastic Disease, NIH/NCI  
R33 CA88303 (Principal Investigators: **C.H. Contag** and R.S. Negrin)
- Visualizing tumor progression and therapy in living animals, Leukemia Society  
6090-99 (Principal Investigators: R.S. Negrin and **C.H. Contag**)
- Oral immunization against HIV using attenuated salmonella strains as gene delivery vehicles  
(Stanford, CHI-Packard Foundation; Principal Investigator: **C. H. Contag**)
- Molecular Biophotonics, ONR  
N00014-91-C-1-0170 (Principal Investigator: **C. H. Contag**)
- Vertical transmission of HIV in Zimbabwe, NIH/NIAID  
RO1 A139013 (Principal Investigator: D. Katzenstein)
- Imaging Spontaneous Breast Cancer in Mouse Models, NIH/NCI  
R21 CA87386-01A1 (Principal Investigators: **C.H. Contag** and R.S. Negrin)
- *In vivo* multimodality Imaging of Neoplastic Disease, NCI/NIH  
P20 CA86312-01 (Principal Investigators: **C. H. Contag**, M. Moseley, M Bednarski)  
R24 HD37543 (Principal Investigators: **C.H. Contag** and D.K. Stevenson)
- Visualizing insulinitis: IDDM pathogenesis and therapy, NIH/NIDDK



RO1 DK58664 (Principal Investigators **C.H. Contag** and C.G. Fathman)

- Novel Cancer Targeting Mechanism for Imaging with PE; DOD  
WH-05-1-0059 (Principal Investigator: B. Franc, UCSF)
- Gene therapy of IDDM and its complications, JDFI  
4-2001-9, JDFI Center Grant (Principal Investigator: C. G. Fathman)
- Spatiotemporal analysis of neonatal host response, NIH/NICHD-NIAID

**Invited Seminars (Recent and Selected from over 600):**

- **Plenary Speaker**, BMEiCON, Chaingmai, Thailand 2018
- **Keynote Address**, NCI CIP 20th Anniversary Symposium, Bethesda, MD 2018
- **Keynote Address**, Fifth ACM/IEEE NanoCom conference, Reykjavik, Iceland 2018
- **Plenary Speaker**, 31st Annual Conference of the IEEE Photonics Society (IPC), Reston, Virginia 2018
- **Invited Speaker, Plenary Session**, Third AACR-SNMMI Joint Conference on State-of-the-Art  
Molecular Imaging in Cancer Biology and Therapy 2018
- **Keynote Address**, 45<sup>th</sup> annual Pharmacology Colloquium, East Lansing Michigan 2018
- **Plenary Speaker**, Conference on lasers and Electro-Optics (CLEO), San Jose, CA 2017
- **Invited Meet the Expert**, AACR Annual Meeting, Meet the Expert Session: **The Future  
of Cancer Imaging “Integrated Imaging over a Range of Scales and Modalities”** 2017
- **Invited Speaker**, SNMMI Annual meeting, Denver, CO 2017
- **Invited Speaker**, MicroScience Microscopy Conference, London, England 2017
- **Invited Speaker**, European Society for Molecular Imaging, Amsterdam, Holland 2016
- **Invited Speaker**, SU2P Photonics meeting, Edinburgh, Scotland 2016
- **Invited Speaker**, AACR Annual meeting, New Orleans, LA 2016
- **Invited Speaker**, OSA Biomed conference, Orlando, FL 2016
- **Invited Speaker**, Pediatric Societies Annual Meeting, Baltimore MD 2016
- **Invited Speaker**, Physiology Society, Warwick, UK 2016
- **Invited Speaker**, Imaging in 2020, Jackson, WY 2016
- **Invited Speaker**, Russian Societies of Physiology and Biochemistry, Sochi, Russia 2016
- **Opening Keynote Lecture**. 13th Imaging Network of Ontario Symposium  
London, Ontario, Canada. 2015
- **Opening Keynote Lecture**. Personalizing Cancer Medicine Conference  
Toronto, Canada. 2015
- **Opening Keynote Lecture**. Tiawan Society of Molecular Imaging 2015
- **Opening Keynote Lecture**. Korean Society of Molecular Imaging 2015
- **Keynote Lecture**. 11th Asia Oceania Congress of Nuclear Medicine and Biology,  
Jeju, Korea 2015
- **Opening Keynote Lecture**. World Engineering Conference and Convention, Kyoto, Japan 2015
- AACR-SNMMI Joint Conference on Cancer Imaging 2015  
San Diego, CA
- Invited Lecture, Conference on Lasers and Electro-Optics, Photonics in Surgery  
Image-guided Resection of Medulloblastoma 2015
- Ernst Strümgmann Forum on Heavy Metals and Infectious Disease 2014  
Frankfurt am Main, Germany
- **Opening Keynote Lecture**, Seeing is Believing and Beyond, National Cancer Center Korea 2014  
Point-of-care pathology with miniaturized microscopes
- Medical Scholars Training Program Distinguished Lecturer 2014  
UC Irvine, Irvine, CA
- Medical Physics Departmental Seminar 2014  
University of Toronto, Toronto, Canada.
- **Invited Speaker**, American Association of Physicists in Medicine 2014  
Changing the Diagnostic Paradigm: Point-of-Care Pathology
- **Invited Speaker**, Society of Nuclear Medicine and Molecular Imaging 2014  
Changing the Diagnostic Paradigm: Point-of-Care Pathology
- Molecular Medicine Departmental Seminar 2014  
Ewha University Seoul Korea
- Invited Speaker, Grand Opening Ceremony for Cha Bio, Seoul, Korea 2014

