DASSAULT SYSTEMES

# 6th ANNUAL LIVING HEART SYMPOSIUM & PROJECT MEETING

December 8-9, 2020 | VIRTUAL EVENT

## INVENTING NEW WAYS OF REPRESENTING LIFE – A JOURNEY TOWARDS THE VIRTUAL TWIN EXPERIENCE OF THE HUMAN BODY

3DEXPERIENCE® Lab

FINAL PROGRAM

# FORWARD

The Living Heart Project opened our eyes to the potential of virtual twins for healthcare, connecting global data and knowhow into 3D realistic human simulations of the human heart. Our mission now is to systematically create virtual twins for the entire human body and usher in a new era of medical innovations. With the symposium, we kick off this digital health revolution to power smarter therapeutics for healthier life. This conference is unlike others, bringing leaders from academia, the medical device and pharmaceutical industries, clinicians and regulators together to share advances in the use of simulation for human body for development of new treatments and precision patient care. Multidisciplinary panels will address the key challenges and identify synergies culminating in a roadmap towards simulating the human body. The outcome will be a massive jump start for a future of preventative, precision, and personalized health enabled by virtual twins for all human experiences

Steve Levine,
Founder, Living Heart Project & Senior Director Virtual Human Modeling,
*Dassault Systèmes*



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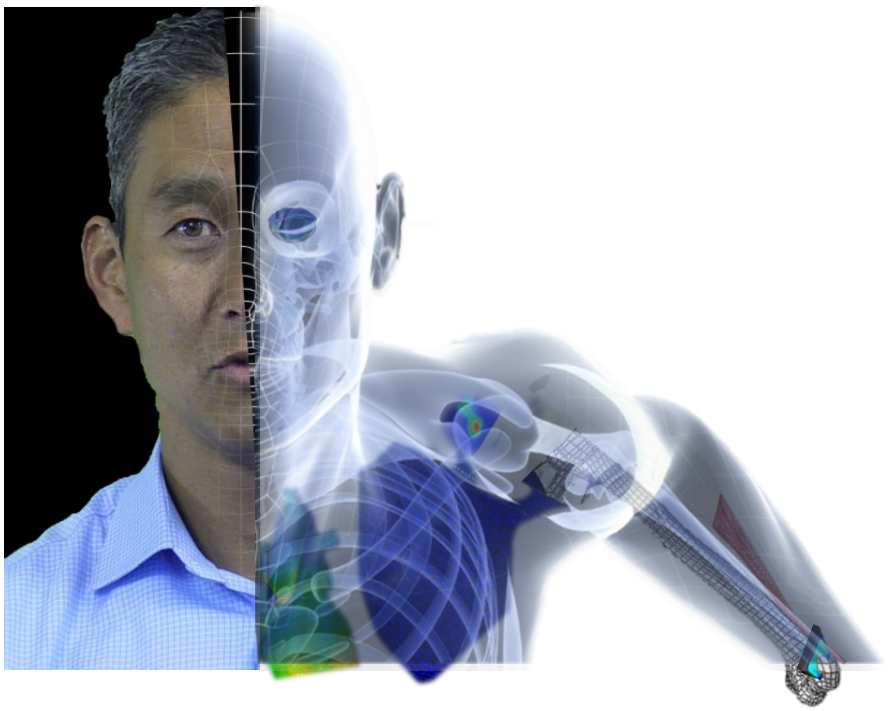
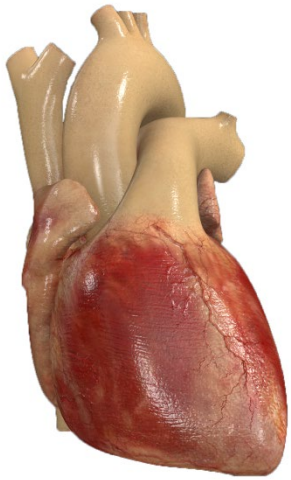




The Living Heart Project

3DEXPERIENCE® Lab

# TUESDAY, DECEMBER 8

## 10:00 AM WELCOME & PLENARY SESSION

**Welcome and Opening Remarks**
Steven Levine, *Dassault Systèmes*

**A Journey Towards the Virtual Twin Experience of the Human Body**
Claire Biot & Patrick Johnson, *Dassault Systèmes*

**The Living Heart Project** Steven Levine. *Dassault Systèmes*

**Scientific Breakthroughs in Human Modeling**

**Living Heart**: Mathias Peirlinck, *Stanford University*

11:20 AM **BREAK**

**Living Lung**: Daniel Hurtado, *Pontificia Universidad Católica de Chile*
Mona Eskandari, *University of California Riverside*

**Living Brain**: Nicolas Gazeres, *Dassault Systèmes*

12:50 PM **BREAK**

## 1:00 PM STUDENT SHOWCASE

**Effects of Dispersed Myofibre Architecture on Ventricular Pump Function**
Debao Guan – *University of Glasgow*

**Virtual Human Modelling and Simulation to Investigate Genetic Heart Diseases**
Francesca Margara, *University of Oxford*

**Investigating the Soft-tissue Socket Interaction During Gait using FEA**
Theodoros Marinopoulos, *Loughborough University*

**FE Study of Heterotopic Ossification Formation on a Cervical Spine with Artificial Disc**
Srikanth Srinivasan, Dilip Kumar S, Shruthi Ramachandran, S K Pugazhenthi, Deepak S, Senthil Kumar M, Balaji H – *Vellore Institute of Technology- Chennai*

**Biomechanical Simulations of Resuscitation**
Gunda Sachin, *Indian Institute of Technology (IIT) Hyderabad*

## 1:30 PM FDA ENRICHMENT PROJECT

**Overview and Status Update on the FDA In silico Clinical Trial Project**
Brent Craven, *US Food and Drug Administration* & Steven Levine, *Dassault Systèmes*

2:00 PM **BREAK**

# TUESDAY, DECEMBER 8 *(continued)*

## 2:10 PM PURSUITS OF EXCELLENCE (*Parallel Sessions*)

**Accelerating the Use of In silico Clinical Trials**

Industry Perspectives on the Use of Computational Modeling & Simulation Randy Scheistl, *Boston Scientific*

The Harvi Cardiovascular Simulation: Exploration of Surrogate Endpoints for an In silico Trial of MR Therapy Daniel Burkhoff MD, *Cardiovascular Research Foundation*

What Slows the Adoption of In-silico Clinical Trials? *(Panel)*

Najib Abboud, *Thornton Tomasetti* (Moderator); Randy Scheistl, *Boston Scientific;* Daniel Burkhoff MD, *Cardiovascular Research Foundation;* Alison Marsden, *Stanford University;* Dorothy Abel, *Syntactx;* Ashley Peterson, *Thornton Tomasetti,* Partho Sengupta, *West Virginia University*

**Building Patient-Specific Models**

Leveraging Machine Learning-based AI to Quickly Build Patient Specific Living Heart Models Kerim Genc, *Synopsys* & Paul Segars, *Duke University*

Pediatric Heart Modeling in a Clinical Environment Noah Schulz, *Boston Children's Hospital*

