BIOGRAPHICAL SKETCH

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NAME: **Kothary, Nishita**

eRA COMMONS USER NAME (credential, e.g., agency login): **KOTHARY.NISHITA**

POSITION TITLE: Associate Professor of Radiology

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Topiwala National Medical College	MBBS	1990-1996	Doctorate of Medicine and Surgery
Good Samaritan Hospital, Cincinnati, OH	Internship	1996-1997	Internal Medicine
Medical College Of Ohio, Toledo, OH	Radiology Residency	1997-1998	Radiology
George Washington University, Washington DC	Radiology Residency	1998-2001	Radiology
NYU, New York, New York	Fellowship	2001-2002	Neuroradiology
University of Pennsylvania, Philadelphia, PA	Fellowship	2001-2003	Interventional Radiology

A. Personal Statement

I am an Associate Professor in the in the Department of Radiology at Stanford University School of Medicine. My primary clinical and research interest focuses on hepatocellular carcinoma (HCC). As an interventional radiologist (IR), I am at the crossroads of cutting-edge technologies fused with practical clinical care. My focus on using novel technologies to diagnose, treat and prognosticate has made me an early adopter of emerging technologies such as cone-beam CT, Virtual Reality and Stereotactic Body Radiation Therapy as applied to HCC. This has led to several publications and facilitated translation into mainstream clinical practice. My recent work has focused on computational imaging tools for imaging biomarkers for biologically aggressive HCCs. Since imaging plays a central role in oncology patients, I believe, computational imaging, and in particular image analysis, is ideally suited to advance our understanding of these biological processes.

My role as a physician scientist makes me ideally suited for this project. Clinically, I have close ties with hepatologists, hepatobiliary surgeons, and transplant surgeons, thus providing a robust patient population we can draw from. As a busy IR section, we are directly involved in the care of over 300 HCC patients every year. Many of our HCC patients undergo resections or transplantations, giving us access to in-vivo and ex-vivo tissue and blood specimens. As a researcher, I collaborate extensively with our basic scientists and am an active member of Integrative Biomedical Imaging Informatics at Stanford (IBIIS).

Our group is unique in that while each one of us brings expertise to this multi-disciplinary project, we are cohesive, as evidenced by our long track-record of successful collaboration. Further, I have extensive experience leading large groups effectively. My administrative roles have included Director of Operations for IR for several years and I presently, lead the Clinical Trials Office for the Department of Radiology. I have similarly spearheaded several multi-disciplinary research collaborations and I believe I am well-suited to lead this multi-disciplinary project investigating the radiomic signature of biologically aggressive HCCs.

B. Positions and Honors

Employment

2013-present Associate Professor, Department of Radiology, Stanford University
2006-2013 Assistant Professor, Department of Radiology, Stanford University
2003-2006 Assistant Professor, Department of Radiology, Columbia (New York Presbyterian) University

Selected Professional Service

2008-2013 Director of Clinical Operations, Interventional Radiology
2010-present Member, Scientific Review Committee, Stanford Cancer Center
2012 Interim Section Chief, Interventional Radiology (3/2012 -10/2012)
2012-present Faculty lead for Clinical Trials Office, Department of Radiology
2013-present Editorial Board, Journal of Vascular and Interventional Radiology
2014-present Grant Reviewer, Grant Study Section, Society of Interventional Radiology Foundation (SIRF)
2015-present Member, Grants and Research Education, Society of Interventional Radiology Foundation
2016-present Editorial Board, Digestive Disease Interventions

Selected Honors and Awards:

2006 JVIR Distinguished Reviewer Award
2011 Fellow, Society of Interventional Radiology for outstanding contribution to the field of Interventional Radiology.
2013 Stanford Cancer Institute for outstanding performance in Clinical Research

C. Contributions to Science (chosen from 58 peer-reviewed publications)

Computational Imaging in HCC: Pre-operative identification of histopathological features that signal biological aggressiveness in HCCs is a challenge since these tumors are not routinely biopsied and, when biopsied, have a high sampling error due to heterogeneity. My work in computational imaging explores quantitative imaging features as a window into tumor biology. Drs. Napel, Gevaert and I have worked collaboratively over several years, advancing our understanding the tumor biology in HCC, while advancing computational imaging tools and techniques.

1. Bakr S, Echegaray S, Shah RP, Kamaya A, Louie J, Napel S, **Kothary N*** Gevaert O*. Non-invasive radiomics signature based on quantitative analysis of computed tomography images as a surrogate for microvascular invasion in hepatocellular carcinoma: A Pilot Study. J Med Imaging (Bellingham). **NK and OG equally contributing senior authors.* In Press.

