Jonathan D. Pillai, Ph. D.

jonathan@thsti.res.in

C204 Renaissance Exotica, Jakkur Plantation Road, Bangalore 560064 Cell Phone: +(91)9968859550

EDUCATION

Stanford India Biodesign Fellowship, Medical Device Innovation 12/2013
Stanford University, USA, and All India Institute for Medical Sciences (A.I.I.M.S.), New Delhi, India

Doctor of Philosophy, Biomedical Engineering 08/2008
Ohio State University (OSU), Columbus, OH, USA

Master of Science, Mechanical Engineering 12/2002
Ohio State University (OSU), Columbus, OH, USA

Bachelor of Engineering, Mechanical Engineering 06/1999
University of Pune, Pune, India

AREAS OF INTEREST AND SPECIALIZATION

Primary area of interest: Applications of nanotechnology and biomaterials for novel drug delivery systems
Secondary areas of interest: Medical technology innovation for low-resource settings

CURRENT AFFILIATION

Project Lead (Center for Biodesign) 03/2017-present
Jiva Sciences Pvt. Ltd.
Center for Cellular and Molecular Platforms, NCBS Campus, Bellary Road, Banglaore, India

ACADEMIC EXPERIENCE

Assistant Professor (Center for Biodesign) 12/2013-02/2017
Co-director (Social Innovation Immersion Program for Maternal and Child Health) 12/2014-09/2016
Translational Health Science and Technology Institute, Faridabad, Haryana, India.

RESEARCH EXPERIENCE

Post-Doctoral Research Associate 01/2009-12/2011
Dept. of Chemistry and Lineberger Cancer Center,
University of North Carolina (UNC-CH), Chapel Hill, NC, USA
Supervisor: Dr. Joseph DeSimone

Post-Doctoral Research Associate 10/2008-12/2008
Davis Heart and Lung Research Institute, OSU
Supervisor: Dr. Periannan Kuppusamy

Graduate Research Assistant 07/2007-08/2008
Center for Biomedical Engineering, OSU
Advisor: Dr. Periannan Kuppusamy

Graduate Research Assistant 09/2003-05/2007
Center for Biomedical Engineering, OSU
Advisor: Dr. Mark Ruegsegger

Graduate Research Fellow 07/2000- 12/2002
Center for Advanced Polymers and Composite Engineering, Dept. of Mechanical Engineering, OSU
Advisor: Dr. Anthony Luscher

TEACHING AND MENTORING EXPERIENCE

Center for Biodesign, THSTI, Faridabad, India 01/2014-present

- Launched and co-directed the Social Innovation Immersion Program Fellowship (Maternal and Child Health) - trained a team of three Fellows in the Biodesign process for clinical needs-inspired innovation
- Successfully launched a 1-credit elective course on "Introduction to Biodesign" for Ph.D. students
- Lead and mentor research group consisting of one post-doctoral scientist, and two Research Associates
- Supervising 1 Ph.D. student for dissertation project in drug-delivery
- Supervised 2 Master's trainees for final theses projects in drug-delivery and microfluidics

Indian Institute of Technology (IIT)

- Invited Visiting Faculty for Biodesign Fellowship (Biomedical Engineering, IIT- Hyderabad) 08/2016
- Invited Guest Lecturer for Biodesign elective (Engineering Design, IIT- Madras) 04/2013
- Invited Guest Lecturer in frugal medtech innovation (Mechanical Engineering, IIT-Delhi) 2014-present

Carey School of Business, Johns Hopkins University, Baltimore USA 07-08/2015

- Visiting Research Scholar, mentoring team of 4 JHU exchange students studying models of parallel innovation in medtech between developed and emerging economies
- Invited talk at the Center for Bioengineering Innovation and Design(CBID) Master's Program

Invited Biodesign Workshops (part of Training Faculty Team)

- 4-day workshop for 1st year students in the Master's of Design Program, IIT-Delhi 09/2012
- 2-day weekend workshop for 25 employees, G.E. Healthcare, Bangalore 12/2012
- 2-day weekend workshop for 30 students and faculty, Sri Guru Govind Singhji Government Institute of Engineering and Technology, Nanded, India 08/2013