Patient/Population Based Anatomical Modeling and Simulation Ryan Benyshek & Ashley Stroh, *Dassault Systèmes*

Patient Specific Simulation Parameter Tuning Jiang Yao, *Dassault Systèmes*

**Case Studies and Benefits of High-Performance Computing for Human Simulations In The Cloud**

High-performance Cloud computing for human simulations, digital twins, big data analytics, and AI Wolfgang Gentzch, *The UberCloud*

Multi-scale Modeling of Drug-induced Arrhythmias Francisco Sahli, *Pontificia Universidad Católica de Chile*

Simulation of a Personalized Left Atrial Appendage Occluder Device with the Living Heart Model in the Cloud Philipp Hempel, *Admedes GmbH*

Numerical Simulations in Cardiovascular Device Development and the Significance of Cloud Computing Deepanshu Sodhani, *Enmodes*

HPC Cloud Simulation of Direct Current Brain Stimulation in Schizophrenia Karl D'Souza, *Dassault Systèmes*

**Machine Learning and Other Reduced Order Models**

AI/ML in Life Sciences Jing Bi, *Dassault Systèmes*

LHP Models to Train Machine Learning Model for Clinical Use Julius Guccione, *University of California San Francisco*

Modelica Models for Cardiovascular System Modeling Filip Ježek, *University of Michigan*

3:50 PM BREAK

## 4:10 PM CLINICAL APPLICATIONS OF VIRTUAL ORGANS

Utilization of 3D Models and Computational Simulations to Improve Operative Planning for Pediatric Cardiac Surgery

David Hoganson, MD, *Boston Children's Hospital*

Patient-Specific Modeling of Heart Failure for COVID-19 Cases

Cristina Pop, MD & Alireza Heidari, *McGill University*

FE Solver Based Subject-specific Musculoskeletal Model for Analyzing Lower Extremity Biomechanics

Shihao Li, *University of Tokyo*

## 5:40 PM CLOSING REMARKS

# WEDNESDAY, DECEMBER 9

## 10:00 AM WELCOME & PLENARY SESSIONS

**Day 1 Recap & Day 2 Outlook**
Steven Levine, *Dassault Systèmes*

**Replicating and Validating In Vivo Conditions to Simulate Leadless Pacemaker Motion in a Virtual Porcine Heart**
Kevin Sack, *Medtronic*

**Left Ventricular Biomechanics in Aortic Stenosis: Application of the Living Heart Human Model**
Yunjie Wang, *Thornton Tomasetti*

**Precision Structural Heart Interventions**
Matthieu De Beule, *FEops*

**Living Human Heart Project Mitral Valve Fluid Structure Interaction Simulation**
Tomasz Luniewski, *CAPVIDIA*

11:35 AM **BREAK**

## 11:40 AM BUILDING THE VIRTUAL HUMAN TWIN *(Parallel Sessions)*

### Living Brain

**Brain Virtual Twin Generation Workflow for Epilepsy Surgery**
Louise Moreau, Benoit Sarthou & Antoine Guillemain, Dassault *Systèmes*

**Discussion** Steve Levine, *Dassault Systèmes (moderator)*

**Technology and Model Update** Tom Battisti, Jiang Yao & Ashley Stroh, Dassault *Systèmes*
**Mitral Valve Special Interest Group** Steve Kreuzer, *Exponent, Inc.*
**Project Checkup** Tom Battisti, *Dassault Systèmes*

### Living Heart Members' Breakout

### Living Lung

**Current Pulmonary Modeling and Simulation Applications** Quentin Rouanet, Dassault *Systèmes*

**Discussion** Stuart Wright, Dassault *Systèmes (moderator)*

1:40 PM **VIRTUAL LUNCH**

## 2:10 PM APPLICATION SHOWCASE

**Numerical Analysis of Healthy, Diseased, and Prosthetic Aortic Valve within the LHHM**
Adi Morany, *Tel Aviv University*

**A Multi-Physics Simulation Framework Using Four-Chamber Cardiac Models**
Adarsh Krishnamurthy, *Iowa State University*

**Improving Patient Outcomes with an AI-driven Automation for Scan-to-print**
Andy Kalambi, *Rize, Inc.*

**Subject-Specific Computational Models of the Human Tricuspid Valve**
Manuel Rausch & Mrudang Mathur, *University of Texas, Austin*

# WEDNESDAY, DECEMBER 9 *(continued)*

3:35 AM **BREAK**

## 3:40 PM INNOVATION CENTERS

**ViTrack™, the First Standalone Continuous Non-invasive Blood Pressure Monitor** Mohan Thanikachalam, *Dynocardia*

**Developing and Validating Personalized Digital Human Brain Models for Neuro-psychiatric Disorders**

Laina Emmanuel, *Brainsight AI*

**Digital Tools for Innovation in Biomedical Research and Education: Academia-Industry synergy in developing the Workforce of the Future**

Jean-Philippe Laguerre & Natacha Becard, Dassault *Systèmes*

Natacha De Paola, *Illinois Institute of Technology*

**Harvi for Education**

Mark Dickstein, MD, *Columbia University Medical Center*

## 5:15 PM FUTURE DIRECTION AND CONCLUDING REMARKS

**Strategy and Vision for the Future of the Virtual Human Twin Technology**

Steven Levine, *Dassault Systèmes*

## 5:35 PM SYMPOSIUM ADJOURNS





The Living Heart Project

**4th Annual Living Heart Project Meeting**

April 4-5, 2018
Dassault Systèmes | Vélizy-Villacoublay, France

# 3DEXPERIENCE LAB & SUPPORTED STARTUPS

## 3DEXPERIENCE LAB

The 3DEXPERIENCE Lab is an open innovation laboratory, which embraces the concept of the social enterprise. It draws upon all 3DS people and the company's long history of expertise in virtual technologies to open new perspectives of innovation for a more sustainable world. The Lab looks to support disruptive innovation in the domains of city, life and lifestyle, with a focus on the mentoring Dassault Systèmes' experts can offer to nascent companies with amazing ideas. It supports collective projects— either collaboration around a start-up or communities of passionate people willing to achieve a common cause. Collecting information and managing new ideas with the 3DEXPERIENCE platform is a key asset for this inclusive innovation approach. https://3dexperiencelab.3ds.com/en

## BRAINSIGHT AI

BrainSightAI is an AI enabled application suite developed by a diverse and expert team of scientists, researchers and designers. It provides evidence-based treatment hooks for psychiatrists and neurologists; and a private and empathetic digital aid for patients.