- Changing the Diagnostic Paradigm: Point-of-Care Pathology

• Department of Molecular Medicine, Mayo Clinic, Rochester, MN 2013

Image-guidance in the development of a dual-biotherapy
- Cambridge Healthtech Institute Second Annual Future Diagnostics conference at University of California, Irvine 2012

Point-of-care pathology with miniaturized microscopes
- Imaging in 2020 2012

Molecular determinants of immune cell migration
- Pediatric Grand Rounds, Stanford University 2012

Use of imaging to refine and accelerate preclinical models of human biology and disease
- ISMRM workshop on Immune Cell Trafficking, Miami Beach 2012

Imaging immune cell fates and function
- Department of Bioengineering Case Western Reserve University 2012

Advancing immune cell therapies through imaging
- Pittcon 2012 2012

Miniaturized confocal microscopes for point-of-care pathology
- AACR, **Major Symposium:** Immune cell function and cancer in vivo: 2012

Visualizing friends and foes. Optimizing Immune Cell Therapies with Optical Imaging
- Department of Bioengineering, University of Southern California 2012

Early detection of GI cancers with miniaturized microscopes
- École Polytechnique Fédérale de Lausanne 2012

Dual biotherapy for the treatment of cancer
- University of Massachusetts, Worcester 2012

Use of imaging to refine and accelerate animal models of human biology and disease
- **Keynote address,** Japanese Society of Molecular Imaging 2012

Use of imaging to refine and accelerate animal models of human biology and disease
- Korean Association of Immunologists, Seoul National University 2011

Image-guidance to advance immunotherapies for cancer
- **Plenary Lecture,** Global Research and Development Centers, Seoul, Korea 2011

Green Science and Technology for Health and Environment

Imaging with molecular specificity and cellular resolution for early cancer detection
- Texas A&M Biomedical Engineering Seminar Series 2011

Point-of-care pathology with miniaturized microscopes
- **Plenary Lecture.** International Symposium in Radiology, Seoul, Korea 2011

Optical imaging for early detection of cancer
- 8th Annual World Congress of IBMISPS on Brain, Spinal Cord Mapping & Image Guided Therapy. San Francisco, CA, Guided resection of medulloblastoma using a miniature confocal microscope 2011
- **Keynote Address.** Canada/UK/US Workshop on Imaging, London, UK 2011

Enabling the future of imaging science
- **Invited lecture.** European Congress on Clinical Microbiology and Infectious Diseases and International Congress of Chemotherapy (ECCMID/27<sup>th</sup> ICC), Milan Italy 2011

Advances in imaging of infection
- SU2P Photonics meeting, St. Andrews, Scotland 2011

Point-of-care microscopy: Molecular imaging with cellular resolution
- Advances in Optics for Biotechnology, Medicine and Surgery XII, Naples, Florida 2011

Miniature microscopes for point-of-care pathology, early detection of cancer and guided resection of malignancy
- Biotechnology Training Program Symposium, Charlottesville, VA 2011

Point-of-care microscopy for early detection and guided resection of malignancy
- AACR Annual Meeting, Orlando FL 2011

Point-of-care Microscopy for Early Detection and Guided Resection of Malignancy
- NSF meeting on the Physics of Cancer Metastasis, Arlington, VA 2010

