BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Liao, Joseph C.	Assistant Professor of Urology
eRA COMMONS USER NAME (credential, e.g., agency login)	
joseph.liao	

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
Harvard College, Cambridge, MA	A.B.	1993	Biology
Stanford University, Stanford, CA	M.D.	1997	Medicine

A. Personal Statement

I am a practicing urological surgeon who directs a translational research program that aims to bridge biomedical and engineering disciplines. Current areas of research interest include urine-based molecular diagnostics, biosensors, lab-on-a-chip, molecular imaging, and image-guided surgery, which complement my clinical expertise in complex urinary tract infections, minimally invasive surgery, and urological oncology. I am experienced in conducting human subject research and clinical trials, as well as leading complex interdisciplinary research teams composed of academic and industry partners. I have been an invited speaker on numerous national and international conferences as well as serving on ten NIH study section/special emphasis panel assignments in the last three years.

B. Positions and Honors

Positions and Employment

1997–1999 Internship and Residency, General Surgery, UCLA Medical Center, Los Angeles, CA
1999–2003 Residency, Urology, UCLA Medical Center, Los Angeles, CA
2000–2001 Postdoctoral Fellow, Microsystems Laboratory, UCLA School of Engineering
2003–2005 Postdoctoral Fellow, Urological Research, UCLA School of Medicine
2005–2006 Clinical Fellow, Endourology & Minimally Invasive Surgery, UCLA School of Medicine
2003–2006 Clinical Instructor, Department of Urology, UCLA School of Medicine
2006– Assistant Professor, Dept. of Urology, Stanford University School of Medicine, Stanford, CA
2006– Chief of Urology, Veterans Affairs Palo Alto Health Care System, Palo Alto, CA
2006– Co-Director, Section of Laparoscopy and Minimally Invasive Surgery, Dept. of Urology, Stanford University Medical Center
2006- Affiliated Faculty, Bio-X Program, Stanford University
2007- Member, Stanford Comprehensive Cancer Center
2009- Member, Stanford Institute of Immunity, Transplantation, and Infection

Other Experience and Professional Memberships

2008 Diplomate, American Board of Urology
2009 Associate Member, NCI/Network for Translational Research
2010 Guest Editor, Nanomedicine Special Issue, Journal of Association for Laboratory Automation
2011–2012 Ad-Hoc Member, NIH Study Section: Instrumentation and Systems Development (ISD)
2011–2012 Member, NIAID SEP RFA-AI-10-017 “Partnership for Next Generation Biodefense Diagnostics”; RFA AI-11-014 “Partnerships for Biodefense” (R01); SBIR IMST (11); NIAID SEP for LRP

Ad-Hoc Reviewer: *Journal of Urology, Urologic Oncology, Urology, Lab-on-a-chip, Nature Biotechnology, Simulations in Healthcare, Biosensors and Bioelectronics, PLoS One, Analytical Chemistry*

Society Memberships: American Urological Association, Society of Urologic Oncology, Endourology Society, Engineering and Urology Society, Institute of Electrical and Electronics Engineers (IEEE), IEEE Engineering in Medicine and Biology Society, The International Society of Optical Engineering (SPIE), World Molecular Imaging Society

Awards and Honors

1993	*Magna cum laude* with Highest Honors, Harvard College
1994-1996	Medical Scholar Award, Stanford University School of Medicine
2001	Wendy and Ken Ruby Fund for Excellence in Pediatric Urology Research Award
2003-2005	American Foundation for Urologic Disease Research Scholar
2003-2008	NIH/NIDDK Loan Repayment Award (LRP)
2005	Best Paper Award, Engineering and Urology Society Annual Meeting
2007	Stanford Center for Immersive & Simulation-based Learning Conference Scholarship
2007	Diversity Faculty Fellowship Award, Stanford University School of Medicine
2007	Stanford Comprehensive Cancer Center Development Research Award
2007-2010	VA Merit Review Award
2007	Second Prize, Joseph F. McCarthy Physician Essay Contest, AUA Western Section
2008	Stanford University School of Medicine Faculty Fellow
2008	Invited Keynote Speaker, IEEE International Conference on Nano/Molecular Medicine & Engineering, Macau, China
2009	Third Prize, AUA/Gyrus Essay Contest (Clinical Research)
2009	First Prize, AUA/Gyrus Ambrose Reed Socioeconomics Essay Contest
2009	First Prize, AUA Foundation Young Investigator Research Forum
2009	Panelist, Bladder Cancer: Emerging Technology, SUO Winter Meeting
2010	Invited Speaker, Gordon Research Conference (Bioanalytical Sensors), Colby-Sawyer College, New London, NH
2012	Fellow, American Urological Association/Chinese Urological Association Academic Exchange Program