Stanford-India Biodesign, A.I.I.M.S, New Delhi, India 08/2012-06/2013

- Co-developed Biodesign coursework for premier design and engineering schools in India
- Mentored 6 teams of interns at the SIB center on short-term Biodesign projects at A.I.I.M.S

Department of Chemistry, DeSimone Group, UNC-Chapel Hill, USA 07/2009-12/2012

- Mentored 4 graduate students on projects related to pulmonary drug delivery and particulate vaccines
- Supervised 3 undergraduate summer interns on computer-aided design (CAD) and synthesis of aerodynamic nanoparticles

Graduate Teaching Assistant, **Freshman (1st Year) Engineering Program, OSU, USA** 09/2003-06/2007

- Conducted labs related to CAD, MATLAB™ programming, applied physics and basic engineering
- Assisted with curriculum development of quarter-long "design-and-build" project (roller coasters)
- Adapted 1st year engineering curriculum for high-school level coursework for affiliated programs

Graduate Teaching Assistant, **Mechanical Engineering (ME), OSU, USA** 03/2002-06/2002

- Conducted labs for material and prototype testing on Instron® test-bed for ME capstone design projects

OTHER WORK EXPERIENCE

Consultant, Product Development 10/2016-02/2017
Jiva Lifesciences Pvt. Ltd, Bangalore, India

Advisor, Intellectual Property and Regulatory Affairs 08/2013-present
Indio Labs Pvt. Ltd, Bangalore, India

Biodesign Consultant and Lead Analyst, ENT space 09/2013-11/2013
InnAccel Consulting Services, Bangalore, India

Engineering Intern (CAD) 07/2003-09/2003
G.I.Plastek, Marysville, OH, USA

Consultant for Finite Element Analysis (FEA) 02/2003- 05/2003
Worthington Cylinders, Columbus, OH, USA

Software Development Engineer 08/1999 - 06/2000
TechMahindra (formerly Mahindra-British Telecom Ltd.), Pune, India.

Mechanical Engineering Co-op Program 06/1997-12/1997 and 01/1999-05/1999
Tata Motors (formerly Tata Engineering and Locomotive Company Ltd.), Pune, India

GRANTS

Jonathan Pillai (Ph.D.) and Uma Chandra Mouli Natchu (M.D., M.P.H.) "*Social Innovation Immersion Program for training medical technology innovators under the SPARSH initiative.*" Biotechnology Industry Research Assistance Council (BIRAC), Department of Biotechnology, Government of India
(Total Award: INR 66.9 Lakhs/ ~$ 100,000). 12/2014-09/2016

Jonathan Pillai (Ph.D.) "*An implantable drug-delivery device for improving Tuberculosis treatment adherence and compliance*." Biotechnology Ignition Grant (BIG), Biotechnology Industry Research Assistance Council (BIRAC), Department of Biotechnology, Government of India (Total Award: INR 46 Lakhs/~$70,000) 12/2014-12/2016

Swami Gnanashanmugam, (M.D.), **Jonathan Pillai (Ph.D.),** Patrick Holsberry, (M.S.), Jayakumar Rajadas, (Ph.D.), Brian Blackburn (M.D.), Paul Weller (Ph.D.). "*An implantable device for sustained Tuberculosis therapy*." Consortium for Innovation, Design, Evaluation and Action (C-IDEA), Global Health Program, Stanford University
(Total Award: $100,000) 07/2012-06/2013

PUBLICATIONS

Pillai J., Dunn S., Napier M., DeSimone J.M. "*Novel platforms for vascular drug delivery with controlled geometry*". **IUBMB Life** (August 2011)

Garcia A., Fromen C., Mack P., **Pillai J.**, Formen N., Shen T., Williams S., DeSimone P., Patrick W., Laaker K., Kuehl P., Mitran S., Napier M., Maynor B., DeSimone J.M. "*Microfabricated engineered aerosols for respiratory drug delivery*". **Journal of Drug Delivery,** Volume 2012 (2012)

