

BIOGRAPHICAL SKETCH

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NAME: **Tomasz J. Petelenz**

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

POSITION TITLE: Research Associate Professor

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
Silesian University of Technology	BS/MS	09/1976	Physics/Microelectronics
University of Utah	PhD	05/1989	Bioengineering

A. Personal Statement

Medical device development and clinical implementation requires multidisciplinary medical device design, regulatory and commercialization expertise, as well as the ability to work together with engineers, clinicians and patients in hospital and laboratory environments. During my career, I have managed biomedical R&D projects at all stages of medical and drug delivery systems development from concept, funding procurement, to clinical testing, regulatory compliance and production. My experience in medical and drug delivery device R&D encompasses implantable cardiac pacemakers, iontophoretic transdermal drug delivery systems, kidney dialysis machines, infusion and injection devices, biosensors, optical sensors, cardiovascular devices, wearable sensors, wireless data communication devices and prosthetics. I have organized and directed a drug delivery systems R&D and testing laboratory, and developed a prototype ISO9001 quality system for a medical start-up company. I have also designed and conducted both animal and human studies, and I am currently a member of the University of Utah IRB. I am a Co-PI on the NSF iCorps Stie program at the University of Utah where I create and manage the program curriculum, organize and supervise team grants solicitation, teams selection and coordinate/conduct educational sessions. My experience most relevant to the REACH program will be in the area of creating educational curriculum, organizing and managing team grants solicitation and evaluation, as well as providing required project management and technical expertise. I also expect to provide regulatory and clinical testing coordination experience. I believe that my bioengineering education, and experience in multidisciplinary design, research, clinical collaborations, and regulatory process will allow me to make significant regulatory contribution to the project, as well as provide strategic, product development, testing and regulatory advice to REACH program teams.

B. Positions and Honors

2011 – current Research Associate Professor, University of Utah, Department of Bioengineering, Salt Lake City, UT

2007 – 2011 Senior Manager, Program Management, Raytheon Sarcos, Salt Lake City, UT

1994 – 2007 Vice President, Medical Projects, Sarcos Research Corporation, Salt Lake City, UT

1994 – 2007 Technical Director, Medical Projects, Sarcos Research Corporation, Salt Lake City, UT

1992 – 2011 Adjunct Associate Professor, University of Utah, Department of Bioengineering, Salt Lake City, UT

1987 – 1994 Director of Research and CTO, Iomed, Inc., Drug Delivery Systems, Salt Lake City, UT

1987 – 1994 Co-Founder and Director of Product Development, Iomed, Inc., Drug Delivery Systems, Salt Lake City, UT

1983 - 1987 University of Utah, Center for Engineering Design, Salt Lake City, UT

Other experience:

2013– present Associate Editor, IEEE EMBC Conference (2013, 2014, 2016, 2017, 2018, 2019)

2013 – present University of Utah Institutional Review Board, Member

2007-2014 Member of the Veterans Administration Rehabilitation R&D Scientific Review Board, Washington, DC IEEE, Member

Controlled Release Society, Member (past)

IEEE Neural Systems and Rehabilitation Engineering – ad hoc reviewer

Journal of Controlled Release – Reviewer

2015-present iCorps Site Co-Pi (4yrs), development training course curriculum, mentoring teams

2011– present Teaching:

- a. Developed a didactic curriculum for a bioimmersion summer fellowship course for undergraduate bioengineering and multidisciplinary design students, focused on identification of clinical problems and needs in healthcare environment. The program was supported by the NIH R25 grant.
- b. Co-instructor in undergraduate and graduate, 2-semester medical device design courses.
- c. Developed and taught a new Regulatory Affairs course for Bioengineers at the Department of Bioengineering at the University of Utah. This 2-semester course covers medical device, drugs, biologics and combination product regulations.

2016-2018 Co-instructor in the new (2017) Lifescience MBA curriculum at the University of Utah School of Business MBA program.

2013-present Associate Editor, IEEE EMBC Conference (2013, 2014, 2016, 2017, 2018, 2019)

