



Christopher H. Contag

Professor of Pediatrics (Neonatology), Emeritus

Pediatrics - Neonatal and Developmental Medicine

 Curriculum Vitae available Online

Bio

BIO

Dr. Contag, is Professor emeritus in the Departments of Pediatrics, Radiology and Microbiology & Immunology at Stanford University, and a member of BioX Faculty for interdisciplinary sciences, and Immunology Faculty. Dr. Contag received his B.S. in Biology from the University of Minnesota, St. Paul in 1982. He received his Ph.D. in Microbiology from the University of Minnesota, Minneapolis in 1988 where he did his dissertation research under the direction of Professors Ashley Haase and Peter Plagemann on the topic of viral infections of the central nervous system. He was a postdoctoral fellow at Stanford University from 1990-1994 in the Department of Microbiology where he studied mother-to-infant transmission of HIV, and then joined the faculty in Pediatrics at Stanford in 1995 with a joint appointment in Microbiology and Immunology and a courtesy appointment in Radiology. Dr. Contag was the Associate Chief of Neonatal and Developmental Medicine, director of Stanford's Center for Innovation in In Vivo Imaging (SCI3) and co-director of the Molecular Imaging Program at Stanford (MIPS) until 2017. Dr. Contag is a pioneer in the field of molecular imaging and is developing imaging approaches aimed at revealing molecular processes in living subjects, including humans, and advancing therapeutic strategies through imaging. His laboratory develops macroscopic and microscopic optical imaging tools and uses imaging to assess tissue responses to stress, reveal immune cell migration patterns, understand stem cell biology and advance biological therapies. He is a founding member, and a past president of the Society for Molecular Imaging, and for his fundamental contributions in imaging, is a recipient of the Achievement Award from the Society for the Molecular Imaging. Dr. Contag is a Fellow of the World Molecular Imaging Society (WMIS) and past President of WMIS. The research mission of the Contag laboratory is to develop and use noninvasive imaging tools that can simultaneously reveal the nuances of biological processes and provide an overall picture of disease states for the purpose of developing and refining novel interventions. These imaging tools are sensitive and image over a range of scales from micro- to macroscopic, and are well-suited for the in vivo study of cellular and molecular biology. For the purpose of studying tumor biology in vivo, the Contag group developed advanced microscopic tools with the aims of detecting and studying cancer at high resolution in vivo. These approaches use micro-optics to develop miniaturized confocal microscopes and Raman endoscopes that can reach inside the body to interrogate disease states. This is enabling point-of-care microscopy that is changing the diagnostic paradigm from biopsy and histopathology to in vivo pathology. The opportunity to study tumor margins with arrays of microscopes will enable improved tumor detection and guided resections.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Pediatrics - Neonatal and Developmental Medicine
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)

ADMINISTRATIVE APPOINTMENTS

- Chair, Scientific Advisory Board--Xenogen Corp., (1997-2005)

- Director, Stanford Center for Photomedicine, (2008-2012)
- Co-director, Molecular Imaging Program at Stanford (MIPS), (2003-2016)
- Director, Stanford Center for Innovation in In Vivo Imaging (SCI³), (2000-2016)
- Associate Chief, Division of Neonatal and Developmental Medicine, (2010-2016)

HONORS AND AWARDS

- Bacaner Research Award, Minnesota Medical Foundation (1988)
- Scholar, American Foundation for AIDS Research (AmFAR) (1991 -1994)
- Upjohn Infectious Disease Prize, American Federation for Clinical Research (AFCR) (1995)
- President elect, Society for Molecular Imaging (2001-2002)
- President, Society for Molecular Imaging (2002-2003)
- Achievement Award, Society for Molecular Imaging (2006)
- Fellow, World Molecular Imaging Society (2012)
- Stanford Inventors' Hall of Fame, Stanford University Technology and Licensing Office (2013)
- President Elect, World Molecular Imaging Society (2014-2015)
- President, World Molecular Imaging Society (2015-2016)
- Britton Chance Award for Outstanding Lifetime Contributions to Optics, SPIE (2016)
- Helen C. Levitt Visiting Professorship, Mayo Clinic (2016)
- John and Bette Klacsmann Visiting Professor, Mayo Clinic (2019)

