

Claudio Vinegoni, Ph.D.

Center for System Biology
MGH, Harvard University
vinegoni@gmail.com - cvinegoni@mgh.harvard.edu
[HTTP://WWW.QUANTACOMM.COM/](http://www.quantacomm.com/)

185 Cambridge Street
Boston, MA 02114
(857)891.4272

CITIZENSHIP Dual Citizenship. **USA, Italy.**

EDUCATION ◇ **University of Geneva**, Geneva, Switzerland.
Ph.D. in Physics, in the group of Prof. N. Gisin. 2002.
Thesis title: *Nonlinear Effects in Optical Fibers.*

◇ **University of Trento**, Trento, Italy.
M.Sc. in Physics, October 1996.
Thesis title: *Structure and Vibrational Properties of Electrochromic Materials*

◇ **Scholarships**

- Scholarship of the University of Trento (Winter – Spring 1996 & 1997)
- Scholarship of the University of Pittsburgh (Summer 1997)

PRESENT
APPOINTMENT ◇ Assistant Professor at Harvard Medical School at the *Center of System Biology* MGH-Harvard University (Dir. Prof. R. Weissleder).

◇ Director of the In-vivo Microscopy Core at the *Center of System Biology*

◇ Head Laboratory for Biooptics and Molecular Imaging at the *Center for Molecular Imaging Research* MGH-Harvard University

PREVIOUS
APPOINTMENTS ◇ **09/2005–08/2007** Postdoctoral research fellow at Harvard University in the Lab for Biooptics and Molecular Imaging (*prof. V. Ntziachristos*).

◇ **07/2003–08/2005** Post-Doc at the Beckman Institute at the University of Illinois Urbana-Champaign, in the Biophotonics Imaging Laboratory.

◇ **05/2002–06/2003** Research fellow at Chalmers University (Sweden)- Photonics Laboratory.

◇ **05/2001–09/2001** Guest researcher at EXFO (Quebec, CAN)

◇ **03/1999–01/2002** Research Assistant at the University of Geneva, CH

◇ **06/1998–03/1999** Research Assistant at the University of Pittsburgh, PA.

◇ **03/1997–06/1998** Technical Supervisor of the Ultrafast Spectroscopy Univ. of Trento (Italy).

◇ **10/1996–03/1997** Research Assistant in the Raman Spectroscopy Laboratory.

CURRENT
RESEARCH
ACTIVITY ◇ The current research activity involves the development of novel optical (micro/macro)scopic molecular imaging techniques that allow to generate *in-vivo* three-dimensional data in optically diffusive non-transparent living organisms with a size up to a few millimeters providing both *in-vivo* anatomical and functional imaging. Development of new fluorescence molecular tomography techniques in diffusive regime for mouse imaging. Other research activities involve in vivo near infrared fluorescence imaging of protease activity in rabbit models of atherosclerosis, and development of combined optical and opto-acoustic multispectral tomographic imaging for *in-vivo* imaging applications. Leader of the in-vivo microscopy core responsible for developing the center and develop new applications for novel microscopy imaging systems and design and

conduct cutting-edge experiments. Other research interests involved the exploitation of molecular specificity for optical coherence tomography (OCT) combined with multiphoton imaging, and the study of CARS and Raman spectroscopy applied in the biomedical field (cancer, DNA imaging).