We enable greater precision in diagnosis and prognosis for neurological and psychiatric disorders, using AI on fMRI, sMRI and digital phenotypes. https://www.brainsightai.com

## DYNOCARDIA

Dynocardia's ViTrack™ is based on technology developed out of MIT & Tufts. It is the first standalone, continuous non-invasive blood pressure (cNIBP) monitor using novel, cuff-less technology. The current arm cuff-based BP devices provide inadequate single-point BP measurements, which lead to 30% misdiagnoses and are inadequate for management of hypertension with less than 50% of patients with controlled BP. The ViTrack will address gaps in patient monitoring in hospitals, improve workflow, detect patient deterioration early to improve outcomes and provide actionable real-world data. Dynocardia expects to have the commercial device and regulatory approval (Class II device) in the next 24 months. https://www.dynocardia.care/

## RIZE, INC.

RIZE's versatile additive manufacturing platform redefines additive manufacturing - making it easy and safe for all users, while providing full color industrial-strength parts suitable for a variety of medical applications. Rize 3DPrinters can be safely deployed into Labs and Hospitals with no facility changes and empower multiple stakeholders – researchers, clinicians, designers and patients – to use additive manufacturing. With Dassault Systèmes, a strategic investor in RIZE, RIZE is creating 'connected, intelligent and interactive' environments called Smart Spaces that are powered by the 3DEXPERIENCE Platform to help companies Innovate, Compress Time to Market, Reduce Part Cost impacting all stages of Design to Manufacture Process. http://www.rize3d.com

# MEET THE PRESENTERS

**Najib Abboud, Ph.D., P.E.** – Thornton Tomasetti

*Managing Principal & Applied Science Global Practice Leader*

Najib Abboud has more than 25 years of experience in applied mechanics R&D, and in the transition of research to engineered solutions. As leader of the Applied Science practice, he directs the firm's research and advanced analysis efforts in three key sectors: Defense, Energy and Life Sciences.

Much of Najib's experience is in solving problems related to the safety of unique complex systems, encompassing military platforms, critical infrastructure, industrial and petro-chemical plants, automotive and airborne vehicles, and medical devices, whether implanted in or interfacing with the human body. These efforts rely on extensive Modeling & Simulation, coupled with small and large scale testing for validation, and are often accompanied by the development of new algorithmic approaches or new models.

Leveraging rigorous Verification & Validation approaches, Najib leads the Applied Science practice in the development and deployment of digital twins in many areas where the opportunity for physical experiments is limited.

**Dorothy Able** – SYNTACTX

*Vice President, Regulatory Strategy*

Dorothy Abel had a highly accomplished career with the U.S. Food and Drug Administration (FDA) in the Center for Devices and Radiological Health (CDRH), leading the evaluation of vascular and endovascular surgical devices for over 30 years. Joining Syntactx in January 2020, Dorothy provides expert assistance in developing and communicating evaluation strategies, helping clients achieve regulatory approvals and product adoption worldwide.

Dorothy holds a Bachelor of Science in Biomedical Engineering from the University of Iowa and is a fellow of the American Institute for Medical and Biological Engineering. Dorothy has co-authored over 50 scientific articles, co-initiated the Greenberg Stent Summit, and is the recipient of several honors including the 2006 FDA Civil Service Civil Engineer of the Year and the 2017 CDRH Group Recognition Award for the Endovascular Devices Standards Team.

**Abhishek Bali** – Dassault Systèmes

*3DEXPERIENCE Lab North America Manager*

Abhishek drives the 3DEXPERIENCE Lab Startup Accelerator and Open Innovation program for North America. The Accelerator is focused on incubating early- to mid-stage startup companies around the space of Product, Life and Nature that can potentially shift the scales of Innovation in their respective industries. Boston Lab was set up in May 2017 in collaboration with MIT's Center for Bits and Atoms and Fab Foundation, and is a vital node for Dassault Systèmes to foster a culture of maker-ship within the community globally.

# MEET THE PRESENTERS

## **Tom Battisti** – Dassault Systèmes

*Senior Director Life Sciences Industry Experience*

Tom received his Masters of Science in Mechanical Engineering with a focus in finite element simulation from Worcester Polytechnic Institute in 1991. Tom has held positions at the US Army Research, Development and Engineering Center, EMC Corporation, and with DS. While at HKS, Abaqus, and DS SIMULIA, Tom has held many positions including those in technical support, sales and marketing and alliances. In 2002, Tom founded the alliances organization and was responsible for developing alliances programs and building and managing an ecosystem of over 120 software and technology partners. In 2013, he was named the Senior Director of Brand Initiatives at DS SIMULIA. In this role, Tom was responsible for managing strategic brand initiatives which encompassed all SIMULIA projects in the field of Virtual Human Modeling (VHM) including the Living Heart Project. In 2018 Tom joined the corporate life sciences team and continues to manage collaborative projects with the VHM ecosystem including those with the US FDA for which he is the principal investigator on the Collaborative Research Agreement between the parties.

## **Ryan Benyshek** – Dassault Systèmes

*DS Government Solutions Solution Consultant*

Ryan Benyshek is a Solutions Consultant at DS Government Solution Corp. He received his Bachelors and Masters in Aerospace at Wichita State University. He has worked for the National Institute of Aviation Research (NIAR) at Wichita State University, where his primary focus was Reverse Engineering and Additive Manufacturing. The latest projects at NIAR included being the design lead for an sUAS platform, as well as a project lead for aircraft accident reconstruction. At Dassault Systems, He specializes in Reverse Engineering, Additive Manufacturing Design and Simulation, and Systems Architecture.

## **Jing Bi, PhD** – Dassault Systèmes

*Senior Portfolio Technical Specialist, CSO Structures, SIMULIA*

Jing Bi is a Senior Portfolio Technical Specialist at Dassault Systèmes SIMULIA focusing on machine learning technologies and structural mechanics. She received her MS and PhD degree in Mechanical Engineering from the University of North Carolina at Charlotte in 2010 and 2012 respectively. Jing joined Dassault Systèmes in 2012 and since then worked in a variety of technical roles at SIMULIA and engagement with key customers and partners in additive manufacturing, composites, multiscale modeling and crashworthiness. In the recent years, she has been developing solutions to accelerate the adoption of machine learning technologies for modeling and simulations.

# MEET THE PRESENTERS

## **Claire Biot, PhD** – Dassault Systèmes

*Vice President Life Sciences Industry*

Claire Biot was appointed Vice President, Life Sciences Industry, Dassault Systèmes in 2019.

Her multifaceted experience in healthcare-related research, business and government administration supports Dassault Systèmes' aim to drive the life sciences industry's digital transformation. As the industry shifts its focus to personalized medicine and patient-centric experiences, she is responsible for helping companies adopt a new unified approach to scientific innovation by using the 3DEXPERIENCE platform to catalyze the next generation of therapeutics.

Claire Biot began her career as manager of industrial methods at the biopharmaceutical company LFB. Later, she was head of division, health products pricing and reimbursement at the French Ministry of Health. She was then appointed managing director of France's Health products and Technologies Central Agency (AGEPS), a subsidiary of Greater Paris University Hospitals (AP-HP). Here, she oversaw 500 employees and two sites dedicated to the development of its procurement policy and supply chain, as well as the development and manufacturing of drugs for specific hospital unmet needs.

Claire Biot graduated from France's Ecole Polytechnique engineering institute. She later earned a Master of Science degree in life sciences from the Watson School of Biological Sciences in New York, and an engineering degree from the Corps des mines program in Paris. She studied cancer immunotherapy at Institut Pasteur in Paris and graduated with a doctorate in immunology.