PROFESSIONAL EDUCATION

- Ph.D., University of Minnesota , Microbiology (1988)
- BS, University of Minnesota , Biology (1982)

LINKS

- Molecular Imaging Program: http://med.stanford.edu/profiles/mips/researcher/Christopher_Contag/
- MIPS: http://mips.stanford.edu/faculty_staff/
- Molecular Biophotonics and Imaging Lab: <http://mips.stanford.edu/research/mbil.html>
- Neonatology: <http://neonatology.stanford.edu/>
- Cancer Institute--Cancer Imaging: <http://ancer.stanford.edu/research/imaging/>
- Microbiology and Immunology: <http://med.stanford.edu/profiles/microimmuno/frdActionServlet?choiceId=facProfile&fid=4036>
- Immunology: http://med.stanford.edu/profiles/immunol/faculty/Christopher_Contag/
- BioX--Clark Center: <http://biox.stanford.edu/clark/contag.html>
- CCBT: <http://neurosurgery.stanford.edu/pediatric/ccbt.html>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Mammalian biology occurs in complex environments of living tissues and complex organ structures where there is potential for rapid change, and therefore we use multimodality imaging approaches to study the dynamics of biological processes. These strategies have cellular resolution and molecular specificity, and can reveal dynamic changes as they occur in the living body. We have developed imaging approaches based on optical reporter genes and have used them to reveal immune cell trafficking patterns, regulation of gene expression, extent of tumor growth, stem cell biology, and nature of host responses to infection. Our initial experimental

approach was based on the observation that light can pass through mammalian tissues, much the same as when light from a flashlight is shined through one's hand in a dark room. The source of light in our approach is internal; that is, we use genes originating from fireflies and other "glow-in-the-dark" (bioluminescent) organisms to mark mammalian cells and pathogens. These labeled entities are then used in animal models of human biology and disease, and the light that they produce is externally monitored to reveal levels of expression, growth rate, or movement within tissue and organs. The strength of this method is that it can be used to simultaneously reveal the nuances of biological processes, and the overall biological response in living animals. Recently, we have revealed the kinetics of stem cell engraftment and hematopoietic reconstitution, elucidated the nature of minimal residual disease states following cancer therapy and identified tissue sites that pathogens use to evade the host immune response. Optical methods of molecular imaging are extremely powerful in preclinical models and have tremendous potential, but a wide range of tools is becoming available for studying biology in vivo. We therefore use many of these tools and approach biological questions with multimodality strategies. The focus of our efforts is the cells and molecules that control the body's response to insult and enable regeneration of damaged tissues and organs.

CLINICAL TRIALS

- Advanced Gastrointestinal Endoscopic Imaging, Recruiting
- SPY Intra-Operative Angiography & Skin Perfusion in Immediate Breast Reconstruction w/ Implants, Not Recruiting

