

BIOGRAPHICAL SKETCH

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NAME: Lima, Joao A. C.

eRA COMMONS USER NAME (credential, e.g., agency login): jlma1

POSITION TITLE: Professor of Medicine, Radiology and Epidemiology

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 <i>(if applicable)</i>	Completion Date MM/YYYY	FIELD OF STUDY
University of Bahia, Brazil	M.D.	06/1977	Medicine
Johns Hopkins University	M.B.A.	05/2001	Business

A. Personal Statement

Dr. Lima's primary scientific contributions to cardiovascular medicine have been the development of MRI methods to measure infarct size and the extent and severity of microvascular obstruction in patients with acute myocardial infarction. The majority of Dr. Lima's clinical efforts have been dedicated to clinical scholarship and program development at the Johns Hopkins Hospital. He directed the Echocardiography Laboratory at Hopkins for several years and spearheaded pioneering programs in cardiovascular MRI and cardiac CT. His leadership in mentoring cardiology and radiology trainees in cardiovascular imaging has also been significant both clinically and in clinical investigation. Currently, Dr. Lima is a Professor of Medicine with joint appointments in the Departments of Radiology and Epidemiology, as well as Director of Cardiovascular Imaging at Johns Hopkins Hospital. Dr. Lima's research interests are concentrated on the development and application of imaging technology to address scientific and clinical problems involving the heart and vascular system. Dr. Lima has been the PI for the MESA, CARDIA, EDIC, CorE64, CorE320, ALLSTAR, CCTRN, ESCAPE, HOPE, MESA-COPD, SSCOR, SOL, SPIROMICS, DCM II, GOLDILOX, VICINITY, and MWCCS Imaging Core Laboratory studies. The proposed work represents a natural continuation of his efforts dedicated to the elucidation of heart failure and aging related cardiovascular remodeling in human populations.

Professional Positions

1977- 1978	Post Doctoral, Cardiology, Hospital of Cardiology, DeLyon, France
1978 - 1980	Resident, Medicine University of Bahia Hospital, Brazil
1980 - 1983	Post Doctoral, Cardiology, Johns Hopkins University
1983	Post Doctoral, Cardiology, Univ. of Calgary, Canada
1984-1985	Investigator, Medicine, Brazilian Research Council
1986-	Post Doctoral, Cardiology, National Institute of Aging
1986-1988	Resident, Medicine, Francis Scott Key Medical Center
1988-1990	Clinical Fellow, Cardiology, Johns Hopkins University
1990-1992	Assistant Professor, Medicine, University of Pennsylvania
1992-1997	Assistant Professor, Medicine, Johns Hopkins University
1996-1998	Assistant Professor, Radiology, Johns Hopkins University
1997-2007	Associate Professor, Medicine, Johns Hopkins University
1998-2008	Associate Professor, Radiology, Johns Hopkins University
2001-2008	Associate Professor, Epidemiology, Johns Hopkins University
2003- Present	Director of Cardiovascular Imaging