- Targeting the cancer stem cell for therapy
- Departmental Seminar, BioEngineering, UC Berkeley 2010  
Point-of-care microscopy: Molecular imaging with cellular resolution
- Orthopaedic Research Society, New Orleans, LA 2010  
"Imaging stem cell fate and function"
- **Keynote Address.** European Society for Molecular Imaging, Warsaw, Poland 2010  
Point-of-care microscopy: Molecular imaging with cellular resolution
- Molecular Diagnostics for Cancer Drug Development, Boston, MA 2010  
Point-of-care microscopy: can we change the current paradigm in cancer diagnosis?
- CCSIP, UC – Canada Bioimaging Workshop on Biophotonics, Vancouver, Canada 2010  
Point-of-care microscopy: Molecular imaging with cellular resolution
- Gordon Conference on Drug Delivery, Waterville Valley, NH 2010  
Advancing drug delivery through imaging
- International Congress on Biophotonics, Quebec City, Quebec 2010  
Advancing Drug Discovery and Delivery Through In vivo Imaging
- American Transplantation Society, Orlando, FL 2010  
Imaging stem cell engraftment and hematopoietic reconstitution
- AACR" Colorectal Cancer: Biology to Therapy - Philadelphia PA 2010  
Miniaturized microscopes for early detection of GI cancers
- **Plenary Address.** Global Research and Development Centers, Seoul S. Korea 2010  
"Accelerating the discovery, development and delivery of new therapies through imaging"
- **Plenary Address.** 20<sup>th</sup> Anniversary of the Korean Society of Medical Physics 2010  
"Point-of-care Pathology: Can we change the current paradigm of cancer diagnosis"
- **Keynote Address.** Innovations in Optical Imaging of Cancer. UT Southwestern 2009  
"A dual biotherapy for elimination of the last cancer cell"
- **Keynote Speaker:** Regenerative Medicine, Advancing next generation therapies 2009  
"Imaging as a window into stem cell biology"
- **Special Seminar.** 2<sup>nd</sup> International Conference on Medical Physics, Seoul, Korea 2009  
Miniaturized microscopes for early detection of cancer.
- 3<sup>rd</sup> International Symposium on Animal Molecular Imaging, Taipei, Taiwan 2009  
Refining immune cell therapies through imaging
- **Keynote Speaker:** Chicago Biomedical Consortium Sixth Annual Symposium. 2008  
"Imaging as a window into mammalian biology"
- Lyme and other tick-borne Disease: solutions through cutting edge science, 2008  
College of Physicians and Surgeons of Columbia University.  
"Imaging of infection and the host response"
- **Keynote Speaker:** Bio-inspired Design Conference, Mississippi State University 2008  
"Imaging as a window into mammalian biology"
- **Keynote Address:** International Society of Bioluminescence and Chemiluminescence 2008  
Shanghi, China
- **Distinguished Lecture:** University of California at Davis 2008
- **Keynote Address:** Biophotonics Symposium, CREOL, University of South Florida 2008
- Third AACR International Conference on Molecular Diagnostics in Cancer Therapeutic 2008  
Development: Fulfilling the Promise of Personalized Medicine.
- **Keynote address.** UCSF Cancer Center Annual Retreat 2008  
"Use of imaging to refine a dual biotherapy for cancer"
- Imaging in 2020 – Imaging Theragnostics, Jackson Hole WY 2007  
Session Chair: Chemistries of Photoactive Proteins
- Nobel Conference, Stockholm Sweden; Watching Life through Molecular Imaging 2007  
"Imaging Cell Fates and Function"
- **Keynote Address,** Gordon Research Conference "Cancer Models and Mechanisms", 2007  
Les Diablerets, Switzerland
- University of Pennsylvania, Cancer Center Seminar 2007  
Refining small models of cancer through Imaging
- Translation al Optical Molecular Imaging – Nano to Macro, Houston TX 2007  
Bioluminescent markers for studying cell biology in living animals