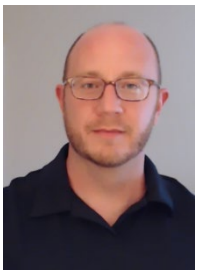
Claire Biot has been an active member of several World Health Organization working groups on health products, has co-authored four publications and was granted a patent in the field of immunotherapy. Additionally, Claire Biot sits at Mauna Kea Technologies Board of Directors

## **Dan Burkhoff, MD, PhD** – Cardiovascular Research Foundation

*Director, Heart Failure, Hemodynamics and Mechanical Circulatory Support Research at the CRF Clinical Trials Center and Adjunct Associate Professor at Columbia University in the department of Medicine*

Daniel Burkhoff, MD, PhD, is Director, Heart Failure, Hemodynamics and Mechanical Circulatory Support Research at the CRF Clinical Trials Center and Adjunct Associate Professor at Columbia University in the department of Medicine. He started his career by earning a Bachelor of Sciences degree from Cornell University in Applied and Engineering Physics. He then obtained Doctor of Philosophy and Medical degrees from The Johns Hopkins School of Medicine and completed a fellowship in Cardiology at The Johns Hopkins Hospital. Dr. Burkhoff then moved to Columbia University in the City of New York where he ran the Cardiovascular Research Laboratory through 2003 and was instrumental in establishing and running the Jack Skirball Center for Cardiovascular Research of the CRF through 2005. Dr. Burkhoff collaborates on heart failure research initiatives across all divisions of CRF. Dr. Burkhoff is author of Harvi, an interactive simulation web- and iPad-based application for teaching and researching many aspects of ventricular mechanics and hemodynamics. Dr. Burkhoff has developed novel curricula using Harvi in educational programs for practicing physicians, fellows, and medical students around the world. He currently focuses on cardiovascular modeling and research in ventricular mechanics and device and pharmacologic treatments for heart failure.

# MEET THE PRESENTERS



## **Brent Craven, PhD** – U.S. Food and Drug Administration

*Research Scientist and Principal Investigator*

Brent Craven is a Research Scientist and Principal Investigator in the Division of Applied Mechanics, Office of Science and Engineering Laboratories, Center for Devices and Radiological Health (CDRH) at the U.S. Food and Drug Administration (FDA). He received his PhD in Mechanical Engineering from the Pennsylvania State University in 2008. His areas of expertise include computational fluid dynamics (CFD), fluid-structure interaction (FSI), multiphysics modeling, patient-specific modeling, and verification and validation (V&V) of computer modeling applied to medical devices such as mechanical circulatory support devices, artificial heart valves, intravascular blood clot filters, and inhalers. His research at the FDA primarily focuses on (i) advancing the use of V&V for physics-based computational modeling of medical devices, and (ii) developing improved models for reliably predicting flow-induced blood damage in cardiovascular devices. In addition to research, he regularly serves as a subject matter expert and technical consulting reviewer on regulatory submissions to CDRH. He has authored 47 refereed journal papers and more than 90 conference proceedings and abstracts. He was a recipient of an FDA CDRH COVID-19 award in 2020 for his regulatory contributions in the technical review of emergency use ventilators, the FDA CDRH Excellence in Scientific Research Award in 2018, the American Society for Artificial Internal Organs (ASAIO) Kolff Award in 2016, and his research was featured in the 2015-2016 FDA Regulatory Science Progress Report to Congress.

## **Matthieu De Beule, PhD** – FEops

*CEO*

Under Matthieu's leadership, FEops has transformed from a small academic spin-off into a fast-growing venture capital backed gazelle in the medtech sector. He completed his degree in engineering at the University of Ghent in 2002 and gained his PhD in 2008 for his research on cardiovascular device and procedure modeling.

## **Natacha DePaola, PhD** – Illinois Institute of Technology

*Professor of Biomedical Engineering*

Dr. DePaola has 35 years of combined experience in biomedical engineering research, education, and academic leadership. Her research investigates the role of physical mechanisms on cellular behavior stressing its importance in the understanding of human disease, the development of new therapies, and the engineering of functional tissues and devices. Dr. DePaola is committed to excellence in engineering education and the empowerment of a diverse and agile workforce to succeed in today's rapidly changing technological-driven industry and society. She has received various awards and recognitions, is a Fellow of the American Institute for Medical and Biological Engineering (AIMBE), member of eight other professional societies, and serves/has served in various public and private (academic and non-academic) advisory committees or boards. Dr. DePaola is a co-inventor of a few biotechnologies focused on the development of instrumentation for biomedical research and diagnostics. Dr. DePaola holds a Ph.D. in Medical Engineering/Medical Physics from the Division of Health Science and Technology at Harvard Medical School – Massachusetts Institute of Technology. She has held academic and research appointments at Columbia University (NY), Northwestern University (IL), the University of Huntsville (AL), Rensselaer Polytechnic Institute (NY), and the Albany Medical College Center for Cardiovascular Sciences (NY). While chair of the Global Engineering Deans Council (GEDC) (2017-2019), Dr. DePaola promoted Academia–Industry interactions and led the partnership agreement for the GEDC Industry Forum (international workshops bringing academic and corporate leadership together to discuss contemporary challenges in the development of the engineering workforce of the future). She currently leads the Illinois Tech-Dassault Systèmes partnership focused in the development of educational solutions and the application of advanced digital tools in biomedical engineering research.

# MEET THE PRESENTERS

**April Deady** – Dassault Systèmes

*Life Sciences Industry Solution Experience Manager*

April Deady is a Life Sciences Industry Experience Manager responsible for marketing and administration of the Living Heart Project and other human modeling-related initiatives. Prior to joining the Virtual Human Modeling group, April had a similar role in the Alliances team where she worked since graduating from Bryant College, now Bryant University, in 2004 with a Bachelors of Science degree in Business Administration.

**Mark Dickstein, MD** – Columbia University Medical Center

*Professor of Anesthesiology*

Marc Dickstein, MD is a Professor of Anesthesiology at Columbia University Medical Center in New York. After completing medical school and residency training at Columbia, he has remained as full-time clinical faculty in the Division of Cardiothoracic Anesthesia. Dr. Dickstein's research interest include cardiovascular physiology, heart failure, and mechanical circulatory support. He is also a dedicated educator and co-developer of Harvi.

**Karl D'Souza** – Dassault Systèmes

*Life Sciences Industry Solution Experience Director*

With technical expertise in computational modeling and simulation, and 20 years at Dassault Systèmes, Karl D'Souza has extensive experience in technical consulting, product management, and business development. As part of the Virtual Human Modeling (VHM) initiative, Karl's primary mission is to identify and develop high-value applications involving realistic simulation of human biological systems, especially the heart and the brain. His secondary responsibilities include working with Dassault Systèmes R&D and external partners to improve the predictive power and market reach of VHM technologies, by leveraging computational techniques including multiphysics/multiscale modeling and machine learning, as well as emerging digital health technologies such as multimodal interfaces, wearables, and 3D printing. Karl has a B.Tech in Materials Science and Engineering from the Indian Institute of Technology Bombay, a Masters in Mechanical Engineering from the State University of New York at Buffalo, and a MBA in Strategy and Marketing from Bryant University, and is based in Providence, RI.