Publications

PUBLICATIONS

- **Poly lactide Degradation Activates Immune Cells by Metabolic Reprogramming.** *Advanced science (Weinheim, Baden-Wurttemberg, Germany)*
Maduka, C. V., Alhaj, M., Ural, E., Habeeb, O. M., Kuhnert, M. M., Smith, K., Makela, A. V., Pope, H., Chen, S., Hix, J. M., Mallett, C. L., Chung, S., Hakun, et al
2023; e2304632
- **Glycolytic reprogramming underlies immune cell activation by polyethylene wear particles.** *Biomaterials advances*
Maduka, C. V., Habeeb, O. M., Kuhnert, M. M., Hakun, M., Goodman, S. B., Contag, C. H.
2023; 152: 213495
- **Bioenergetic Profile Of Mesenchymal Stromal Cells And Macrophages In The Presence Of An Inflammatory Stimulus In A 3D Model**
Teissier, V., Gao, Q., Shen, H., Li, J., Li, X., Huang, E., Kushioka, J., Toya, M., Tsubosaka, M., Hirata, H., Alizadeh, H., Maduka, C., Zhang, et al
MARY ANN LIEBERT, INC.2023
- **A protease-activated, near-infrared fluorescent probe for early endoscopic detection of premalignant gastrointestinal lesions.** *Proceedings of the National Academy of Sciences of the United States of America*
Yim, J. J., Harmsen, S., Flisikowski, K., Flisikowska, T., Namkoong, H., Garland, M., van den Berg, N. S., Vilches-Moure, J. G., Schnieke, A., Saur, D., Glasl, S., Gorpas, D., Habtezion, et al
2021; 118 (1)
- **Mind Over Magnets - How Magnetic Particle Imaging is Changing the Way We Think About the Future of Neuroscience.** *Neuroscience*
V Makela, A., Gaudet, J. M., Murrell, D. H., Mansfield, J. R., Wintermark, M., Contag, C. H.
2020
- **Biodegradable fluorescent nanoparticles for endoscopic detection of colorectal carcinogenesis.** *Advanced functional materials*
Rogalla, S., Flisikowski, K., Gorpas, D., Mayer, A. T., Flisikowska, T., Mandella, M. J., Ma, X., Casey, K. M., Felt, S. A., Saur, D., Ntziachristos, V., Schnieke, A., Contag, et al
2019; 29 (51)
- **Microvesicle-mediated delivery of minicircle DNA results in effective gene-directed enzyme prodrug cancer therapy.** *Molecular cancer therapeutics*
Kanada, M., Kim, B. D., Hardy, J. W., Bachmann, M. H., Bernard, M. P., Perez, G. I., Zarea, A. A., Ge, T. J., Withrow, A., Ibrahim, S. A., Toomajian, V., Gambhir, S. S., Paulmurugan, et al
2019
- **Detection of Premalignant Gastrointestinal Lesions Using Surface-Enhanced Resonance Raman Scattering-Nanoparticle Endoscopy.** *ACS nano*
Harmsen, S., Rogalla, S., Huang, R., Spaliviero, M., Neuschmelting, V., Hayakawa, Y., Lee, Y., Tailor, Y., Toledo-Crow, R., Kang, J. W., Samii, J. M., Karabeber, H., Davis, et al
2019; 13 (2): 1354-64

- **Charge-altering releasable transporters (CARTs) for the delivery and release of mRNA in living animals** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
McKinlay, C. J., Vargas, J. R., Blake, T. R., Hardy, J. W., Kanada, M., Contag, C. H., Wender, P. A., Waymouth, R. M.
2017; 114 (4): E448-E456
- **Differential fates of biomolecules delivered to target cells via extracellular vesicles** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Kanada, M., Bachmann, M. H., Hardy, J. W., Frimannson, D. O., Bronsart, L., Wang, A., Sylvester, M. D., Schmidt, T. L., Kaspar, R. L., Butte, M. J., Matin, A. C., Contag, C. H.