- University of Pennsylvania, Cancer Center Seminar 2006  
Optimizing cell-based therapies through Imaging
- Joslin Diabetes Center, Harvard University, Departmental Seminar 2006  
Imaging stem cell fates and function
- Siteman Cancer Center of Washington University, programmatic Seminar 2006  
The role of stem cell fusion in hematopoiesis
- Society for Molecular Imaging 2006  
**Opening Plenary Lecture:** Visualizing stem cell fusion  
**Session Chair and State-of-the-art presentation:** Visible animal models of neoplasia
- Autumn Immunology Conference (AIC), Imaging Cell Migration 2006  
Enhancing immune cell therapies through imaging
- Sidney Kimmel Cancer Center Symposium 2006  
Optimizing cell-based therapies through Imaging
- Association of American Cancer Institutes (AACI) and Cancer Center Administrators Forum (CAF) Association of American Cancer Institutes (AACI) 2006  
Optimizing cell-based therapies through Imaging: can we eliminate the last cancer cell?
- UCSF, Departmental Seminar Immunology 2006  
Optimizing cell-based therapies through Imaging
- Memorial Sloan Kettering Cancer Center, Departmental Seminar 2006  
Optimizing cell-based Therapies through Imaging
- International Society of Bioluminescence and Chemiluminescence 2006  
In vivo bioluminescence imaging to optimize cell-based therapies
- NTROI, Workshop on Translational Optical Imaging 2005
- University of Oklahoma, Departmental Seminar, Microbiology 2005  
Imaging biological processes in vivo
- UCSF, Departmental Seminar Radiology 2005  
Imaging Stem Cell Fates and Function
- Symposium: Optical Probes For Molecular and Cellular Imaging 2005  
Accelerating and Refining Animal Models through Bioluminescence Imaging
- AACR-NCI-EORTC International Conference Molecular Targets and Cancer Therapeutics: Discovery, Biology, and Clinical Applications 2005  
**Plenary Lecture:** Optimizing Immune Cell Therapies through Imaging
- BioOptical Symposium, Groningen, Netherlands 2005  
From Stem Cells to Cancer, In vivo Imaging using Bioluminescence
- 3rd Workshop on Innovative Mouse Models in Leiden, Netherlands 2005  
**Plenary Lecture:** Molecular imaging with bioluminescence: accelerating and refining preclinical studies
- CLEO **Keynote address:** In vivo Cell Biology Using Optics 2005
- FOCIS (Federation of Immunology Societies) 2005  
**Plenary address:** Visualizing stem cell fates and function
- Keystone Symposium: Leukocyte Trafficking: Cellular and Molecular Mechanisms 2005  
**Session Chair:** In situ Visualization of Lymphocyte Migration and Activation  
Presentation: Whole Body Imaging of Lymphocyte Trafficking
- FOCIS (Federation of Immunology Societies), Montreal Canada 2004  
**Major Symposium:** Stem cell tracking and Monitoring
- Society for Molecular Imaging, **Plenary session** on Cell Trafficking and Immunology 2004  
Tracking stem cells in hematopoiesis
- NIAID Biodefense Workshop 2004  
Bioluminescence Imaging for Accelerating Research in Infectious Diseases
- Hwasun Optical Imaging Workshop, Chonnam National University Medical School, Korea 2004  
From Stem Cells to Cancer, In vivo Imaging using Bioluminescence
- *In vivo* Imaging Symposium, Tokyo, Japan 2004  
From Stem Cells to Cancer, In vivo Imaging using Bioluminescence
- Tsukuba University Departmental Seminar 2004  
From Stem Cells to Cancer, In vivo Imaging using Bioluminescence
- University of Texas Southwestern – Departmental Seminar, Dept. of Cell Biology 2004

- Stem cells to cancer: Imaging using bioluminescence
- Pediatric Academic Societies Annual Meeting, **State-of-the-Art presentation** 2004  
Watching hematopoietic stem cell engraftment and hematopoiesis in living animals
  - University of Pennsylvania – Chance Laboratory 2004  
Advances in in vivo bioluminescence imaging
  - Gordon Conference: Lasers in Biology and Medicine 2004  
Session Chair Molecular targets: from functional imaging to therapy
  - International Society of Differentiation, Waikiki, Hawaii 2004  
Shifting foci of hematopoiesis
  - AACR Annual meeting 2004  
Immune cell and stem cell trafficking in vivo
  - Keystone Symposium: Mouse models of human cancer 2004  
Luciferase-Based Imaging of Mouse Tumor Development
  - FASEB Annual meeting; American Association of Anatomists, Whole Body Assessment 2004  
of Cell and Molecular Therapies using *In Vivo* Bioluminescent Imaging
  - Levine Symposium on Diabetes 2003  
*In vivo* Immune cell trafficking
  - Annual meeting of the American Association of Veterinary Pathologists 2003
  - The 24th Congress of the International Association for Breast Cancer Research 2003  
Imaging of cells fates and function using in vivo bioluminescent imaging
  - AACR Annual Meeting 2003  
Bioluminescence Imaging for Cancer Research
  - 15<sup>th</sup> Annual Mahajani Symposium in Molecular Medicine. Salk Institute 2003  
Stem cell fates and function
  - European Molecular Imaging Symposium. Roscoff, France; "New in vivo imaging modalities 2003  
for Molecular Biology, Cell Biology and Physiology conference"  
**Keynote address:** The promise of molecular imaging
  - Stem Cell Symposium, Stem Cell Research Foundation 2003  
Assessing Cell Fates and Function In Vivo
  - 14<sup>th</sup> Pezcoller Symposium: Molecular in vivo visualization of cancer cells 2003  
Rovereto, Italy.
  - Engineering Conferences International, Advances in optics for biotechnology, medicine 2003  
and surgery Revealing the molecular basis of disease and response to therapy using  
*in vivo* bioluminescent imaging
  - Duke University 2003  
Revealing the molecular basis of disease and response to therapy using  
*in vivo* bioluminescent imaging
  - AAI: American Association of Immunology 2003  
**Opening plenary:** *In Vivo* Bioluminescent Imaging of Immune Cell Trafficking Patterns.
  - Case Western Reserve 2003  
Revealing the molecular basis of disease and response to therapy using  
*in vivo* bioluminescent imaging
  - Keystone symposia on optical imaging 2003  
*In vivo* molecular and cellular analyses using internal light emitting probes
  - FOCIS: Federation of Clinical Immunology Societies 2002  
In Vivo Bioluminescent Imaging of Immune Cell Trafficking Patterns.
  - Spanish National Cancer Center, CNIO Conference on Mechanisms of Invasion and Metastasis 2002  
Revealing the molecular basis of malignancy and host response using in vivo  
Bioluminescent measurements
  - Jacques Monod Conference on Integrative approaches in pathogenesis 2002  
Pasteur Institute, Paris, France  
-**Symposium organizer, session chair** and speaker  
-Imaging of infection and host response *in vivo*
  - Annual meeting of the Society for Molecular Imaging 2002  
- **Member of the steering committee and program committee**  
- **Plenary session chair**