C. Selected peer-reviewed publications (from > 50)

1. Gaster RS, Hall DA, Nielsen CH, Osterfeld SJ, Yu H, Mach KE, Wilson RJ, Murmann B, **Liao JC**, Gambhir SS, Wang SX. Matrix-insensitive protein assays push the limits of biosensors in medicine. Nat Med. 2009.
2. Sonn GA, Jones SN, Tarin TV, Du CB, Mach KE, Jensen KC, **Liao JC**. Optical biopsy of human bladder neoplasia with in vivo confocal laser endomicroscopy. J Urol. 2009;182(4):1299-305.
3. Mach KE, Du CB, Phull H, Haake DA, Shih MC, Baron EJ, **Liao JC**. Multiplex pathogen identification for polymicrobial urinary tract infections using biosensor technology: a prospective clinical study. J Urol. 2009;182(6):2735-41.
4. Sonn GA, Mach KE, Jensen K, Hsiung PL, Jones SN, Contag CH, Wang TD, **Liao JC**. Fibered confocal microscopy of bladder tumors: an ex vivo study. J Endourol. 2009;23(2):197-201.
5. Mach KE, Mohan R, Baron EJ, Shih MC, Gau V, Wong PK, **Liao JC**. A biosensor platform for rapid antimicrobial susceptibility testing directly from clinical samples. J Urol. 2010;185(1):148-53.
6. Pan Y, Sonn GA, Sin ML, Mach KE, Shih MC, Gau V, Wong PK, **Liao JC**. Electrochemical immunosensor detection of urinary lactoferrin in clinical samples for urinary tract infection diagnosis. Biosens Bioelectron. 2010;26(2):649-54. PMCID: 2946447.
7. Bercovici M, Kaigala GV, Mach KE, Han CM, **Liao JC**, Santiago JG. Rapid detection of urinary tract infections using isotachophoresis and molecular beacons. Anal Chem. 2011;83(11):4110-7. PMCID: 3116659.
8. Mach KE, Wong PK, **Liao JC**. Biosensor diagnosis of urinary tract infections: a path to better treatment? Trends Pharmacol Sci. 2011;32(6):330-6. PMCID: 3106133.
9. Adams W, Wu K, Liu JJ, Hsiao ST, Jensen KC, **Liao JC**. Comparison of 2.6- and 1.4-mm Imaging Probes for Confocal Laser Endomicroscopy of the Urinary Tract. J Endourol. 2011;25(6):917-21.
10. Wu K, Liu JJ, Adams W, Sonn GA, Mach KE, Pan Y, Beck AH, Jensen KC, **Liao JC**. Dynamic Real-time Microscopy of the Urinary Tract Using Confocal Laser Endomicroscopy. Urology. 2011;78(1):225-31.
11 Riahi R, Mach KE, Mohan R, **Liao JC**, Wong PK. Molecular Detection of Bacterial Pathogens Using Microparticle Enhanced Double-Stranded DNA Probes. Anal Chem. 2011 Aug 15; 83 (16):6349-54. PubMed PMID:21718053.
12. Bercovici M, Han CM, **Liao JC**, Santiago JG. Rapid hybridization of nucleic acids using isotachophoresis.

Proc Natl Acad Sci U S A. 2012;109(28):11127-32. PMCID: 3396536.
13. Mohan R, Mach KE, Bercovici M, Pan Y, Dhulipala L, Wong PK, **Liao JC**. Clinical Validation of Integrated Nucleic Acid and Protein Detection on an Electrochemical Biosensor Array for Urinary Tract Infection Diagnosis. PLoS One. 2011 October 31; 6(10):e26846.
14. Sin MLY, Liu T, Pyne J, Gau V, **Liao JC**, Wong PK. In situ electrokinetic enhancement for self-assembled monolayer based electrochemical biosensing. Anal Chem. 2012 Mar 20;84(6):2702-7. Epub 2012 Mar 6.
15. Liu JJ, Droller MJ, **Liao JC**. New optical imaging technologies for bladder cancer: considerations and perspectives. J Urol. 2012;188(2):361-8.

D. Funding

ACTIVE

U01 AI082457 Liao (PI) 3/15/09 – 2/28/14 2.4 CM
NIH/NIAID
An Integrated Diagnostic Biochip for Point of Care Pathogen Identification
The major goal of this project is to develop an integrated microfluidic platform for point of care urinary diagnostics in nontraditional health care settings.

R01 CA160986 Liao (PI) 08/01/11 – 05/31/15 2.4 CM
NIH/NCI
Optical Imaging of Bladder Cancer with Molecular Contrast Agents
The goal of this project is to develop and validate peptides and antibodies as molecular contrast agents for optical molecular imaging of bladder cancer.

Cooperative Studies Program #553 Liao (Site PI) 1/1/09 – 9/31/12 0.24 CM
Department of Veterans Affairs
Chemotherapy after Prostatectomy for High Risk Prostate Carcinoma
The major goal of this randomized clinical trial is to determine whether the addition of chemotherapy prostatectomy will improve progression-free survival in patients at high risk of recurrence of prostate cancer after prostatectomy.

ECCS-0901292 Liao (PI) 9/15/09 – 8/31/12 1.2 CM
National Science Foundation (NSF)
Collaborative Research: A Miniaturized Uropathogen Detection System
This is a collaborative research project in response to NSF Program Announcement PD 05-7564 to develop a pilot lab on a chip prototype for uropathogen detection based on optical sensors.

002S Liao (PI) 10/1/09-9/27/12 0.6 CM
Cepheid
Development of Diagnostic Tests for Bladder Cancer
The goal of this project is to validate the utility of a novel biosensor for rapid and sensitive diagnosis of bladder cancer.

R44 AI 088756 Gau (PI), Liao Co-Investigator 6/1/12 – 3/31/15 0.6 CM
NIH/NIAID
Rapid Antimicrobial Susceptibility Test Cartridge for Resource-Limited Settings
The goal of this Phase 2 SBIR is to develop an integrated microfluidic cartridge for antimicrobial susceptibility testing.