2015; 112 (12): E1433-E1442
- **A real-time clinical endoscopic system for intraluminal, multiplexed imaging of surface-enhanced Raman scattering nanoparticles.** *PloS one*
Garai, E., Sensarn, S., Zavaleta, C. L., Loewke, N. O., Rogalla, S., Mandella, M. J., Felt, S. A., Friedland, S., Liu, J. T., Gambhir, S. S., Contag, C. H.
2015; 10 (4)
- **High-sensitivity, real-time, ratiometric imaging of surface-enhanced Raman scattering nanoparticles with a clinically translatable Raman endoscope device.** *Journal of biomedical optics*
Garai, E., Sensarn, S., Zavaleta, C. L., Van de Sompel, D., Loewke, N. O., Mandella, M. J., Gambhir, S. S., Contag, C. H.
2013; 18 (9): 096008-?
- **A Raman-based endoscopic strategy for multiplexed molecular imaging.** *Proceedings of the National Academy of Sciences of the United States of America*
Zavaleta, C. L., Garai, E., Liu, J. T., Sensarn, S., Mandella, M. J., Van de Sompel, D., Friedland, S., Van Dam, J., Contag, C. H., Gambhir, S. S.
2013; 110 (25): E2288-97
- **Visualizing cellular interactions with a generalized proximity reporter.** *Proceedings of the National Academy of Sciences of the United States of America*
Sellmyer, M. A., Bronsart, L., Imoto, H., Contag, C. H., Wandless, T. J., Prescher, J. A.
2013; 110 (21): 8567-8572
- **Heme Oxygenase-1 Deletion Affects Stress Erythropoiesis** *PLOS ONE*
Cao, Y., Kusy, S., Luong, R., Wong, R. J., Stevenson, D. K., Contag, C. H.
2011; 6 (5)
- **Synergistic antitumor effects of immune cell-viral biotherapy** *SCIENCE*
Thorne, S. H., Negrin, R. S., Contag, C. H.
2006; 311 (5768): 1780-1784
- **MYC inactivation uncovers pluripotent differentiation and tumour dormancy in hepatocellular cancer** *NATURE*
Shachaf, C. M., Kopelman, A. M., Arvanitis, C., Karlsson, A., Beer, S., Mandl, S., Bachmann, M. H., Borowsky, A. D., Ruebner, B., Cardiff, R. D., Yang, Q. W., BISHOP, J. M., Contag, et al
2004; 431 (7012): 1112-1117
- **Extracellular replication of *Listeria monocytogenes* in the murine gall bladder** *SCIENCE*
Hardy, J., Francis, K. P., deBoer, M., Chu, P., Gibbs, K., Contag, C. H.
2004; 303 (5659): 851-853
- **Shifting foci of hematopoiesis during reconstitution from single stem cells** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Cao, Y. A., Wagers, A. J., Beilhack, A., Dusich, J., Bachmann, M. H., Negrin, R. S., Weissman, I. L., Contag, C. H.
2004; 101 (1): 221-226
- **Visualizing gene expression in living mammals using a bioluminescent reporter** *PHOTOCHEMISTRY AND PHOTOBIOLOGY*
Contag, C. H., Spilman, S. D., Contag, P. R., Oshiro, M., Eames, B., Dennery, P., Stevenson, D. K., Benaron, D. A.
1997; 66 (4): 523-531
- **Photonic detection of bacterial pathogens in living hosts** *MOLECULAR MICROBIOLOGY*
Contag, C. H., Contag, P. R., Mullins, J. I., Spilman, S. D., Stevenson, D. K., Benaron, D. A.
1995; 18 (4): 593-603
- **Flavinated SDHA underlies the change in intrinsic optical properties of oral cancers.** *Communications biology*
Marumo, T., Maduka, C. V., Ural, E., Apu, E. H., Chung, S., Tanabe, K., van den Berg, N. S., Zhou, Q., Martin, B. A., Miura, T., Rosenthal, E. L., Shibahara, T., Contag, et al