- Speaker in optical imaging session  
Revealing the molecular basis of disease and response to therapy using  
*in vivo* bioluminescent imaging
- Boston Children's Hospital, Leading Edge Seminar Series 2002  
Revealing the molecular basis of disease and response to therapy using  
*in vivo* bioluminescent imaging
- Gordon Conference: Immunobiology and Immunochemistry 2002  
**Speaker and Session Chair**, Imaging immune cell function *in vivo*
- UCLA Molecular Imaging Seminar Series 2002  
Revealing the molecular basis of disease and host response using *in vivo*  
bioluminescent measurements
- Molecular Imaging in Cancer: Linking Biology Function and Clinical Applications *In Vivo* 2002  
*In vivo* imaging of tumor cells and cells of the immune system
- NIH BECON Meeting on Biosensors 2002
- Pasteur Institute, Paris, France 2001  
Imaging of infection *in vivo*
- General Motors Cancer Research Foundation Awards Symposium 2001  
Following tumor growth and the immune response *in vivo*
- Imaging in 2020, Jackson Hole, WY 2001  
Immune cell trafficking *in vivo*
- DARPA Conference on Biophotonics, Arlington, VA 2001
- NCI Workshop on Molecular Imaging and Cancer Drug Development and Probe Discovery 2001
- International Congress on Neonatal Jaundice, Hong Kong 2001  
In Vivo transcription patterns of heme oxygenase-1
- Imaging Life: from Cells to Whole Animals, Microscopy Society of America, Long Beach, CA 2001  
Whole body imaging of gene expression and cell migration
- American Society of Gene Therapy Annual Meeting, May 30-June 3, 2001
- Imaging 2020, Jackson Hole, WY Sept 30-Oct. 6, 2001
- Society of Pediatric Research National Meeting, Boston, MA 2000  
**Plenary Address:** Monitoring gene expression during development
- International Society for Analytical Cytology, Montpieller, France 2000  
**Chair:** Mini-symposium: Molecular and cellular analyses in living animals
- SPIE Annual Meeting, BIOS'99, San Jose, CA (**Conference Co-chair**) 1999  
Conference Title: Molecular imaging: reporters, dyes and instrumentation  
Bioluminescent reporters for molecular and cellular analyses in living mammals
- Wellman Laboratories of Photomedicine, Massachusetts General Hospital 1998  
Photoproteins as labels for *in vivo* functional imaging
- National Heart and Lung Institute; Imperial College, London 1998  
Photoproteins as labels for *in vivo* functional imaging
- Symposium on Biomedical Photonics, German Cancer Research Center, Heidelberg 1998  
Bioluminescent reporters for molecular and cellular analyses in living mammals
- Commonwealth Club of California 1998  
Discovery in the living organism
- Optical Society of America Meeting, **Symposium Chair** 1997  
Genetic engineering optical reporters into living organisms

#### Membership in Academic Societies

American Association for the Advancement of Science (AAAS)	1986-
American Society of Microbiology (ASM)	1989-1999, 2008-
American Society for Virology (ASV)	1989-1999
International Society for Analytical Cytology (ISAC)	2000-2002
Scientific Advisor for International Congress	
International Society of Bioluminescence and Chemiluminescence (ISBC)	1998-2000
Society for Molecular Imaging (SMI), Charter member	1999-
President elect	2000-2001
President	2002-2003

Member of advisory council	2003-2009
World Molecular Imaging Society (WMIS, integration of AMI and SMI)	2011
Fellow	2012
President elect	2014-2015
President	2015-2016

## Trainees

### Current

Nathan Loewke  
Victoria Toomajian

### Current Position

Graduate Student, Electrical Engineering Stanford  
Graduate Student, Biomedical Engineering, MSU

### Past

Jennifer Prescher, Ph.D.  
Ade Olomu, M.D.  
I. Nickolas Olomu, M.D.  
Jonathan Liu, Ph.D.