Kumar N., Gupta D. G., Kumar S., Maurya P., Tiwari A., Mathew B., Banerjee S., Haldar S., **Pillai J.**, Bhatnagar S., Chaudhuri S. "*Exploring packaged microvesicle proteome composition of chinese hamster ovary secretome*". **Journal of Bioprocessing & Biotechniques**, 6:274. doi:10.4172/2155-9821.1000274

BOOK CHAPTERS

Banerjee S. and **Pillai J.,** "*Lipid Nanoparticle Formulations for Enhanced Antituberculosis Therapy"*. Chapter-11 in **Nanoarchitectonics for Smart Delivery and Drug Targeting**, Elsevier Press, 2016, 285-313 [ISBN: 9780323473477].

Banerjee S., **Pillai J.** "*Smart polymeric nanocarriers for drug delivery*". (Accepted, Article in Press) Book chapter in **Nanoconjugate Nanocarriers for Drug Delivery,** Apple Academic Press, 2017**.**

Banerjee S., **Pillai J.** "*Solid lipid matrix based nano carriers for improved oral bioavailability of drugs*". (Accepted) Book chapter in **Pharmaceutical Nanotechnology,** Elsevier Press, 2017.

Sharma. A.K., **Pillai J.** "*Implantable Drug Delivery Systems: An Overview*". (Accepted) Book chapter in **Pharmaceutical Nanotechnology,** Elsevier Press, 2017.

PATENTS AND INNOVATIONS

PCT application (published) **# WO/2011/008737**: "*Engineered aerosol particles, and associated methods"*. Inventors: DeSimone P., Maynor B., Napier M., **Pillai J.**, DeSimone J.M., Patrick W., Laaker K., Zhang H.

PCT application (published) **# WO/2010/099321**: *"Interventional drug delivery system and associate methods".* Inventors: DeSimone J., Napier M., **Pillai J.**, Byrne J., Roush L.M., Yeh J.J., Parrott M.

Complete Specification **#3881/DEL/2012** and PCT Application (published) **# PCT/IN2013/000768:** *"Device and Method for Biopsy".*
Inventors: Bagwan S., **Pillai J.**, Chaturvedi J., Joshi S., Garg P., Makharia G., Sharma H., Rao P.

Complete Specification and PCT Application (published) **# PCT/IN2013/000772**: "*Fluid Delivery Device*". Inventors: Bagwan S., **Pillai J.**, Joshi S., Garg P., Makharia G., Sharma H.

Complete Specification **#3839/DEL/2012:** *"Abdominal Paracentesis Device".*
Inventors: Joshi S., Bagwan S., **Pillai J.**, Chaturvedi J., Garg P., Makharia G., Sharma H., Rao P.

Complete Specification **#3838/DEL/2012** and PCT Application no.: PCT/IN2013/000765**:** *"Removing Foreign Objects from a Body Cavity".*
Inventors: Chaturvedi J., Bagwan S., **Pillai J.**, Joshi S., Rao P.

HONORS AND AWARDS

- First Place, Poster Presentation (Medical Devices), International Knowledge Millennium Conference, Hyderabad. 10/2013
- First Place for "BioScoop™ Business Plan". Team Stanford-India Biodesign 2012, Empressario Business Plan Competition at IIT-Kharagpur, Kharagpur, India 01/2013
- Stanford-India Biodesign Fellowship 2012
- Best Poster (Biomaterials and Medical Devices), OSU BMES Student Chapter Annual Conference, Department of Biomedical Engineering, OSU: **Pillai J.**, Karuppaiyah S., Bratasz A., Hideg K., Ruegsegger M., Kuppusamy P. *"Biodegradable polymeric constructs for disease-specific, localized and sustained drug delivery for a novel synthetic curcumin analog."* 07/2008
- Center for Advanced Polymers and Composite Engineering Fellowship, OSU 09/2001-04/2002
- Best Undergraduate Senior Project (Co-op Program), University of Pune, India 06/1999

PROFESSIONAL AFFILIATIONS

- Founder Member of MIT-DBT sub-committee on promoting biomedical research in India 2013-2016
- Early career member of Biomedical Engineering Society 2009-2015