2023; 6 (1): 1134

- **Glycolytic reprogramming in macrophages and MSCs during inflammation.** *Frontiers in immunology*
 Li, X., Shen, H., Zhang, M., Teissier, V., Huang, E. E., Gao, Q., Tsubosaka, M., Toya, M., Kushioka, J., Maduka, C. V., Contag, C. H., Chow, S. K., Zhang, et al
 2023; 14: 1199751
- **Gla-domain mediated targeting of externalized phosphatidylserine for intracellular delivery.** *FASEB journal : official publication of the Federation of American Societies for Experimental Biology*
 Hardy, J., Bauzon, M., Chan, C. K., Makela, A. V., Kanada, M., Schneider, D., Blankenberg, F., Contag, C. H., Hermiston, T.
 2023; 37 (8): e23113
- **Flavinated SDHA Underlies the Change in Intrinsic Optical Properties of Oral Cancers.** *bioRxiv : the preprint server for biology*
 Marumo, T., Maduka, C. V., Ural, E., Apu, E. H., Chung, S., van den Berg, N. S., Zhou, Q., Martin, B. A., Rosenthal, E. L., Shibahara, T., Contag, C. H.
 2023
- **Metabolic profile of mesenchymal stromal cells and macrophages in the presence of polyethylene particles in a 3D model.** *Stem cell research & therapy*
 Teissier, V., Gao, Q., Shen, H., Li, J., Li, X., Huang, E. E., Kushioka, J., Toya, M., Tsubosaka, M., Hirata, H., Alizadeh, H. V., Maduka, C. V., Contag, et al
 2023; 14 (1): 99
- **Stereochemistry Determines Immune Cellular Responses to Polylactide Implants.** *ACS biomaterials science & engineering*
 Maduka, C. V., Alhaj, M., Ural, E., Kuhnert, M. M., Habeeb, O. M., Schillmiller, A. L., Hankenson, K. D., Goodman, S. B., Narayan, R., Contag, C. H.
 2023
- **Efficacy of Cathelicidin-Mimetic Antimicrobial Peptoids against Staphylococcus aureus.** *Microbiology spectrum*
 Benjamin, A. B., Moule, M. G., Didwania, M. K., Hardy, J., Saenkham-Huntsinger, P., Sule, P., Nielsen, J. E., Lin, J. S., Contag, C. H., Barron, A. E., Cirillo, J. D.
 2022: e0053422
- **Molecular Imaging of Infective Endocarditis With 6''-[18F]Fluoromaltotriose Positron Emission Tomography-Computed Tomography.** *Circulation*
 Wardak, M., Gowrishankar, G., Zhao, X., Liu, Y., Chang, E., Namavari, M., Haywood, T., Gabr, M. T., Neofytou, E., Chour, T., Qin, X., Vilches-Moure, J. G., Hardy, et al
 2020; 141 (21): 1729–31
- **Software-Based Phase Control, Video-Rate Imaging, and Real-Time Mosaicing With a Lissajous-Scanned Confocal Microscope** *IEEE TRANSACTIONS ON MEDICAL IMAGING*
 Loewke, N. O., Qiu, Z., Mandella, M. J., Ertsey, R., Loewke, A., Gunaydin, L. A., Rosenthal, E. L., Contag, C. H., Solgaard, O.
 2020; 39 (4): 1127–37
- **Nano-immunoimaging.** *Nanoscale horizons*
 Wang, P. n., Kim, T. n., Harada, M. n., Contag, C. n., Huang, X. n., Smith, B. R.
 2020; 5 (4): 628–53
- **Biodegradable Fluorescent Nanoparticles for Endoscopic Detection of Colorectal Carcinogenesis** *ADVANCED FUNCTIONAL MATERIALS*
 Rogalla, S., Flisikowski, K., Gorpas, D., Mayer, A. T., Flisikowska, T., Mandella, M. J., Ma, X., Casey, K. M., Felt, S. A., Saur, D., Ntziachristos, V., Schnieke, A., Contag, et al
 2019; 29 (51)
- **Tunable structured illumination light sheet microscopy for background rejection and imaging depth in minimally processed tissues.** *Journal of biomedical optics*
 Landry, J. R., Itoh, R., Li, J. M., Hamann, S. S., Mandella, M., Contag, C. H., Solgaard, O.
 2019; 24 (4): 1–6
- **Tunable structured illumination light sheet microscopy for background rejection and imaging depth in minimally processed tissues** *JOURNAL OF BIOMEDICAL OPTICS*
 Landry, J. R., Itoh, R., Li, J. M., Hamann, S. S., Mandella, M., Contag, C. H., Solgaard, O.
 2019; 24 (4)
- **Functional DNA Delivery Enabled by Lipid-Modified Charge-Altering Releasable Transporters (CARTs)** *BIOMACROMOLECULES*
 Benner, N. L., Near, K. E., Bachmann, M. H., Contag, C. H., Waymouth, R. M., Wender, P. A.
 2018; 19 (7): 2812–24
- **A Dual-Modality Hybrid Imaging System Harnesses Radioluminescence and Sound to Reveal Molecular Pathology of Atherosclerotic Plaques** *SCIENTIFIC REPORTS*