Prof., University of California at Irvine  
Pof., Michigan State University  
Prof., Michigan State University  
Assoc. Prof., Univ. Washington  
University of Washington, Seattle, WA

Mark Mackanos, Ph.D.  
Steve Thorne, Ph.D.  
Maneesh Batra, M.D., M.P.H.

Asst. Prof., Vanderbilt University  
Assoc. Prof., University of Pittsburgh  
Assoc Prof., Pediatrics, Division of Neonatology  
University of Washington, Seattle, WA

Thomas Wang, MD, PhD  
Brian Eames, Ph.D.  
Wibool Piyawattanametha, Ph.D.

Assoc. Prof., University of Michigan  
Assoc. Prof., Univ. Saskatchewan  
Assoc. Prof. National Univ. Hosp. and Scientist, Federal Laboratory of Thailand

Zhen Qui  
Mark Sellmyer, M.D., Ph.D.  
Masamitsu Kanada, Ph.D.  
Caitlin O'Connell-Rodwell, Ph.D

Asst. Prof. Michigan State University  
Asst. Prof., Univ. Pennsylvania  
Asst. Prof, Michigan State University  
Instructor, Dept. of Otolaryngology, Stanford Univ. School  
Scientific consultant, author, co-founder and CEO of Utopia Scientific  
Instructor, Stanford University

Stephan Rogalla, M.D.  
Ryan Spitler, Ph.D.  
HyeJun Ra, Ph.D.  
Steve Sensarn, Ph.D.  
Ellis Garai  
Maruti Didwania  
Sophie Kusy, Ph.D.  
Tobi Lyn Schmidt, Ph.D.  
Josephine Chen  
Markus Deutschmann  
Yu-An Cao, M.D., Ph.D.  
Emilio Gonzalez, Ph.D.  
Tim Doyle, Ph.D.  
Mike Helms, Ph.D.  
Rajesh Shinde, Ph.D.  
Weisheng Zhang, Ph.D.  
Steffi Mandl, Ph.D.  
Pei-Lin Hsiung, Ph.D.  
Henry Haeberle, Ph.D.  
Irfan Ali-Khan, Ph.D.  
Stacy Burns, Ph.D.  
Laura Bronsart, DVM, Ph.D.  
Ji-Yeon Park, Ph.D.  
Patrick Eimerman  
David Bundy, M.D.  
Derek Moore, M.D.

Deputy Director, Precision Health and Integrative Diagnostics, Stanford  
Project leader, Apple Computers  
Project leader, Leo Inc., Palo Alto, CA  
Project leader, Leo Inc., Palo Alto, CA  
Graduate Student, Bioengineering  
Assistant Editor, Peer J  
Scientist, MSI  
Undergraduate research assistant  
Medical Student, Munich, Germany  
Scientist, TransDerm Inc., Santa Cruz, CA  
Scientist, Madrid, Spain  
Sr. Scientist, Dept. Pediatrics at Stanford University  
Research Scientist, Cenix BioScience  
Senior Scientist, Blend Therapeutics, Watertown, MA  
Senior Scientist, Merck Pharmaceuticals.  
Scientist, Exelixis – Komen Fellowship  
Scientist, Pacific Biosciences  
Director Microscopy Center, Univ. New South Wales  
CEO, Wavrine Inc.  
Director of Microbiology, Cobalt Biofuels Inc.  
DVM, US Army  
Radiation Physicist  
Director, GenomOncology, Madison, WI  
Pediatrician Chapel Hill North Carolina  
Orthopaedic Surgeon, Santa Barbara, CA

