BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES**.

NAME	POSITION TITLE
Xingde Li	Associate Professor of Biomedical Engineering
eRA COMMONS USER NAME (credential, e.g., agency login) xingde	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Univ. of Science and Technology of China, Hefei	B.S.	07/90	Applied Nuclear Physics
University of Pennsylvania, Philadelphia	Ph.D.	05/98	Physics and Biomedical Optics
Massachusetts Institute of Technology, Cambridge	Postdoc	08/01	Biomedical Optics

A. Personal Statement

My background is in biomedical optics, with specific training and expertise in fluorescence diffuse photon density waves, fluorescence tomography technology for cancer detection, and optical imaging probes development. As Principal Investigator or Co-Investigator on several NIH-, NSF- and private foundation funded grants, I have focused on developing new generation fiber-optic endomicroscopy technologies that can perform optical biopsy without the need for tissue removal, thereby ultimately enabling real-time visualization of histopathology *in situ*. Our work involves novel optics and engineering designs, light source development, and weak fluorescence detection. My group pioneered the development of the first ultra-compact, fully integrated, single-fiber scanning endomicroscope, which essentially miniaturizes a bulky laser-scanning microscope down to a flexible probe of 1.5 - 2.5 mm diameter, and lays out the ground work for enabling clinical translation of two-photon fluorescence (TPF) and second harmonic generation (SHG) microscopy for imaging internal organs. Dr. Glunde and I (Co-PI) will lead the overall research design and execution of the Collagen I fiber imaging studies proposed in Research Component 4. I will take the lead responsibility in supervising and guiding the development of the ultra-compact fiber-optic endomicroscopy technology compatible with 14-gauge breast biopsy needles in Aim 2, and testing its feasibility for SHG imaging of collagen I fiber network morphologies of mastectomy specimens, *in vivo* animal models, and *in vivo* human patients in a pilot study in Aim 3. The proposed research will fill a technology gap to enable minimally invasive real-time visualization of the novel imaging biomarker Collagen I during breast biospy, and thereby significantly improve prediction of lymph node involvement in breast cancer patients.

B. Positions and Honors

Positions and Employment

2001-07	Assistant Professor of Bioengineering, University of Washington, Seattle, WA
2006-07	Adjunct Assistant Professor of Oral Biology, Electrical Engineering, and Physics, University of Washington, Seattle, WA
2007-08	Associate Professor of Bioengineering (with tenure), University of Washington, Seattle, WA
2007-08	Adjunct Associate Professor of Electrical Engineering, Physics, and Oral Biology, University of Washington, Seattle, WA
2009 – Present	Associate Professor of Biomedical Engineering, Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD
	Joint Associate Professor of Electrical and Computer Engineering, Johns Hopkins University

Awards/Honors

1987	Samuel C. C. Ting Physics and Biology Award
1990	Zhang Zhongzhi Science and Technology Award (University Science and Technology Senior Top 10)
1996	OSA - New Focus Travel Award (Optical Society of America)

1997	Engineering Foundation Fellowship
2002	Distinguished Teacher/Mentor Award (Department of Bioengineering, University of Washington)
2004	Faculty Early Career Development Award, National Science Foundation
2006	Best Student Poster Award, OSA Biomedical Optics Topical Meeting, Fort Lauderdale, FL
2007	Engineering Conference International (ECI) Fellowship
2007	Best Student Paper Award, SPIE BIOS (Conference 6434), San Jose, CA
2009	ADR/GlaxoSmithKline Innovation in Oral Care Awards International (with Dr. Sandra Bordin)

Committees

2003-10	NIH (CSR, NIBIB, NCI) Special Emphasis Study Sections (23 times) and P41, P01 Panels
2004-09	NSF Proposal Review Panels (16 times)
2005-10	Congressionally Directed Medical Research Programs (CDMRP) – Scientist Reviewer (5 times)
2005, 06	Optical Society of America (OSA) New Focus/Bookham Award Committee
2006-10	Chair of Emerging Technologies Committee, IEEE EMBS Society

Associate Editor

Journal of Biomedical Optics, IEEE Transactions on Biomedical Engineering (2009 – Present); Biomedical Optics Express (2010 – Present)