**Laina Emmanuel** – Brainsight AI

*CEO*

Laina Emmanuel has 15+ years of experience in healthcare management, policy and consulting. She has an MBA in healthcare from Indian School of Business, in some of the highest impact organizations like Clinton Health Access Initiative. She has deep technical knowledge, having built operating systems at Netapp, and at the Offshore Development Centre of Cisco at Infosys.

**Mona Eskandari** – University of California Riverside

*Assistant Professor, Mechanical Engineering*

Mona Eskandari is an Assistant Professor of Mechanical Engineering and associated faculty of the BREATHE Center in the School of Medicine at UC-Riverside. Prior to her postdoctoral fellowship at UC-Berkeley, she received her doctorate from Stanford University. She has been honored with several fellowships, including the University of California Provost's Engineering Faculty Research Fellowship and National Science Foundation Graduate Research Fellowship. Her area of expertise is computational modeling and experimental characterization of biological systems, with an emphasis on pulmonary mechanics.

# MEET THE PRESENTERS

**Nicolas Gazeres** – Dassault Systèmes

*Healthcare & Life Sciences Research & Technology Director, Living Brain*

Nicolas started working on the neural dynamics of local cortical circuits in visual cortex, in close collaboration with sensory electrophysiologists. In 1999, he joined Dassault Systèmes and worked on software engineering, application servers, Product Lifecycle Management and biomedical data integration. He now leads a computational neurology team, passionate about bringing new interpretation tools to neurologists based on Virtual Brain technologies. Nicolas holds a Master's degree in Applied Mathematics from Ecole Centrale Paris-Saclay (1993) and a PhD in Computational Neuroscience from Université Pierre et Marie Curie (1999).

**Kerim Genc** - Synopsys

*Global Business Development Manager*

Kerim Genc is the Global Business Development Manager for the Simpleware Group within Synopsys. He is responsible for managing global business development, sales, and technical marketing content development. He is involved in several committees, one of which is the Patient Specific Modeling Sub-Group of the ASME V&V40, which provides guidelines to the use of Computational Modeling for Medical Devices and Software as a Medical Device (SaMD). He received his BS and MS in biomechanics from the University of Calgary and the Pennsylvania State University respectively and completed his PhD in Biomedical Engineering at Case Western Reserve University in 2011.

**Wolfgang Gentzsch** – The UberCloud

*President & Co-Founder*

Wolfgang Gentzsch is president and co-founder of the UberCloud. He was the chairman of the International ISC Cloud Conferences 2010 – 2015, an Advisor to EU projects EUDAT & DEISA, directed the German D-Grid Project and the North Carolina State Grid, and was a member of the Board of Directors of the Open Grid Forum and of the US President's Council of Advisors for Science and Technology, PCAST. After his Ph.D. in Appl Math at Technical University Darmstadt, he started his professional career as a magneto-hydrodynamics researcher at the Max-Planck-Insitute for Plasmaphysics and headed the CFD Department at the German Aerospace Center in Gottingen.

**Julius Guccione, PhD** – University of California San Francisco

*Professor of Surgery at the UCSF School of Medicine*

Julius Guccione received his PhD in Bioengineering from UCSD in 1990 and completed his postdoctoral training in Biomedical Engineering at The Johns Hopkins University in 1993. He has been a faculty member in UCSF's Department of Surgery since 1999, where Dr. Guccione has specialized in finite element modeling of the efficacy of novel surgical procedures and devices for treating heart failure. In 2019, he teamed up with Yaghoub Dabiri, Alex Van der Veldon, Kevin Sack, Jenny Choy and Ghassan Kassab to develop and validate a real-time left ventricular mechanics simulator using machine learning (DOI: 10.3389/fphy.2019.00117).

# MEET THE PRESENTERS

**Debao Guan** – University of Glasglow

*PhD Candidate*

Debao Guan is a PhD candidate in applied mathematics, associated with the Soft Mech Centre funded by EPSRC. His supervisors are Dr. Hao Gao and Prof. Xiaoyu Luo from the School of Mathematics and Statistics at the University of Glasgow, UK.

**Antoine Guillemain** – Dassault Systèmes

*Research Engineer, Living Brain*

Antoine Guillemain is a Research Engineer in the Computer Science department at Dassault Systèmes with a focus on the Living Brain.

**Alireza Heidari, PhD** – McGill University

*Research Associate*

Alireza Heidari has Ph.D. in Structural Mechanics from The Patrice Lumumba University in Moscow. He obtained Candidate of Science certificate in Structural Mechanics from Moscow State University of Railway Engineering. He has conducted research on Computational Geometry at Technical University of Berlin in Germany. He is currently working as Research Associate at McGill University in joint program between Department of mechanical Engineering and Department of Anatomy and Cell biology and his current research focuses on growth and remodeling of cardiac soft tissue, and shakedown analysis.

**Philipp Hempel, PhD** – Admedes GmbH

*Head of Simulation and Testing*

Philipp Hempel is the Head of Simulation and Testing at Admedes GmbH, a world-leading contract manufacturer of nitinol self-expandable components to the medical device industry. He holds a PhD in Computational Mechanics from the Institute of Technology, Karlsruhe and a MSc in Computational Engineering Sciences from the Leibniz University Hanover, Germany. In his current role he is responsible for the test lab and all computational simulations at Admedes. These simulations are performed to optimize the manufacturing and the in-vivo perfomance of devices and to asses the fatigue loadings, respectively.

**David Hoganson, MD** – Boston Children's Hospital

*Assistant in Cardiac Surgery*

Dr. Hoganson is an Assistant in Cardiac Surgery, Department of Cardiac Surgery at Boston Children's Hospital, and is an Instructor of Surgery at Harvard Medical School. His clinical focus is on neonates and children with congenital heart disease. He has co-lead development of patient specific 3D modeling and computational flow modeling of complex cardiac disease for improved pre-operative planning and intraoperative guidance. His lab also focuses on development of medical devices to improve the safety and effectiveness of cardiac surgery. Dr. Hoganson has a background in engineering and industry experience developing cardiovascular medical devices prior to medical school. He graduated from the Temple University School of Medicine in 2004 and completed his general surgery residency and CT fellowship at the Washington University in St. Louis, and completed a congenital cardiac surgery fellowship at the Boston Children's Hospital in 2016.

# MEET THE PRESENTERS

**Daniel Hurtado, PhD -** Pontificia Universidad Católica de Chile

*Associate Professor, School of Engineering and Institute of Biological and Medical Engineering*

Daniel Hurtado is an associate professor with the Engineering School and Institute for Biological and Medical Engineering and Pontificia Universidad Catolica de Chile. His research focuses in the development of computational models of the respiratory system for medical translational research. He is an elected member of the World Council of Biomechanics.

**Filip Ježek, PhD –** University of Michigan

*Post Doctoral Fellow*

Filip Ježek received his PhD in Artificial Intelligence and Biocybernetics at Czech Technical University in Prague in 2019, led by prof. Kofránek. Since then he has worked as a postdoctoral fellow at Dan Beard's group at University of Michigan. His main research interests include complex physiological models, mainly of cardiovascular system and acid-base balance, system identification and development of model-based simulators.