Wenchuen Liang, Ph.D.	Research Associate—Stanford University
Blythe Bartos, M.D.	Internist, Kaiser Permanente, Oakland, CA
Kathy Fernando	Graduate Student, Cornell University
Anthony Basile	Attorney at Casas Riley Simonian, LLP, Campbell, CA
Pamela Dietz	Medical Student, Univ. North Carolina
Patricia Lee (née Kwon), M.D.	Pediatrician, Palo Alto Medical Foundation, Palo Alto, CA
Wah-Ping Luk, M.D., Ph.D.	Resident, Santa Clara Medical Center, CA
Jon A. Mathy, M.D., F.A.C.S.	Plastic Surgeon, Auckland, New Zealand
Christopher Gruber, M.D.	Family medicine practitioner, Simi Valley, CA
Karine Gibbs, Ph.D.	Postdoctoral Fellow, Microbiol. & Immunol. Stanford Univ.
Monica Hadjna-Dawson, MD	Staff Physician—Stanford University
Ryan McFarland	Graduate Student, Microbiol. & Immunol. Stanford University
Mary Brindle, M.D.	Surgery Resident, University British Columbia
Hamid Kazerouni, MD	Surgery Resident, Mayo Clinic
Masami Mizubuchi, MD	Staff Physician, Kobe University
Garrett Hefner	Postdoctoral Fellow, Columbia University
Glenn DeSandre, M.D.	Staff Physician, Pacific Medical Center
Jennifer Duda, M.D.	Pediatrician, Palo Alto, CA
Hui Zhao, Ph.D.	Research Associate, Stanford University, Dept. of Pediatrics
Esther Lee, MS	Research Fellow, Stanford University, Dept. of Medicine.
Mainak Sakar	Graduate Student, Aerospace engineering
Amy Wu	Medical Student, Stanford University
Jayalakshmi Ravindran, M.D.	Pediatrician in private practice, Seattle, WA
Jack Perrng	Graduate Student, Physics, Stanford University
Afraaz Irani, M.D.	Orthopedic surgeon, Columbia, SC
Maria Fernando, Ph.D.	Scientist, Transderm Inc.
Rinki Kapoor, Ph.D.	Scientist
Jocelyn Ko	Medical Student
Christian Stokes	Undergraduate research assistant
Barney Cruz	Graduate Student, Chemistry
Adithya Balasubramanian	Medical Student, Baylor College of Medicine
Qian Wang, Ph.D.	Research Associate, Stanford University
Simone Haag	Ph.D. Graduate Student, Germany

#### Patents:

1. US Pat. 6638752; Filing date: Oct 30, 1998; Issue date: Oct 28, 2003; **Biodetectors targeted to specific ligands**. Inventors: C.H. Contag, P.R. Contag and D.A. Benaron. (1996)
2. US Pat. 6939533. Filing date: Jun 2, 2005; Issue date: Aug 14, 2007; **Non-invasive localization of a light-emitting conjugate in a mammal. Detecting and tracking pathogens in a mammal**. Inventors: C.H. Contag, P.R. Contag and D.A. Benaron.
3. US Pat. Pending. Filing date Aug. 2005. **Luciferyl peptides**. Inventors CH Contag, RR Shinde, MD Bednarski, S Guccione.
4. US Pat. 6923951. Filing date: Dec, 16, 2002; Issue date: Aug 2, 2005; **Non-invasive localization of a light-emitting conjugate in a mammal. Detecting and tracking pathogens in a mammal**. Inventors: C.H. Contag, P.R. Contag and D.A. Benaron.
5. US Pat. 6890515. Filing date: Dec, 16, 2002; Issue date: May 10, 2005; **Non-invasive localization of a light-emitting conjugate in a mammal. Detecting and tracking pathogens in a mammal**. Inventors: C.H. Contag, P.R. Contag and D.A. Benaron.
6. US Pat. 6916462. Filing date: Dec, 16, 2002; Issue date: July 12, 2005; **Non-invasive localization of a light-emitting conjugate in a mammal. Detecting and tracking pathogens in a mammal**. Inventors: C.H. Contag, P.R. Contag and D.A. Benaron.
7. US Pat. 6908605. Filing date: Dec, 16, 2002; Issue date: June 21, 2005; **Non-invasive localization of a light-emitting conjugate in a mammal. Detecting and tracking pathogens in a mammal**. Inventors: C.H. Contag, P.R. Contag and D.A. Benaron.