C. Selected Peer-reviewed Publications (from 63 papers, in chronological order)

Most relevant to the current application

1. X. D. Li, C. Chudoba, T. Ko, C. Pitris, and J. G. Fujimoto, Imaging needle for optical coherence tomography, Optics Letters 2000;25(20):1520-1522.
2. X. D. Li, S. A. Boppart, J. Van Dam, H. Mashimo, M. Mutinga, W. Drexler, M. Klein, C. Pitris, M. L. Krinsky, M. E. Brezinski, and J. G. Fujimoto, Optical coherence tomography: advanced technology for the endoscopic imaging of Barrett's esophagus, Endoscopy 2000; 32(12):921-930.
3. X. M. Liu, J. M. Cobb, Y. C. Chen, M. B. Kimmey, and X. D. Li, Rapid-scanning forward-imaging miniature endoscope for real-time optical coherence tomography, Optics Letters 2004; 29(15):1763-1765.
4. H. Cang, T. Sun, J. Chen, Z. Y. Li, B. J. Wiley, Y. N. Xia, and X. D. Li, Gold nanocages as potential contrast agents for spectroscopic optical coherence tomography, Optics Letters 2005; 30(22):3048-3050.
5. M. T. Myaing, D. J. McDonald, M. J. Cobb, and X. D. Li, Fiber-optic scanning two-photon fluorescence endoscope, Optics Letters 31(8):1076-1079 (2006).
6. M. J. Cobb, Y. C. Chen, S. Baily, C. Kemp, and X. D. Li, Non-invasive Detection of Early Neoplasia in Carcinogen-induced Skin Cancer Mouse Models *in vivo*, Cancer Biomarkers 2006;2(3-4):163-173.
7. J. Y. Chen, D. L. Wang, J. F. Xi, L. Au, A. Siekkinen, A. Warsen, Z. Y. Li, H. Zhang, Y. N. Xia, and X. D. Li, Immuno gold nanocages with tailored optical properties for targeted photothermal destruction of cancer cells, Nano Letters, 2007; 1318-1322.
8. D. L. Wang, Boyd V. Hunter, M. J. Cobb, and X. D. Li, Super-achromatic rapid scanning microendoscope for ultrahigh-resolution OCT imaging, IEEE Journal of Selected Topics in Quantum Electronics 2007; 13(6):1596-1601.
9. H. L. Fu, M. J. Cobb, Y. X. Leng, J. H. Hwang, K. Hsu, and X. D. Li, Flexible miniature compound lens design for high-resolution OCT balloon imaging catheter, Journal of Biomedical Optics – Letters 2008;13(6):060502. PMCID2697562.
10. Y. C. Wu, J. F. Xi, M. J. Cobb, and X. D. Li, Scanning fiber-optic nonlinear endomicroscopy with miniature aspherical compound lens and multimode fiber collector, Optics Letters 2009;34(7): 953-955. PMCID2697571.
11. Y. C. Wu, Y. Leng, J. F. Xi, and X. D. Li, Scanning all-fiber-optic endomicroscopy system for 3D nonlinear optical imaging of biological tissues, Optics Express 2009; 17(10):7907–7915. PMCID 2697571.
12. J. F. Xi, L. Huo, Y. C. Wu, M. J. Cobb, J. H. Hwang, and X. D. Li, High-resolution OCT balloon imaging catheter with astigmatism correction, Optics Letters 2009; 34(13):1943-5. PMC Journal - In Process.
13. M. J. Cobb, J. H. Hwang, M. P. Upton, Y. C. Chen, B. K. Oelschlager, D. E. Wood, M. B. Kimmey, and X. D. Li, Feasibility study of using OCT to assess subsquamous Barrett's epithelium, Gastrointestinal

Endoscopy, Oct 19, 2009 [Epub ahead of print] (cover page for paper publication in 2010). PMC Journal - In Process.

14. J. F. Xi, L. Huo, J. S. Li, and X. D. Li, Generic real-time uniform K-space sampling method for high-speed swept-source optical coherence tomography, Optics Express 2010; 18(9):9511-9517. PMC Journal - In Process.
15. L. Huo, J. F. Xi, Y. C. Wu, and X. D. Li, Forward-viewing resonant fiber-optic scanning endoscope of appropriate scanning speed for 3D OCT Imaging, Optics Express 2010;18(14): 14375-14384 . PMC Journal - In Process.

D. Research Support

Ongoing Research Support

2P50CA103175-06A2 (Bhujwalla) 09/22/11-07/31/16
NCI JHU ICMIC Program
This center grant funds an *in vivo* Cellular and Molecular Imaging Center at Johns Hopkins. The program consists of four research components, four developmental projects, one career development award and four resources.

R01 EB007636-01 (Li) 07/01/09-06/30/13
NIBIB
A New Integrated Endoscope System
Major goal of this project is to develop new generation miniature scanners and molecular biomarkers for an integrated high-resolution molecular endoscopic imaging system. This endoscope system will integrate optical coherence tomography with confocal fluorescence imaging. No SHG imaging was proposed, and therefore, there is no overlap with the current application.

Completed Research Support Within the Last Three Years

R01 CA120480-01 (Li) 07/01/06-06/30/11
NCI
Molecular Contrast Agents Based on Gold Nanocages for OCT Imaging of Cancer
Major goal of this project is to develop a novel class of molecular contrast agents based on gold bioconjugated nanocages for improving the sensitivity and specificity of OCT imaging of early cancer.

IADRIGSK Innovation in Oral Care Award (Bordin) 04/01/09-03/31/10
Optical Coherence Tomography for Noninvasive Diagnosis of Periodontal Disorders
The major goal of the proposed research for this award is to explore OCT for diagnosis of oral lesion and monitoring therapeutic outcomes.

Pancreatic Cancer Foundation (Li) 04/01/08-03/31/10
Alexander H. Steinkoler Pancreatic Cancer Foundation Award
High-resolution Optical Fine Needle Imaging of Pancreatic Neoplasia
The major goal of this project is to investigate the feasibility of optical biopsy using a high-resolution ultrathin OCT interstitial imaging needle for pancreatic neoplasia detection.

BES-0348720 (Li) 07/01/04-06/30/10
National Science Foundation (Career Award)
Miniature Scanning Endoscope for Multi-modality High-resolution Optical Imaging of Internal Organs
The major goal of the proposed research is to develop a new-generation scanning endoscope that can functionally integrate multimodal high-resolution optical imaging technologies for detecting early-stage diseases in internal organs.

IIP-0724231 (Hsu) 09/01/07-10/30/10
NSF SBIR Phase II
Spatially-resolved Swept-Laser Spectroscopic System for Gold Nanoparticle Sensing
The major objective of this SBIR Phase II proposal is to develop a high-speed broad-band swept laser source and structured gold nano particles for spatially resolved spectroscopic biosensing.