**Patrick Johnson** – Dassault Systèmes

*Senior Vice President, Corporate Science & Research*

Patrick Johnson is SVP Corporate Science & Research at Dassault Systèmes. His mission is to define the scientific bases of the company's solutions, invent new disruptive technologies for the Industry Renaissance and animate the group's global research ecosystem.

After joining in 1996, he held various positions in R&D, from Product Lifecycle Management infrastructure to virtual product design solutions for the CATIA flagship brand. In 2001, he became head of the artificial intelligence department and played an instrumental role with new engineering practices currently now adopted in multiple sectors, such as smart morphing templates, and industrial processes capitalization & reuse automation.

As Head of Corporate Research in 2004, he launched the development of original technologies for all brands, and significantly grew the global innovation ecosystem of public/private partnerships with prestigious research bodies. In addition, he launched a strategic diversification for 3DS, following a very large European research program (BioIntelligence), resulting in a suite of collaborative applications for the life sciences sector, and the creation of the BIOVIA brand with a worldwide R&D lab in modeling, simulation, big data for life sciences.

A graduate of ENSAE, Mr. Johnson is based at 3DS Headquarters near Paris. He is or has been a member of the National Academy of Technology as well as of the scientific boards of INRIA, and International Society of Computational Biology.

# MEET THE PRESENTERS

**Andy Kalambi** – Rize, Inc.

*CEO*

Andy Kalambi is the CEO of Rize Inc. an Additive 2.0 company based in Concord MA. RIZE is focused on safe, affordable, full color industrial 3D printing for diverse applications in life sciences, industrial and urban lifestyle. Andy brings over 25 years experience in enterprise software and additive manufacturing with leading companies like Dassault Systemes and SAP. Prior to RIZE, Andy served as the CEO of ENOVIA and the Global Vice President of the 3DEXPERIENCE Platform. Andy is a part of the Technology Pioneers 2020 at the World Economic Forum and has spoken recently at their Pioneers of Change conference.

**Steven Kreuzer, PhD, PE** – Exponent, Inc.

*Managing Engineer*

Dr. Kreuzer specializes in structural mechanics utilizing both finite element modeling and custom mechanical tests. He has extensive experience with analysis and testing of cardiovascular medical devices including stents and catheters, as well as musculoskeletal implants. Prior to joining Exponent, Dr. Kreuzer studied myocyte protein mechanics using molecular dynamics and cellular fluid/structural interactions in maturing and remodeling orthopedic tissues including cartilage and cortical bone.

**Adarsh Krishnamurthy, PhD** – Iowa State University

*Associate Professor of Mechanical Engineering*

Adarsh Krishnamurthy is an associate professor of Mechanical Engineering at Iowa State University, where he currently leads the Integrated Design and Engineering Analysis (IDEA) lab. Prior to this, he was a post-doctoral researcher in the Bioengineering department at UC San Diego and received his Ph.D. in Mechanical Engineering from UC Berkeley. He is the recipient of the NSF CAREER award in 2018 for developing GPU-accelerated tools for patient-specific cardiac modeling. His research interests include computer-aided design (CAD), GPU and parallel algorithms, biomechanics, patient-specific heart modeling, solid mechanics, and computational geometry.

**Steve Levine, PhD** – Dassault Systèmes

*Executive Director Living Heart Project*

Dr. Steve Levine is Sr. Director of Life Science and the Executive Director of the Living Heart Project at Dassault Systèmes. Steve is responsible for leading the DS strategy for digital healthcare, including the 3DEXPERIENCE Twin, which uses advanced AI and VR to create functioning 3D human models. He is also responsible for incubating a startup community within the 3DEXPERIENCE Labs at DS and creating a marketplace of digital healthcare services.

Dr. Levine holds a Ph.D. in Materials Science from Rutgers University and was elected as a Fellow in the American Institute for Medical and Biological Engineering (AIMBE). He also has nearly 30 years of experience driving innovation in technology, beginning his career in health tech at the San Diego based startup Biosym that went public as Accelrys in 2004 and acquired by Dassault Systèmes in 2014.

**Shihao Li** – University of Tokyo

*PhD Candidate*

Shihao Li is a PhD candidate at the University of Tokyo. His research in the Sugita Lab, focuses on finite element solver based musculoskeletal models for clinical applications.

# MEET THE PRESENTERS

## **Tomasz Luniewski** – CAPVIDIA

*CEO and Founder*

Tomasz Luniewski is the CEO and Founder of CAPVIDIA. He has 40 years experience in CAD and CAE software and simulation, leading software engineering startups to international operation, management, strategic marketing, international sales channel development, and building strategic partnerships. Mr. Luniewski has strong technical, management and communication skills. International experience in lecturing, organization and participation of engineering & scientific events. He is a board member in IT companies and professional organizations (Europe, USA). Excellent mathematical & analytical background. Areas of expertise: 3D CAD, CFD simulation, multi-parameter optimization, image recognition & signal processing, acoustics.

## **Francesca Margara** – University of Oxford

*PhD Candidate*

Francesca Margara graduated as a Biomedical Engineer from the University of Bologna, Italy, in 2018 and she is now a third year PhD student in the Computational Cardiovascular Science group at the University of Oxford (Department of Computer Science) under the supervision of Prof Blanca Rodriguez and Prof Alfonso Bueno-Orovio. She is also a Marie-Curie Innovative Training Network fellow in the Personalised In-silico Cardiology project.

Her research focuses on investigating drug action and hypertrophic cardiomyopathy through multiscale computational modelling and simulation of human ventricular electromechanical function.

## **Theodoros Marinopoulos** – Loughborough University

*PhD Candidate*

After obtaining his Diploma in Production Engineering and Management from the Technical University of Crete, Theodoros joined Loughborough University in 2018 to pursue a PhD in Mechanical Engineering. His research is focused on the performance improvement of lower limb prosthetics. Combining experimental and numerical methods for the mechanical characterization of human soft-tissue and the mechanical assessment of the prosthesis, he is aiming to develop a quantitative methodology for the prosthetic socket design optimization.

## **Alison Marsden, PhD** – Stanford University

*Professor, Pediatrics, Bioengineering and Mechanical Engineering*

Alison Marsden is a Professor in the departments of Pediatrics, Bioengineering, and, by courtesy, Mechanical Engineering at Stanford University. She is a member of the Institute for Mathematical and Computational Engineering. From 2007-2015 she was a faculty member in Mechanical and Aerospace Engineering at UCSD. She graduated with a BSE degree in Mechanical Engineering from Princeton University in 1998, and a PhD in Mechanical Engineering from Stanford in 2005. She was a postdoctoral fellow at Stanford University in Bioengineering from 2005-07. She was the recipient of a Burroughs Wellcome Fund Career Award at the Scientific Interface in 2007, an NSF CAREER award in 2011. She has been elected fellow of three major scientific societies: AIMBE and SIAM in 2018, and the APS Division of Fluid Dynamics in 2020. She has published over 100 peer reviewed journal papers and serves on the editorial board of several leading journals. Her research focuses on the development of numerical methods for cardiovascular blood flow simulation and application of engineering tools to impact patient care in cardiovascular surgery and congenital heart disease.