8. US Pat. 6649143. Filing date: Jan 19, 1999; Issue date: Nov 18, 2003; **Non-invasive localization of a light-emitting conjugate in a mammal. Detecting and tracking pathogens in a mammal.** Inventors: C.H. Contag, P.R. Contag and D.A. Benaron.
9. US Pat. 6217847. Filing date: Jan 19, 1999; Issue date: April 17, 2001; **Non-invasive localization of a light-emitting conjugate in a mammal. Detecting and tracking pathogens in a mammal.** Inventors: C.H. Contag, P.R. Contag and D.A. Benaron.
10. US Pat. 5650135. Filing date: July 1, 1994; Issue date: July 22, 1997; **Non-invasive localization of a light-emitting conjugate in a mammal. Detecting and tracking pathogens in a mammal.** Inventors: C.H. Contag, P.R. Contag and D.A. Benaron.
11. US Pat. 12469578 - Filed May 20, 2009; Issue Date: Dec., 2009. **Encapsulated nanoparticles for drug delivery.** Inventors: C.H. Contag; R.R. Shinde.
12. US Pat. Appl. No. 20110160146. Filing date: February 5, 2009. **Conjugation of small molecule to octaarginine transporters for overcoming multi-drug resistance.** P Wender, EA Dubikovskaya, SH Thorne, CH Contag
13. U.S. Pat. No. 8,530,636 Filing date: May 7, 2009. **Issued:** September 10, 2013. **Methods of regulating protein function in cells in vivo using synthetic small molecules.** TJ Wandless, LA Banaszynski, MA Sellmyer, CH Contag, SH Thorne.
14. US Pat. 7687474; Filing date: Dec 20, 2006; Issue date: Mar 30, 2010. **Nitroreductase enzymes.** Inventors: A.C. Matin, Y. Borak, S.H. Thorne, C.H. Contag, J. Rao.
15. US Pat Appl. No. 20110275524. Filing May 4, 2011. **Methods and systems to detect an active protease in a sample.** CH Contag, RR Shinde, J Perkins.
16. US Pat Appl. No. 20120021923. Filed May 4, 2011. **Methods and systems to diagnose a condition in an individual.** CH Contag, RR Shinde, J Perkins.
17. US Pat. No. 9,101,658. Issued August 11, 2015. **Immune effector cells pre-infected with oncolytic viruses.** Inventors: C.H. Contag, S.H. Thorne
18. US Pat Appl. No. 20120330157. Filed February 23, 2012. **Confocal microscope, system and Method.** M. Mandella, GS Kino, CH Contag, O Colgaard, B Khuri-Yakub, O Oralkan, J-W Jeong, P Cristman, JTC Liu, J Ra, JE Hwang
19. US Pat. 0268318. Filing date: Mar. 13, 2014. **Arrayed Dual Axis Confocal Microscopes.** M.J. Mandella, O. Solgaard and C.H. Contag.
20. US Pat. Filing date: Sept. 2014. **Magnetogenetics.** C.B. Bell, B. Rutt and C.H. Contag.
21. US Pat. Appl. No. 20140316255; Filing date: August 23, 2012. **Raman Imaging Devices and Methods of Molecular Imaging,** Garai, E, Zavaleta, C, Mandella, M, Liu, J, Gambhir, SS, Contag, CH.

#### **Publications (Peer Reviewed):**

1. Contag, CH, Chan, SP, Wietgreffe, SW and Plagemann, PGW (1986) Correlation between presence of lactate dehydrogenase-elevating virus RNA and antigens in motor neurons and paralysis in infected C58 mice. **Virus Res.** 6(3):195-209.
2. Contag, CH, Retzel, EF and Plagemann, PGW (1986) Genomic differences between strains of lactate dehydrogenase-elevating virus. **Intervirology.** 26:228-233.
3. Harty, JT., Chan, SP, Contag, CH and Plagemann, PGW (1987) Protection of C58 mice from lactate dehydrogenase-elevating virus induced motor neuron disease by non-neutralizing antiviral antibodies without interference with virus replication. **J. Neuroimmun.** 15:195-206.
4. Contag, CH and Plagemann, PGW (1988) Susceptibility to lactate dehydrogenase-elevating virus induced poliomyelitis correlates with increased ecotropic retrovirus expression in motor neurons. **Microb. Path.** 5:287-296.
5. Contag, CH and Plagemann, PGW (1989) Age-dependent poliomyelitis of mice: Expression of endogenous retrovirus in motor neurons predisposes them to infection by lactate dehydrogenase-elevating virus. **J. Virol.** 63(10):4362-4369.
6. Contag, CH, Contag, PR, Mullins, JI, Spilman, SD, Stevenson, DK and Benaron, D (1995) Photonic detection of bacterial pathogens in living hosts. **Molec. Micro.** 18(4): 593-603.

7. Contag, CH, Ehrnst, A, Duda, J Lindgren, S, Bohlin, A.B, and Mullins, JI (1997) Mother-to-infant transmission of human immunodeficiency virus type 1 involving five *env* sequence subtypes. **J. Virol.** 71(2):1292-1300
8. Contag, CH, Spilman, SD, Contag, PR, Oshiro, M, Eames, BF, Dennery, P Stevenson, DK and Benaron, D (1997) Visualizing gene expression in living mammals using a bioluminescent reporter. **Photochem. Photobiol.** 66(4):523-531
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