BRANDIS KELLER

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OBJECTIVE

Actively involved in quality systems engineering for the research development and manufacture of polyurethane foam constructs for use in cardiovascular applications.

HIGHLIGHTS OF QUALIFICATIONS

- Highly proficient in a wide gamut of microscopy and computational techniques including
  - Imaging and Acquisition: Micro-CT operation (X-Tek Hawk, Skyscan), Post-processing (VG Studio Max, NRecon, Mimics, Matlab)
  - Histology: PMMA Plastic histology production (Exakt Micrograinder and Diamond blade Bandsaw), Tissue morphometrics and measurements (ImagePro, ImageJ), Low Vacuum Scanning Electron Microscopy (JEOL JSM-6460)
  - Structural analyses: Nonlinear and structural model development (ABAQUS/Standard, ABAQUS/Explicit)
  - CAD Software: 3D modeling (AutoCAD, Rhinoceros)
  - Computational Fluid Dynamics (CFD)analyses: Volume mesh generation (ANSYS/ICEM CFD, steady and transient simulations of biological flow (ANSYS/Fluent), Post-processing (ANSYS/CFD-Post, Tecplot)
  - Other: Experimental setup control equipment (LabVIEW); Statistical analysis (Matlab, SPSS)
- Strong background in biomedical imaging, endovascular device histology and evaluation, bio-fluid mechanics.
- Ability to manage time efficiently according to timelines and budgetary targets.
- Strong analytical, problem solving, project management, communication and interpersonal skills.

EDUCATION

Ph.D. in Bioengineering Marie Curie Fellow	Politecnico di Milano, Milan, Italy Laboratory of Biological and Structural Mechanics Research Advisor: Gabriele Dubini, Ph.D.	May 2013
M.E. in Biomedical Eng.	Texas A&M University, College Station, TX, USA Department of Biomedical Engineering Research Advisor: William Hyman, Sc.D.	Dec. 2009
B.S. in Biomedical Eng. Minor, Mathematics	Texas A&M University, College Station, TX, USA Department of Biomedical Engineering	May 2007

RESEARCH AND WORK EXPERIENCE

Assistant Research Scientist May 2014 - present
Biomedical Device Laboratory (BDL)
Texas A&M University, College Station, TX

- Develop and implement good manufacturing practice quality system (FDA 21 CFR Part 820 and ISO 13485) for materials and device fabrication.
- Supervise graduate and undergraduate lab activities and provide daily oversight for publications on compelling findings.

Graduate Research Associate Mar 2010 - May 2013
Laboratory of Biological and Structural Mechanics (LaBS)
Politecnico di Milano, Milan, Italy

- Computationally modeled idealized arterial domain superimposed onto imaged *in vivo* stent.
- Implemented CFD analysis of blood flow and oxygen transport stresses for localization of in-stent restenosis.
- Imaged, segmented and rendered 3D surface of stents embedded in porcine coronary arteries; Performed morphometrics analysis on histology (PMMA).

Technical Laboratory Coordinator / Lab Manager Sept 2006-Mar 2010
Cardiovascular Pathology Laboratory
Texas A&M College of Veterinary Medicine, College Station, TX

- Coordinated training and activities of graduate and undergraduate students (veterinary and biomedical engineering) for pathology (necropsy, plastic histology and microscopy) and lab imaging (micro-CT) techniques.
- Ensured compliance to all internal SOPs and FDA and industry regulations. Developed and/or improved development processes, procedures and protocols.

Engineering Research Assistant Jan 2005-July 2005
Cardiovascular Pathology Laboratory
Texas Heart Institute, Houston, TX

- Implemented pre-clinical studies (FDA regulation 21 CFR part 58) for implantable cardiovascular devices (stents, pacemakers and leads, valves, grafts, pumps, prostheses, etc); Duties included device and tissue harvesting, x-ray imaging, histology metrics, data management
- Participated in biomaterials research for compatibility, impedance issues, surgical placement and other issues of pathological relevance.

INTERNATIONAL EXPERIENCES & HONORS

Medical Devices Design in Cardiovascular Applications (MeDDiCA) Mar 2010-May 2013
Politecnico di Milano, Milan, Italy

- Marie Curie Fellow in industrial and clinical ITN (initial-training-network) program of multi-disciplinary team from seven European universities (EU-FP7-PEOPLE-ITN-2008-238113).

Engineering World Health (EWH) Jun 2009-Aug 2009
Duke Global Health Institute, Duke University

- Summer clinical engineering volunteer in Costa Rica and Honduras, Central America; Travel scholarship recipient.

22nd Congress-Bundestag Youth Exchange for Young Professionals (CBYX-PPP) July 2005-July 2006
U.S. Department of State, Bureau of Educational and Cultural Affairs

- Year-long Immersion scholarship recipient for German language school, University and Internship in Germany.

PUBLICATIONS

1. Amatruda CM, Bona Casas C, **Keller BK**, Tahir H, Dubini G, Hoekstra A, Hose R, Lawford P, Migliavacca F, Narracott A, Gunn J. From histology and imaging data to models for in-stent restenosis. The International Journal of Artificial Organs, April 2014. (DOI: 10.5301/ijao.5000336).
2. **Keller B.**, Amatruda C., Hose D., Lawford P., Gunn J., Dubini G., Migliavacca F., Narracott A., Contribution of mechanical and fluid stresses to the magnitude of in-stent restenosis at the level of individual stent struts, Cardiovascular Engineering and Technology, 2014; 5(2): 164-175 (DOI: 10.1007/s13239-014-0181-y).
3. Caputo M, Chiastra C, Cianciolo C, Cutrì E, Dubini G, Gunn J, **Keller B**, Migliavacca F, Zunino P. Simulation of oxygen transfer in stented arteries and correlation with in-stent restenosis. International Journal for Numerical Methods in Biomedical Engineering, 2013; 29(12): 1373-1387 (DOI: 10.1002/cnm.2588).
4. Morlacchi S, **Keller B**, Arcangeli P, Balzan M, Migliavacca F, Dubini G, Gunn J, Arnold N, Narracott A, Evans D, Lawford P. Hemodynamics and in-stent restenosis: micro-CT images, histology, and computer simulations. Annals of Biomedical Engineering, 2011; 39(10): 2615-2626 (DOI: 10.1007/s10439-011-0355-9).
5. Trimbach DC, **Keller B**, Bhat R, Zankovych S, Pohlmann R, Schroeter S, Bossert J, and Jandt KD, Enhanced Osteoblast Adhesion to Epoxide-Functionalized Surfaces, Advanced Functional Materials, 2008, 18, p1723-1731 (DOI: 10.1002/adfm.200701491).

PROFESSIONAL ACTIVITIES

Oral presentations at international conferences:

- Virtual Physiological Human Network of Excellence Conference: Cardiovascular Applications and Medical Device and Assessment Workshop, 2012, London, UK
- FDA / NHLBI / NSF Workshop on Computer Methods for Medical Devices: Validation of Computer with Nonclinical Models, 2011, Silver Springs, MD, USA
- International Conference on Advancements of Medicine and Health Care through Technology, 2011, Cluj-Napoca, RO
- International Symposium on Biomechanics in Vascular Biology and Cardiovascular Disease, 2011, Rotterdam, NL

Professional Affiliations:

- European Society of Biomechanics (ESB); Marie Curie Fellows Association (MCFA); Professional Women's Association (PWA-Milan)

INTERESTS AND HOBBIES

Language (conversational German, Spanish & Italian), Travel, Sports (running, volleyball, swimming), Music, Photography, Cinema, Design

Additional experiences and/or professional references available upon request