# MEET THE PRESENTERS

**Mrudang Mathur** – University of Texas at Austin

*PhD Candidate*

Mrudang is a PhD student in Mechanical Engineering at The University of Texas at Austin, working with Dr Manuel Rausch in the Soft Tissue Biomechanics Laboratory. His research focuses on building patient-specific models of the human tricuspid valve which will be used in finite element simulations of surgical procedures and medical device testing.

**Adi Morany** – Tel Aviv University

*PhD Candidate*

Adi Morany, is a PhD student of Mechanical Engineering at Tel-Aviv University, under the supervision of Prof. Rami Haj-Ali. Adi received his BSc degree (2015) in Aerospace Engineering from the Technion (Israeli Institute of Technology) and his MSc in Mechanical Engineering (2019) from Tel Aviv University. His current research activities focus on biomechanical, finite elements and multiphysics analysis, mainly co-simulating refined aortic valve (AV) models within the Living Heart Human Model (LHHM). A prime goal of his research is to introduce blood flow simulations through the AV models, using fluid-structure Lattice Boltzmann approach. Adi and his colleagues previously developed several stand-alone parametric AV structural models, including tricuspid and bicuspid AV geometries with different pathologies, such as calcification, to examine kinematic factors.

**Louise Moreau** – Dassault Systèmes

*R&D Technology Engineer, Living Brain*

Louise Moreau is a Research and Development Engineer in the Computer Science department at Dassault Systèmes with a focus on the Living Brain.

**Mathias Peirlinck, PhD** – Stanford University

*Post Doctoral Research Fellow*

Mathias Peirlinck completed his Engineering degree at Ghent University, Belgium in 2013, and consequently started a PhD in Biomedical Engineering focusing on medical device development and computational biophysical modeling of gastro-intestinal and cardiac tissue. In 2015, he undertook an internship with the LHP core development team and consequently joined the LHP community as an independent researcher. After finishing his PhD in 2019, Mathias became a postdoctoral researcher at Stanford University, where his research focuses on the multiscale biophysical behavior of the human heart.

**Ashley Peterson** – Thornton Tomasetti

*Vice President*

Ashley Peterson is a computational expert with an extensive background in medical device and energy efficiency design. He plays a key role in the growth and diversification of Thornton Tomasetti's life science capabilities, with an emphasis on product optimization, virtual clinical trials, clinical decision support as well as non-medical aspects of human-centric engineering. Ash is well-versed in fluid dynamics, heat transfer, structural mechanics, medical device analysis and data interrogation.

# MEET THE PRESENTERS

**Cristina Pop** – McGill University

*Medical Student*

Cristina Pop is a fourth year medical student at McGill University with a keen interest in cardiology. Current research interests include platelet function in coronary artery disease, computational modeling, and cardiovascular disease in women and minorities, for which she was the recipient of the McGill "MMRA Researcher of the Month". The most recent publication involved computational modeling of an intra-aortic balloon pump using fluid structure interaction.

**Manuel Rausch, PhD** – University of Texas at Austin

*Assistant Professor*

Dr. Rausch's research focuses on soft-tissue biomechanics, nonlinear continuum mechanics, numerical modeling, and material characterization and constitutive modeling.

Originally from Germany, Dr. Rausch earned his PhD from Stanford University in 2013 before taking on the role of Director of R&D at a small medical device company. After a two year stint in industry, Dr. Rausch returned to academia as a post-doctoral fellow at Yale University. As of 2017, Dr. Rausch is an assistant professor in The University of Texas at Austin's Department of Aerospace Engineering & Engineering Mechanics and Department of Biomedical Engineering.

**Quentin Rouanet** – Dassault Systèmes

*3DEXPERIENCE Edu Hub Specialist*

Quentin Rouanet is a 3DEXPERIENCE Edu Hub Specialist at Dassault Systèmes, where he has been employed for the past 8 years. His focus is on creating various pedagogical-based learning projects to facilitate the usage of Dassault Systèmes solutions by universities and engineering schools. Quentin has over 15 years experience as a CATIA Mechanical Engineer.

**Kevin Sack, PhD** – Medtronic

*Biomedical Engineer*

Kevin Sack is Biomedical Engineer, Finite Element (FE) enthusiast and pursuer of patient-specific computational cardiac solutions. Kevin received his doctoral degree at the University of Cape Town, South Africa, the same institute he lectured FE methods courses for over several years. After a postdoc at the University of California, San Francisco, Kevin began working for Medtronic Inc. His work at Medtronic focuses on applying FE modeling to solve cardiac mechanics problems. Specifically, the computational investigation of emerging therapies, medical devices and their efficacy in treating the failing heart.

**Francisco Sahli Costabal, PhD** – Pontificia Universidad Católica de Chile

*Assistant Professor*

Dr. Sahli is an Assistant Professor at the Pontificia Universidad Católica de Chile, where he began his studies and received his bachelor and master degrees. During his master's thesis he developed a semi-automatic method to estimate the load bearing capacity of vertebral bodies from CT images using finite elements. In 2017, he earned his PhD in the Living Matter Lab of Prof. Ellen Kuhl at Stanford University. His research focuses on modeling the electrophysiology of the heart in organ-level simulations. In particular, he has developed a high resolution, multi-scale model to predict potential side effects of drugs in the heart.

# MEET THE PRESENTERS

## **Benoit Sarthou** – Dassault Systèmes

*Technology Manager, Computational Neurology*

Benoit Sarthou is currently a Technology Manager, in Computational Neurology, a research team of Dassault Systèmes.

He is part of the EPINOV project, a hospital-research clinical try, co-lead by 3DS, Aix-Marseille University and AP-HM.

Since the end of his internship last year on medical image registration, he has developed tools to tackle on structural modelisation of a virtual brain during an epileptic crisis, as well as a strong knowledge on medical images and MRI uses.

He values being part of a scientific project having real impact on healthcare and surgery for epileptic patients, through improving medical information for neurosurgeons.

Mr. Sarthou has a Master Research Degree in Artificial Intelligence, and a Engineer's diploma in Robotics, Embedded Systems and Perception

## **Randy Scheistl, PMP** – Boston Scientific Corporation

*Vice President, R&D, Global Technology & Services*

Randall L. Schiestl, PMP, is Vice President, R&D, Global Technology & Services at Boston Scientific Corporation where he leads a team driving the development and sustainment of minimally invasive medical devices. He has global responsibility for building technical community, enabling technology partnerships, driving R&D globalization, leading product security and implementing global R&D systems. Engineering teams that he directs are located across multiple facilities both US and OUS and he chairs the cross-divisional Technical Executive Committee within Boston Scientific.

## **Noah Schulz** – Boston Children's Hospital

*Senior Engineer, Department of Cardiac Surgery*

Noah Schulz MSME is a Senior Engineer in the Department of Cardiac Surgery at Boston Children's Hospital. He creates patient-specific cardiac models for simulation and visualization of complex patient anatomy, and develops novel visualization interfaces for use in the presurgical and OR environments.