2. Echegaray S, Gevaert O, Shah R, Kamaya A, Louie J, **Kothary N**, Napel S.Core samples for radiomics features that are insensitive to tumor segmentation: method and pilot study using CT images of hepatocellular carcinoma. J Med Imaging (Bellingham). 2015 Oct;2(4):041011.

Advanced Imaging for HCC including Cone-beam CT and perfusion imaging: I have been an early investigator of cone-beam CT applications, especially for diagnosis, intra-op treatment planning and prognostication for HCC. The artilces listed below highlight the novelty and the utility of cone-beam CT.

1. Datta S, Müller K, Moore T, Molvin L, Gehrisch S, Rosenberg J, Saenz Y, Manhart M, Deuerling-Zheng Y, **Kothary N**, Fahrig R. Dynamic Measurement of Arterial Liver Perfusion with an Interventional C-Arm System. Invest Radiol. 2017 Mar 17.

2. Pung L, Ahmad M, Mueller K, Rosenberg J, Stave C, Hwang GL, Shah R, **Kothary N**. The Role of Cone-Beam CT in Transcatheter Arterial Chemoembolization for Hepatocellular Carcinoma: A Systematic Review and Meta-analysis. J Vasc Interv Radiol. 2017 Mar 28(3): 334-341.

3. Müller K, Datta S, Gehrisch S, Ahmad M, Mohammed MA, Rosenberg J, Hwang GL, Louie JD, Sze DY, **Kothary N**. The Role of Dual-Phase Cone-Beam CT in Predicting Short-Term Response after Transarterial Chemoembolization for Hepatocellular Carcinoma. J Vasc Interv Radiol. 2017 Feb; 28(2):238-245

4. **Kothary N**, Abdelmaksoud MHK, Tognolini A, Fahrig R, Louie JD, Hwang G, Hofmann LV, Sze DY. Imaging Guidance with C-arm CT: A Prospective Evaluation of its Impact on Patient Radiation Exposure During Chemoembolization. J Vasc Interv Radiol. 2011 Nov; 22(11): 1535-43.

Outcomes in HCC: My interest in novel technologies and their applications to diagnose and treat HCC stems from my interest in improving the outcomes for patients with this challenging cancer. The publications listed below underscore the need to better characterize these tumors and their biology in order to improve outcomes.

1. Duan F, Wang EQ, Lam MG, Abdelmaksoud MH, Louie JD, Hwang GL, **Kothary N**, Kuo WT, Hofmann LV, Sze DY. Superselective Chemoembolization of HCC: Comparison of Short-term Safety and Efficacy between Drug-eluting LC Beads, QuadraSpheres, and Conventional Ethiodized Oil Emulsion. Radiology. 2016 Feb;278(2):612-21.

2. Ahmed O, Patel M, Ward T, Sze DY, Telischak K, **Kothary N**, Hofmann LV. Cost Accounting as a Tool for Increasing Cost Transparency in Selective Hepatic Transarterial Chemoembolization. J Vasc Interv Radiol. 2015 Dec;26(12):1820-1826

3. **Kothary N**, Takehana C, Mueller K, Sullivan P, Tahvildari A, Sidhar V, Rosenberg J, Louie JD, Sze DY. Watershed Hepatocellular Carcinomas: The Risk of Incomplete Response following Transhepatic Arterial Chemoembolization. J Vasc Interv Radiol. 2015 Aug;26(8):1122-9.

4. Boas FE, Do B, Louie JD, **Kothary N**, Hwang GL, Kuo WT, Hovsepian DM, Kantrowitz M, Sze DY. Optimal imaging surveillance schedules after liver-directed therapy for hepatocellular carcinoma. J Vasc Interv Radiol. 2015 Jan;26(1):69-73.

Image Guidance in Radiation Oncology: As pointed out above, development of applications for new technology has always interested me. One such modality is stereotactic ablative radiotherapy (SABR). The physics of SABR requires the placement of fiducials in the tumor in a particular geometry. My research has involved better understanding of this geometry and the use of unique fiducials to prevent migration and complications.

1. **Kothary N**, Heit JH, Louie JD, Kuo WT, Loo BW, Koong A, Chang DT, Hovsepian D, Sze DY, Hofmann LV. Safety and Efficacy of Percutaneous Fiducial Marker Implantation for Image-guided Radiotherapy. J Vasc Interv Radiol. 2009 Feb; 20(2): 235-39.