- SCIENTIFIC CONTRIBUTIONS Author and coauthor of 113 scientific contributions. Among them, **1 Invited Review Chapter** for the Academic Press, **1 article** on the OPN issue “Optics in 2005”, **55 articles**, among published and submitted onto international scientific journals, **56 oral presentations** and poster sessions at international conferences, and **32 proceedings**.
- GRANTS
- ◇ Winner of a call for proposal major projects (400k €) in order to establish an optical neuroimaging laboratory at the Center for Mind/Brain Sciences.
 - ◇ Winner of SBIR NIST solicitation in collaboration with Distant Focus, for the development of a combined optical coherence/multiphoton microscope.
- AWARDS
- ◇ “Venice Summer School on PMD” Award for best paper presented at ECOC 2003.
 - ◇ Awarded with a travel grant to the Centennial Atlanta Meeting 1999 (APS).
 - ◇ Best paper presented at the E-MRS’98 Strasbourg.
- LANGUAGES
- Fluent in English (TOEFL score above 600). German written and spoken at a good level. French at a beginner colloquial level. Basic Arabic. Italian mother tongue.
- OTHERS
- ◇ Private consultant at Genex for the development 3D diffusion imaging system.
 - ◇ Private consultant at Distant Focus for the development of a commercial integrated microscope.
- SKILLS
- Biomedical imaging, Optical microscopy, Multiphoton microscopy, Optical spectroscopy (Raman, CARS, luminescence, time resolved), OCT, Fiber optics, Fiber optics metrology, Polarization mode dispersion, Solid state physics.
- RESEARCH INTERESTS
- Investigate and develop new optical imaging techniques for biomedical and clinical imaging.
- RECENT PUBLICATIONS
33. **Multispectral photoacoustic imaging of fluorochromes in small animals.**
D. Razansky, **C. Vinegoni**, V. Ntziachristos
Accepted: “Opt. Lett.” Vol. 32, (2007) pp. 2891–3
 34. **In-vivo imaging of developing Drosophila tissues using Mesoscopic Fluorescence Tomography**
C. Vinegoni, C. Pitsouli, D. Razansky, N. Perrimon, V. Ntziachristos
Accepted: “Nature Methods” Vol. 5, (2008) pp.45-8
 35. **Real-time Catheter Molecular Sensing of Inflammation in Proteolytically Active Atherosclerosis**
F.A. Jaffer, **C. Vinegoni**, M.C. John, A.V. Finn, V. Ntziachristos, P. Libby, R. Weissleder
Accepted: “Circulation” Vol. 118, (2008) pp.1802-09.
 36. **Real-time assessment of inflammation and treatment response in allergic airway inflammation**
V. Retamozo, FK Swirski, P Waterman, H Yuan, JL Figueiredo, AP Newton, R Upadhyay, **C Vinegoni**, R Kohler, J Blois, A Smith, M Nahrendorf, L Josephson, R Weissleder, MJ Pittet
Accepted: “J. of Clinical Investigation” Vol. 118 (2008) pp. 4058-66.