## **Paul Segars, PhD** – Duke University

*Associate Professor of Radiology and Biomedical Engineering*

Dr. Segars is an associate professor of radiology and biomedical engineering and a member of the Carl E. Ravin Advanced Imaging Laboratories (RAILabs) at Duke University, Durham, North Carolina. He received his PhD in biomedical engineering from the University of North Carolina in 2001. Dr. Segars is among the leaders in the development of simulation tools for medical imaging research where he has applied state-of-the-art computer graphics techniques to develop realistic anatomical and physiological models. Foremost among these are the extended 4D NURBS-based Cardiac-Torso (XCAT) phantom, a computational model for the human body, the 4D Mouse Whole-Body (MOBY) and Rat Whole-Body (ROBY) phantoms, models for the laboratory mouse and rat respectively. These phantoms are widely used to evaluate and improve imaging devices and techniques.

# MEET THE PRESENTERS

## **Partho Sengupta, MD, MBBS, FACC, FASE** – West Virginia University

*Chief of the Division of Cardiology, Director of Cardiovascular Imaging, and Chair of Cardiovascular Innovation at WVU Heart and Vascular Institute; Professor of Medicine in the WVU School of Medicine*

Prior to joining WVU Medicine, Dr. Sengupta was the director of interventional echocardiography, cardiac ultrasound research, and core lab at Mount Sinai's Zena and Michael A. Weiner Cardiovascular Institute and the Marie-Josée and Henry R. Kravis Center for Cardiovascular Health.

Dr. Sengupta received his medical degree from Government Medical College in India, where he also completed a residency. He then completed a cardiology fellowship from All India Institute of Medical Sciences and a cardiology fellowship at both Mayo Clinic in Minnesota and Arizona.

Dr. Sengupta is the associate editor of the Journal of American College of Cardiology: Cardiovascular Imaging, section editor for the Journal of American College of Cardiology, on the editorial board of eight cardiology journals, and has more than 200 publications and text book chapters. He is the current chair of Innovation Task Force at the American Society of Echocardiography. He has been a TedMed speaker and has been recognized as a Top 25 professor of ultrasound medicine. Dr. Sengupta is board certified in internal medicine, cardiovascular medicine, and echocardiography.

## **Deepanshu Sodhani, PhD** – Enmodes GmbH

*R&D Project Manager*

Deepanshu has recently graduated from RWTH Aachen University. During his time at the university his primary focus was computational mechanics. He will obtain/obtained his PhD in the field of computational modelling and analysis of composite valves. He now works at Enmodes GmbH as a R&D Project Manager and his current work focuses on heart assist devices and heart valves. Prior to his PhD he achieved a masters in computer aided mechanical engineering from Aachen & a Bachelors in Mechanical Engineering from Visvesvaraya Technological University in Bangalore, India.

## **Ashley Stroh** – Dassault Systèmes

*Intern – Solution Consultant*

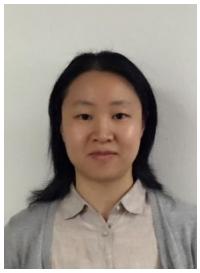
Ashley Stroh is an intern at Dassault Systèmes on the Living Heart Project for the past year. Her work has been primarily on developing methodologies for heart models in order to make them easier to use and more realistic. She has developed experience using the CATIA and the 3DExperience platform to do so. She has worked on developing a baseline full adult heart, a pediatric heart, a left heart submodel, and a few disease state models. In addition to this work, she is a junior at Wichita State University in Kansas, studying Biomedical Engineering. "Working on the Living Heart Project has been such a great opportunity for me."

## **Mohan Thanikachalam –** Dynocardia

CEO

Mohan Thanikachalam, MD is a cardiovascular surgeon with a long-standing interest in public health. As a surgeon managing critically ill inpatients and a physician involved in programs offering community- and home-based services for diabetes and hypertension management, he has first-hand knowledge of the current blood pressure measuring devices and their limitations. To address these limitations, as the principal investigator of a NIH grant, Mohan has led the joint effort (TUFTs and MIT) to develop the ViTrack technology, a first-of-its-kind technology for continuous non-invasive blood pressure monitoring. Mohan is a faculty at Tufts University School of Medicine and an Affiliate Faculty at MIT.

# MEET THE PRESENTERS



## **Yunjie Wang, PhD** – Thornton Tomasetti

*Project Engineer*

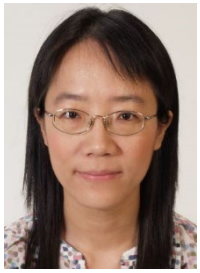
Dr. Yunjie Wang joined Thornton Tomasetti in Cupertino, CA to help expand their life sciences capabilities by bring to bear her knowledge of tissue mechanics and computational modeling to address challenging problems. She's very proficient in advanced finite element modeling analysis especially with Abaqus and is an advanced user of Matlab for experimental analysis, image processing, mathematical modeling and non-linear parameter estimation and optimization.

She has a PhD from Boston University where she was heavily involved in the study of structural and mechanical roles of soft biological tissue both experimentally and computationally. Prior to her PhD, Yunjie earned a Masters in solid mechanics and an undergraduate degree in engineering mechanics both from Tongji University. Yunjie has been working on the Living Heart Human model, focusing on the improving the behavior of the mitral valve.

## **Stuart Wright, PhD** – Dassault Systèmes

*Life Sciences Industry Solution Technical Senior Manager*

Dr. Wright Is a 25year veteran in the field of simulation and has an extensive background and professional experience in mechanical engineering and specialization in transient dynamics. Dr. Wright applies this experience to helping product development organizations to develop and deploy simulation capabilities for best economic return. By focusing on the effectiveness and efficiency of simulation developers can save time and money in programs, and simultaneously innovate products. For the past 3 years Dr. Wright has focused his attention on the Life Sciences industry where he actively supports the rapidly expanding use of simulation in support of product/therapy development, reduction in reliance on physical testing, and even the design and replication of clinical trials.



## **Jiang Yao, PhD** – Dassault Systèmes

*Life Sciences Industry Solution Technical Senior Manager*

Jiang Yao received a bachelor's degree in Mechanical Engineering from Tsinghua University in 1999. She graduated from University of Rochester with a PhD in Computational Biomechanics in 2006, where she developed a finite element model for the knee joint to study the effect of knee injuries. She performed postdoctoral researches in computational simulation of cardiac morphogenesis in chick embryo and material modeling of plaque tissues using intravascular elastography. She lectured linear and nonlinear finite elements for undergraduate and graduate students at the University of Rochester in 2010. She joined Dassault Systèmes in 2011 as a technical specialist supporting Virtual Human Modeling activities and deliverables on human modeling and simulations. She developed musculoskeletal models for the upper and lower extremities, material databases and finite element models for various human organs and tissues (hand, foot, skin, bone etc.). She is the main developer for the Living Heart Human Model (LHHM) since 2017. Her major contribution on the LHHM is the addition of valves and coronaries, and implementation of the advanced electrophysiological model that enables LHHM to investigate cardiac toxicity of drugs.

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