2007- Present Professor, Medicine, Johns Hopkins University

2008- Present Professor, Radiology and Epidemiology, Johns Hopkins University

B. Contribution to Science – Original Research (N= 722) and Reviews, Editorials and Letters (N=119)

1. Dr. Lima's initial work was focused on the pathophysiology of left ventricular remodeling after myocardial infarction using non-invasive techniques. As one of the first investigators to measure infarct size by MRI, left ventricular remodeling has been a significant focus of my work. I have also been directly involved in applying imaging phenotyping methods in population research, including the Multi-Ethnic Study on Atherosclerosis (MESA) to concentrate my investigation of myocardial damage and dysfunction among asymptomatic individuals of different ethnicities living in the United States. My efforts have included the biomechanical analysis of aortic function, determinants of incident heart failure, and progressive ventricular dysfunction as a consequence of subclinical atherosclerosis and hypertensive heart disease. I have also developed contrast enhanced MRI methods to predict sudden death in patients who suffered from myocardial infarction. The below publications exemplified the use of MRI as the most powerful phenotyping tool in cardiac imaging.
 - a. **Lima JA**, Judd RM, Bazille A, Schulman SP, Atalar E, Zerhouni EA. Regional heterogeneity of perfusion within human myocardial infarcts demonstrated by contrast enhanced ultrafast MRI. *Circulation*. 1995;92: 1117-1125.
 - b. Wu KC, Zerhouni EA, Judd RM, Lugo-Olivieri CH, Barouch LA, Schulman SP, Blumenthal RS, **Lima JA**. The Prognostic Significance of Microvascular Obstruction by Magnetic Resonance Imaging in Patients with Acute Myocardial Infarction. *Circulation*. 1998;97:765-772.
 - c. Rochitte CE, Kim RJ, Hillenbrand HB, Chen EL, **Lima JA**. Microvascular Integrity and the Time Course of Myocardial Sodium Accumulation after Acute Infarction. *Circulation Research*. 2000;87:648-655.
 - d. Redheuil A, Yu WC, Mousseaux E, Harouni AA, Kachenoura N, Wu CO, Bluemke D, **Lima JA**. Age-Related Changes in Aortic Arch Geometry relationship with proximal Aortic Function and Left Ventricular Mass and Remodeling. *J Am Coll Cardiol*. 2011 Sep 13;58(12):1262-70. PMID: PMC3508703.
2. These publications have demonstrated subclinical Left Ventricular Dysfunction in a large cohort of African American and Caucasian asymptomatic individuals with the use of myocardial strain imaging in speckle tracking echocardiography.
 - a. Nwabuo CC, Moreira HT, Vaconcellos HD, Mewton N, Opdahl A, Ogunyankin KO, Ambale-Venkatesh B, Schreiner PJ, Armstrong AC, Lewis CE, Jacobs DR, Lloyd-Jones D, Gidding SS, **Lima JAC**. Left ventricular global function index predicts incident heart failure and cardiovascular disease in young adults: the coronary artery risk development in young adults (CARDIA) study. *European Heart Journal Cardiovascular Imaging*. 2018 Sept; 20(5): 533-540. PMID: 30247530.
 - b. Moreira HT, Nwabuo CC, Armstrong AC, Kishi S, Gjesdal O, Reis JP, Schreiner PJ, Liu K, Lewis CE, Sidney S, Gidding SS, **Lima, JAC**, Ambale-Venkatesh B. Reference Ranges and Regional Patterns of Left Ventricular Strain and Strain Rate Using Two-Dimensional Speckle-Tracking Echocardiography in a Healthy Middle Aged Black and White Population: The CARDIA Study. *JASE*. 2017; 30(7): 647-658. PMID: 28511859.
 - c. Schuijf JD, Matheson MB, Ostovaneh MR, Arbab-Zadeh A, Kofoed KF, Scholte AJHA, Dewey M, Steveson C, Rochitte CE, Yoshioka K, Cox C, Di Carli MF, **Lima JAC**. [Ischemia and No Obstructive Stenosis \(INOCA\) at CT Angiography, CT Myocardial Perfusion, Invasive Coronary Angiography, and SPECT: The CORE320 Study.](#) *Radiology* 2020 Jan;294(1):61-73.
 - d. **Lima JAC**, Schuijf JD, Detailed CAD Phenotyping by Angiography, Dynamic Perfusion and Scar Imaging Sharpens CT Prognostic Power. *JACC Cardiovasc Imaging*, 2020 May 8.
3. These publications have demonstrated subclinical Left Atrial Dysfunction in a large cohort of African American and Caucasian asymptomatic individuals
 - a. Vasconcellos HD, Moreira HT, Cuiffo L, Nwabuo CC, Yared GS, Ambale-Venkatesh B, Armstrong AC, Kishi S, Reis JP, Liu K, Lloyd-Jones DM, Colangelo LA, Schreiner PJ, Sidney S, Giddign SS, **Lima JAC**. Cumulative blood pressure from early adulthood to middle age is associated with left atrial remodeling and subclinical dysfunction assessed by three-dimensional echocardiography:

- a prospective post hoc analysis from the coronary artery risk development in young adults study. *European Heart Journal Cardiovascular Imaging*. 2018 Sept. Volume 19. Issue 9. Pages 985-992. PMID: 29982431.
- b. Armstrong AC, Liu K, Lewis CE, Sidney S, Colangelo LA, Kishi S, Ambale-Venkatesh B, Arynchyn A, Jacobos DR, Correia LC, Gidding SS, **Lima JA**. Left atrial dimension and traditional cardiovascular risk factors predict 20-year clinical cardiovascular events in young healthy adults: the CARDIA Study. *Eur Heart Journal Cardiovas Imaging* 2014; 15: 893-9. PMID: 24534011.
4. As echocardiography remains one of the most frequently used cardiac imaging modalities in clinical investigation, I have demonstrated the importance of this imaging modality.
 - a. Vasconcellos HD, Post W, Ervin AM, Haberlen SA, Budoff M, Malvestutto C, Magnani JW, Feinstein MJ, Brown TT, **Lima JAC**, Wu KC. Associations Between HIV Serostatus and Cardiac Structure and Function Elevated by 2-Dimensional Echocardiography in the Multicenter AIDS Cohort Study. *JAHA*. 2021. PMID: 33749311.
 - b. Armstrong A, Ricketts E, Cox C, Adler P, Arynchyn A, Liu K, Stengel E, Sidney S, Lewis C, Schreiner P, Shikany J, Keck K, Merlo J, Gidding S, **Lima JA**. Quality control and reproducibility in M-mode, two-dimensional, and speckle tracking echocardiography acquisition and analysis: The CARDIA Study, Year 25 Examination Experience. *Echocardiography*, 2015 Aug;32(8):1233-40. PMID: 25382818.
 - c. Nwabuo CC, Moreira HT, Vasconcellos HD, Ambale-Venkatesh B, Yoneyama K, Ohyama Y, Sharma RK, Armstrong AC, Ostovaneh MR, Lewis CE, Liu K, Schreiner PJ, Ogunyankin KO, Gidding SS, **Lima JAC**. Association of Aortic Root Dilation from Early Adulthood to Middle Age with Cardiac Structure and Function: The CARDIA Study. *JASE*. 2017; PMID: 28927559.
 5. Dr. Lima early publications in the field of Computed Tomography (CT) directly addressed my development in accurate CT imaging methods for identification of the atherosclerotic coronary artery diseases compared to the invasive angiography. Key research projects included the Coronary Artery Evaluation using 64-row Multidetector Computed Tomography Angiography (CORE64), Combined Non-invasive Coronary Angiography and Myocardial Perfusion Imaging Using 320 Detector Computed Tomography (CORE320), Screening For Asymptomatic Obstructive Coronary Artery Disease Among High-Risk Diabetic Patients Using CT Angiography, Following CORE 64 (factor-64), and Dynamic Computed Tomography Myocardial Perfusion Imaging for Detection of Coronary Artery Disease.
 6. The below publications launched the use of coronary CTA in clinical cardiology to address the epidemics of atherosclerosis.
 - a. Miller JM, Rochitte CE, Dewey M, Arbab-Zadeh A, Niinuma H, Gottlieb I, Paul N, Clouse ME, Shapiro EP, Hoe J, Lardo AC, Bush DE, de Roos A, Cox C, Brinker J, **Lima JA**. Diagnostic Performance of Coronary Angiography by 64-Row Multidetector Computed Tomography. *N Engl J Med* 2008; 359: 2324-36. PMID:19038879.
 - b. Arbab-Zadeh A, Miller JM, Rochitte CE, Dewey M, Niinuma H, Gottlieb I, Paul N, Clouse ME, Shapiro EP, Hoe J, Lardo AC, Bush DE, de Roos A, Cox C, Brinker J, **Lima JAC**. Diagnostic Accuracy of CT Angiography According to Pretest Probability of Coronary Arterial Calcification: The CorE-64 International Multicenter Study. *J Am Coll Cardiol* 2012; 59: 379-87. PMID: 22261160.
 - c. Cerci RJ, Arbab-Zadeh A, George RT, Miller JM, Vavere AL, Mehra V, Yoneyama K, Texter J, Foster C, Guo W, Cox C, Brinker J, Di Carli M, **Lima JA**. Aligning Coronary Anatomy and Myocardial Perfusion Territories: An Algorithm for the CORE320 Multicenter Study. *Circ Cardiovasc Imaging* 2012; 5: 587-95. PMID:22887690.
 - d. Rochitte CE, George RT, Chen MY, Arbab-Zadeh A, Dewey M, Miller JM, Niinuma H, Yoshioka K, Kitagawa K, Nakamori S, Laham R, Vavere AL, Cerci RJ, Mehra VC, Nomura C, Kofoed KF, Jinzaki M, Kuribayashi S, de Roos A, Laule M, Tan SY, Hoe J, Paul N, Rybicki FJ, Brinker JA, Arai AE, Cox C, Clouse ME, Di Carli MF, **Lima JA**. Computed tomography angiography and perfusion to assess coronary artery stenosis causing perfusion defects by single photon emission computed tomography: the CORE320 Study. *Eur Heart J* 2014; 35: 1120-30. PMID:24255127.