37. **Polarization Sensitive Optoacoustic Tomography of Optically Diffuse Tissues.**
D. Razansky, **C. Vinegoni**, V. Ntziachristos
Accepted: "Optics letters" Vol. 33 (2008) pp. 2308.
38. **Normalized Born ratio for fluorescence optical projection tomography.**
C. Vinegoni, D. Razansky, J. Figueiredo, M. Nahrendorf, V. Ntziachristos, R. Weissleder
Accepted: "Optics letters" Vol. 34 (2009) pp. 319.
39. **Imaging of Mesoscopic Scale Organisms using Selective-Plane Optoacoustic Tomography.**
D. Razansky, **C. Vinegoni**, and V Ntziachristos
Accepted: "Phys. Med. Biol." Vol. 54 (2009) pp. 2769
40. **Transillumination fluorescence imaging in mice using biocompatible upconverting nanoparticles.**
C. Vinegoni, D. Razansky, V. Ntziachristos, and R. Weissleder.
Submitted: Opt. Letters Vol. 34 (2009) pp. 2566
41. **Multispectral opto-acoustic tomography of deep-seated fluorescent proteins in vivo.**
D. Razansky, **C. Vinegoni**, et al.
Accepted: "Nature Photonics" Vol. 3 (2009) pp. 412.
42. **Unprecedented in vivo views at the mesoscopic scale.**
D. Razansky, **C. Vinegoni**, and V. Ntziachristos
Accepted: "BioOptics World" May/June 2009.
43. **High throughput transmission optical projection tomography using low cost graphics processing unit.**
C. Vinegoni, L. Fexon, P. Fumene Feruglio, M. Pivovarov, J.L. Figueiredo, M. Nahrendorf, A. Pozzo, A. Sbarbati, and R. Weissleder.
Accepted: "Opt. Express" Vol. 17 (2009) pp. 22320.
44. **Diffractionless beam in free space with adiabatic changing refractive index in a single mode tapered slab waveguide.**
CC. Tsai, **C. Vinegoni**, and R. Weissleder.
Accepted: "Opt. Express" Vol. 17 (2009) pp. 21723.
45. **Hybrid PET-optical imaging using targeted probes.**
M. Nahrendorf, E. Keliher, B. Marinelli, P. Waterman, P. Fumene Feruglio, L. Fexon, M. Pivovarov, F.K. Swirski, M. Pittet, **C. Vinegoni**, and R. Weissleder.
Accepted: "PNAS" Vol. 107 (2010) pp. 7910.
46. **Imaging of molecular probe activity with Born-normalized fluorescence optical projection tomography.**
C. Vinegoni, P. Fumene Feruglio, V. Cortez-Retamozo, D. Razansky, B.D. Medoff, V. Ntziachristos, A. Sbarbati, M. Pittet, and R. Weissleder.
Accepted: "Opt. Lett." Vol. 35 (2010) pp. 1088.
47. **Deep tissue optical and optoacoustic molecular imaging technologies for small animal research and drug discovery.**
D. Razansky, N. Deliolanis, **C. Vinegoni**, and V. Ntziachristos.
Accepted: "Current Pharmaceutical Biotechnology" (2010).
48. **WNT5A/JNK and FGF/MAPK pathways regulate the cellular events shaping the vertebrate limb bud.**
J. Gros, JK Hu, **C. Vinegoni**, PF Feruglio, R. Weissleder, and C.J. Tabin.
Accepted: "Current Biol." Vol. 20 (2010) pp. 1993.
49. **Intravascular Near-infrared Fluorescence Molecular Imaging of Atherosclerosis: Towards Coronary Arterial Visualization of Biologically High-Risk Plaques.**
M.A. Calfon, **C. Vinegoni**, V. Ntziachristos, and F.A. Jaffer.
Accepted: "J. Biomed. Opt." Vol. 15 (2010) pp. 011107.

50. **Block matching 3D random noise filtering for absorption optical projection tomography.**
P.F. Feruglio, **C. Vinegoni**, J. Gros, A. Sbarbati, R. Weissleder.
Accepted: "Phys. Med. Biol." Vol. 55 (2010) pp. 5401.
51. **In-vivo two-photon imaging of the honeybee antennal lobe.**
A. Haase, E. Rigosi, G. Anfora, G. Vallortigara, R. Antolini, and **C. Vinegoni**.
Accepted: "Biomed. Opt. Express" Vol. 2 (2011) pp. 131.
52. **Intraoperative Near-Infrared Fluorescent Cholangiography in Mouse models of bile duct injury: reply.**
J.L. Figueiredo, M. Nahrendorf, **C. Vinegoni**, and R. Weissleder.
Accepted: "World J. Surg." (2011).
53. **Searching for anatomical correlates of olfactory lateralization in the honeybee antennal lobes: A morphological and behavioural study.**
E. Rigosi, E. Frasnelli, **C. Vinegoni**, R. Antolini, G. Anfora, G. Vallortigara, A. Haase.
Accepted: "Behav. Brain Res." Vol. 221 (2011) pp. 290.
54. **Indocyanine Green Enables Near-Infrared Fluorescence Imaging of Lipid-Rich, Inflamed Atherosclerotic Plaques.**
C. Vinegoni, I. Botnaru, E. Aikawa, M.A. Calfon, Y. Iwamoto, E.J. Folco, V. Ntziachristos, R. Weissleder, P. Libby, F. Jaffer
Accepted: "Science Transl Med." Vol. 3 (2011) pp. 84.
55. **Accurate measurement of pancreatic islet beta-cell mass using a second-generation fluorescent exendin-4 analog.**
T. Reiner, G. Thurber, J. Gaglia, **C. Vinegoni**, C.W. Liew, R. Upadhyay, R.H. Kohler, L. Li, R.N. Kulkarni, C. Benoist, D. Mathis, R. Weissleder
Accepted: "PNAS" Vol 108 (2011) pp. 12815.