2. **Kothary N**, Dieterich S, Louie JD, Chang DT, Hofmann LV, Sze DY Techniques for Percutaneous Implantation of Fiducial Markers for Image Guided Radiotherapy. AJR Am J Roentgenol. 2009 Apr; 192(4): 1090-6.

3. Hong JC, Yao Y, Rao AK, Dieterich S, Maxim PG, Sze DY, **Kothary N* (Co-corresponding Author)**, Loo BW (Co-corresponding Author). High Retention and Safety of Vascular Embolization Coils as Fiducial Markers for Image-Guided Stereotactic Ablative Radiotherapy of Pulmonary Tumors. Int J Radiat Oncol Biol Phys. 2011 Sept; 81(1): 85-90.

4. Hong JC, Eclov NCW, Yu Y, Rao AK, Dieterich S, Le QT, Loo BW, Diehn M, Sze, DY, **Kothary N* (co-corresponding author),** Maxim PG. Migration of Implanted Markers for Image-Guided Lung Tumor Stereotactic Ablative Radiotherapy. J Appl Clin Med Phys. 2013 Mar 4;14(2): 4046

Completed list of Published Work in My Bibliography
https://www.ncbi.nlm.nih.gov/myncbi/collections/bibliography/40798629/

D. Research Support

Current:

1. A phase 2 randomized multicenter trial to compare hepatic progression-free survival following bland embolization, lipiodol chemoembolization, and drug-eluting bead chemoembolization of neuroendocrine liver metastases
   SPO#128648
   Role: PI
   Goal: In this proposal, the PI will investigate the efficacy and survival benefit of locoregional therapies for neuroendocrine tumors.
   Source: University of Pennsylvania
   Date: 05/01/2017 – 11/09/2019

2. 3D Virtual Reality for Endovascular Procedures
   SPO#128439
   Role: PI
   Goal: In this proposal, the PI will investigate future applications of 3D virtual reality in the context of endovascular procedures, primarily focusing on applications for liver directed therapies for primary and secondary liver cancer.
   Source: EchoPixel, Inc.
   Date: 04/01/2017 – 03/31/2018

3. Combined Investigations: Zeego Flexibility and Image Quality Improvement
   Spo#115675
   Role: PI
   Goal: This is a technology development grant, spanning several years, as we analyze and improve new applications for cone-beam CT for liver directed therapies.
   Source: Siemens Corporate Research
   Date: 04/01/2014 – 04/01/2018

4. TRAM training grant
   N/A
   Role: Co-Investigator
   Goal: This is a training grant that is investigating the genomic signature for biologically aggressive HCCs with particular attention to microvascular invasion and metastases.
   Source: Translational Research and Applied Medicine program
   Date: 8/30/2016 – 08/31/2017

5. DIF Award
   N/A
   Role: PI
   Goal: This a support grant to advance diversity and minority representation in STEM and Live sciences at Stanford.
   Source: Stanford University, Office of Diversity
   Date: 06/30/2017 – 07/01/2018

6. Developing a Genomic Approach for Cancer Screening
   SPO#109485
   Role: Co-investigator
   Goal: Co-Investigator, help accrue subjects for clinical evaluation.
   Source: National Institutes of Health
   Date: 09/30/2013 – 06/30/2018

7. A Phase 3 Randomized, Open-Label Study Comparing PexaVec (Vaccinia GM-CSF / Thymidine Kinase-Deactivated Virus) Followed by Sorafenib Versus Sorafenib in Patients with Advanced Hepatocellular Carcinoma (HCC) Without Prior Systemic Therapy
   SPO#123197
   Role: PI
   Goal: This is a phase 3 clinical trial for onlytic virus therapy for advanced HCC.
   Source: SillaJen Biotherapeutics, Inc.
   Date: 07/15/2016 - 07/14/2019

8. International Randomized Study of Transarterial Chemoembolization (TACE) versus Stereotactic Body Radiotherapy (SBRT)/Stereotactic Ablative Radiotherapy (SABR) for Residual or Recurrent Hepatocellular Carcinoma after Initial TACE
   SPO#113804
   Role: Co-PI
   Goal: This is a multi-institutional clinical trial comparing two modalities for treatment of HCC, locoregional therapy (chemoembolization) vs. Stereotactic ablation.
   Source: Varian Medical Systems, Inc.
   Date: 06/15/2016 – 06/14/2021

Past

9. A Low-Dose Fluoroscope for Interventional Radiology Procedures
   SPO#49371
   Role: PI
   Goal: Technology development grant. In this grant, the PI investigated radiation-dose reduction using a novel, low dose fluoroscopy system.
   Source: National Institutes of Health / Triple Ring Technologies, Inc.
   Date: 05/15/2013- 04/30/2016