- Zaman, R. T., Yousefi, S., Long, S. R., Saito, T., Mandella, M., Qiu, Z., Chen, R., Contag, C. H., Gambhir, S. S., Chin, F. T., Khuri-Yakub, B. T., McConnell, M. V., Shung, et al
 2018; 8: 8992
- **Automated Cell Segmentation for Quantitative Phase Microscopy** *IEEE TRANSACTIONS ON MEDICAL IMAGING*
 Loewke, N. O., Pai, S., Cordeiro, C., Black, D., King, B. L., Contag, C. H., Chen, B., Baer, T. M., Solgaard, O.
 2018; 37 (4): 929–40
 - **Regulatory Aspects of Optical Methods and Exogenous Targets for Cancer Detection (vol 77, pg 2197, 2017)** *CANCER RESEARCH*
 Tummers, W. S., Warram, J. M., Tipirneni, K. E., Fengler, J., Jacobs, P., Shankar, L., Henderson, L., Ballard, B., Pfefer, T., Pogue, B. W., Weichert, J. P., Bouvet, M., Sorger, et al
 2018; 78 (4): 1123
 - **Characterization of Magneto-Endosymbionts as MRI Cell Labeling and Tracking Agents** *MOLECULAR IMAGING AND BIOLOGY*
 Brewer, K. D., Spitler, R., Lee, K. R., Chan, A. C., Barrozo, J. C., Wakeel, A., Foote, C. S., Machtaler, S., Rioux, J., Willmann, J. K., Chakraborty, P., Rice, B. W., Contag, et al
 2018; 20 (1): 65–73
 - **Cell Labeling with Magneto-Endosymbionts and the Dissection of the Subcellular Location, Fate, and Host Cell Interactions** *MOLECULAR IMAGING AND BIOLOGY*
 Lee, K. R., Wakeel, A., Chakraborty, P., Foote, C. S., Kajiura, L., Barrozo, J. C., Chan, A. C., Bazarov, A. V., Spitler, R., Kutny, P. M., Denegre, J. M., Taft, R. A., Seemann, et al
 2018; 20 (1): 55–64
 - **Magnetic particle imaging of islet transplantation in the liver and under the kidney capsule in mouse models.** *Quantitative imaging in medicine and surgery*
 Wang, P. n., Goodwill, P. W., Pandit, P. n., Gaudet, J. n., Ross, A. n., Wang, J. n., Yu, E. n., Hensley, D. W., Doyle, T. C., Contag, C. H., Conolly, S. n., Moore, A. n.
 2018; 8 (2): 114–22
 - **Implantable, insertable and wearable micro-optical devices for early detection of cancer**
 Contag, C. H., Winzer, P., Tsang, H. K., Capmany, J., Yao, J., Fontaine, N., Dutta, N.
 IEEE.2018
 - **Preparation of Tc99m-Labeled Pseudomonas Bacteriophage without Adversely Impacting Infectivity or Biodistribution** *BIOCONJUGATE CHEMISTRY*
 Holman, D., Lungren, M. P., Hardy, J., Contag, C., Blankenberg, F.
 2017; 28 (11): 2698–2706
 - **The tyrosine kinase inhibitor imatinib mesylate suppresses uric acid crystal-induced acute gouty arthritis in mice** *PLOS ONE*
 Reber, L. L., Starkl, P., Balbino, B., Sibilano, R., Gaudenzio, N., Rogalla, S., Sensarn, S., Kang, D., Raghu, H., Sokolove, J., Robinson, W. H., Contag, C. H., Tsai, et al
 2017; 12 (10): e0185704
 - **F-Fluoromaltotriose: A Second Generation PET Tracer Targeting the Maltodextrin Transporter in Bacteria.** *Journal of nuclear medicine*
 Gowrishankar, G., Hardy, J., Wardak, M., Namavari, M., Reeves, R., Neofytou, E., Srinivasan, A., Wu, J., Contag, C., Gambhir, S.
 2017
 - **Regulatory Aspects of Optical Methods and Exogenous Targets for Cancer Detection** *CANCER RESEARCH*
 Tummers, W. S., Warram, J. M., Tipirneni, K. E., Fengler, J., Jacobs, P., Shankar, L., Henderson, L., Ballard, B., Pogue, B. W., Weichert, J. P., Bouvet, M., Sorger, J., Contag, et al
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 - **Neutrophil myeloperoxidase diminishes the toxic effects and mortality induced by lipopolysaccharide** *JOURNAL OF EXPERIMENTAL MEDICINE*
 Reber, L. L., Gillis, C. M., Starkl, P., Joensson, F., Sibilano, R., Marichal, T., Gaudenzio, N., Berard, M., Rogalla, S., Contag, C. H., Bruhns, P., Galli, S. J.
 2017; 214 (5): 1249-1258
 - **Imaging of Tumor-Associated Macrophages in a Transgenic Mouse Model of Orthotopic Ovarian Cancer.** *Molecular imaging and biology*
 He, H., Chiu, A. C., Kanada, M., Schaar, B. T., Krishnan, V., Contag, C. H., Dorigo, O.
 2017
 - **Local estrogen axis in the human bone microenvironment regulates estrogen receptor-positive breast cancer cells.** *Breast cancer research : BCR*

- Amanatullah, D. F., Tamaresis, J. S., Chu, P. n., Bachmann, M. H., Hoang, N. M., Collyar, D. n., Mayer, A. T., West, R. B., Maloney, W. J., Contag, C. H., King, B. L.
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- **Intracellular biomass flocculation as a key mechanism of rapid bacterial killing by cationic, amphipathic antimicrobial peptides and peptoids.** *Scientific reports*
Chongsiriwatana, N. P., Lin, J. S., Kapoor, R. n., Wetzler, M. n., Rea, J. A., Didwania, M. K., Contag, C. H., Barron, A. E.
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 - **A Clinical Wide-Field Fluorescence Endoscopic Device for Molecular Imaging Demonstrating Cathepsin Protease Activity in Colon Cancer.** *Molecular imaging and biology*
Sensarn, S., Zavaleta, C. L., Segal, E., Rogalla, S., Lee, W., Gambhir, S. S., Boggy, M., Contag, C. H.
2016; 18 (6): 820-829
 - **Reactive Oxygen Species Imaging in a Mouse Model of Inflammatory Bowel Disease** *MOLECULAR IMAGING AND BIOLOGY*
Bronsart, L., Linh Nguyen, L., Habtezion, A., Contag, C.
2016; 18 (4): 473-478
 - **World Molecular Imaging Congress 2016: Imaging Biology-Improving Therapy.** *Molecular imaging and biology : MIB : the official publication of the Academy of Molecular Imaging*
Kiessling, F., Contag, C. H.
2016; 18 (3): 313-4
 - **Multimodality Imaging of Cancer Superoxide Anion Using the Small Molecule Coelenterazine.** *Molecular imaging and biology*
Bronsart, L. L., Stokes, C., Contag, C. H.
2016; 18 (2): 166-171
 - **Non-Invasive Intravital Imaging of siRNA-Mediated Mutant Keratin Gene Repression in Skin.** *Molecular imaging and biology*
Hickerson, R. P., Speaker, T. J., Lara, M. F., González-González, E., Flores, M. A., Contag, C. H., Kaspar, R. L.
2016; 18 (1): 34-42
 - **Signaling by Extracellular Vesicles Advances Cancer Hallmarks.** *Trends in cancer*
Kanada, M., Bachmann, M. H., Contag, C. H.
2016; 2 (2): 84-94
 - **Chemiluminescence Imaging of Superoxide Anion Detects Beta-Cell Function and Mass** *PLOS ONE*
Bronsart, L. L., Stokes, C., Contag, C. H.
2016; 11 (1)
 - **Chemiluminescence Imaging of Superoxide Anion Detects Beta-Cell Function and Mass.** *PloS one*
Bronsart, L. L., Stokes, C., Contag, C. H.
2016; 11 (1): e0146601
 - **A role of the adaptive immune system in glucose homeostasis.** *BMJ open diabetes research & care*
Bronsart, L. L., Contag, C. H.
2016; 4 (1)
 - **Imaging Functional Nucleic Acid Delivery to Skin.** *Methods in molecular biology (Clifton, N.J.)*
Kaspar, R. L., Hickerson, R. P., González-González, E., Flores, M. A., Speaker, T. P., Rogers, F. A., Milstone, L. M., Contag, C. H.
2016; 1372: 1-24
 - **Breast Cancer Cell Colonization of the Human Bone Marrow Adipose Tissue Niche** *NEOPLASIA*
Templeton, Z. S., Lie, W., Wang, W., Rosenberg-Hasson, Y., Alluri, R. V., Tamaresis, J. S., Bachmann, M. H., Lee, K., Maloney, W. J., Contag, C. H., King, B. L.
2015; 17 (12): 849-861
 - **[Tc-99m]Annexin V-128 SPECT Monitoring of Splenic and Disseminated Listeriosis in Mice: a Model of Imaging Sepsis** *MOLECULAR IMAGING AND BIOLOGY*
Hardy, J. W., Levashova, Z., Schmidt, T. L., Contag, C. H., Blankenberg, F. G.
2015; 17 (3): 345-354
 - **Early Cancer Detection at the Epithelial Surface** *CANCER JOURNAL*

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