2013-present University of Utah Institutional Review Board, Member

C. Contributions to Science (relevant publications and synergistic activities)

1. Loftus PD, Elder CT, Sorenson MW, Shipman J, D'Ambrosio T, **Petelenz TJ**, Hitchcock R, Langell J. (03/25/2014). Creating a Benchmark Medical Technology Entrepreneurship Competition The University of Utah Bench-to-Bedside Medical Device Design competition <http://venturewell.org/open2014/wpcontent/uploads/2013/10/LANGELL.pdf>, PEER-REVIEWED PUBLICATION. *Proceedings from the NCIIA, 2014*.
2. Loftus P, Elder C, Sorenson M, Shipman J, D'Ambrosio T, **Petelenz TJ**, Hitchcock R, Langell, JL (22 MAR 2014). Creating a Benchmark Medical Technology Entrepreneurship Competition [Web]. Proceeding of the NCIIA (peerreviewed). Available: <http://NCIIA.org/open/wp-content/uploads/2013/10/langell.pdf>.
3. Langell JT, Hitchcock R, **Petelenz TJ** (21 Mar 2014). *“Teaching innovation and Entrepreneurship: A multidisciplinary approach” Oral paper presentation, National Collegiate Inventors and Innovators Alliance (NCIIA) Open 2014, San Jose, CA [Abstract]. Proceeding for the National Collegiate Inventors and Innovators Alliance, OPEN 2014.*
4. Langell JT, Hitchcock, Price R, **Petelenz, TJ** (21 Mar 2014). *“Innovating for resource poor regions” [Abstract]. Proceedings fothe National Collegiate Inventors and Innovators Alliance (NCIIA) Open 2014, San Jose, CA.*
5. Loftus P, Langell JT, Shipman J, Hitchcock R, **Petelenz TJ** (22 Mar 2014). , *“Creating a Benchmark Medical Technology Entrepreneurship Competition” [Abstract]. Proceedings of the National Collegiate Inventors and Innovators Alliance (NCIIA) Open 2014, San Jose, CA.*

6. SYNERGISTIC ACTIVITIES

D. Additional Information: Research Support and/or Scholastic Performance

1. Lajevardi-Khosh, A, Tresco, B, Stuart, A, Sinclair, S, Ackermann, M, Kubiak, EN, **Petelenz, TJ**, Hitchcock, RW, "Development of a step counting algorithm using the ambulatory tibia load analysis system for tibia fracture patients", *Journal of Rehabilitation and Assistive Technologies Engineering*, Vol. 5, (2018), pp.1-11.
2. Lajevardi-Khosh, A, Bamberg, S, Kubiak, EN, **Petelenz, TJ**, Hitchcock, RW, "Center of pressure in a walking boot shifts posteriorly in patients following lower extremity fracture", *GAIPOS 2018* (submitted).
3. deGennaro, JD, de Gennaro, CK, Shaw, JM, Petelenz, TJ, Nygaard, IE, Hitchcock, RW, "The Relationship Between Intra-Abdominal Pressure and Body Acceleration During Exercise." *Female Pelvic Medicine & Reconstructive Surgery*, DOI: 10.1097/SPV.0000000000000523, PMID: 29135811
4. Niederauer S, de Gennaro J, Nygaard I, **Petelenz TJ**, Hitchcock R. Development of a novel intra-abdominal pressure transducer for large scale clinical studies. *Biomed Microdevices*. 2017 Aug 26;19(4):80. doi: 10.1007/s10544-017-0211-2. PubMed PMID: 28844111
5. North, K, Kubiak, EN, Rothberg, DL, Lajevardi-Khosh, A, **Petelenz, TJ**, Hitchcock, RW, Stuart, AR, "Longitudinal monitoring of patient limb loading throughout ankle fracture rehabilitation using and insole load monitoring system: a case series.", *Current Orthopaedic Practice*, Vol.28, No2, March/April 2017, pp.223-230.
6. Lajevardi-Khosh, A, Tresco, B, Stuart, A, **Petelenz, TJ**, Hitchcock, RW. "Development of Step Counting Algorithm from the Ambulatory Tibial Load Analysis System." *BMES 2016*
7. Lajevardi-Khosh, A, Tresco, B, Ackerman, M, Petelenz, TJ, Hitchcock, RW. "Acquisition and Analysis of Underfoot Load Data from Lower Extremity Fracture Patients. *BMES*, 2016
8. North K, Kubiak EN, Hitchcock RW, **Petelenz TJ**. "Load monitoring system for partial weight bearing therapy for rehabilitation of lower extremity fractures." 35th Annual International IEEE EMBS Conference, July 2013, Osaka, Japan
9. Stuart AR, Lajevardi-Khosh A, Chen NK, Presson AP, **Petelenz TJ**, Hitchcock RW, Kubiak EN. Loading and Ambulatory Behavior of Lower Extremity Fracture Patients. *Military Health Services Research Symposia*, Orlando, FL, Aug 2016

US Patents: 30

1. 8,721,559 Non-invasive method and device for measuring cardiac output
2. 8,191,421 Digital ballistic impact detection system
3. 8,056,391 Digital wounding detection system
4. 7,727,180 Method and apparatus for presetting device operating levels with display
5. 7,206,639 Cochlear drug delivery system and method
6. 6,433,690 Elderly fall monitoring method and device
7. 6,223,075 Iontophoretic delivery device with integral hydrating means
8. 6,198,394 System for remote monitoring of personnel
9. 6,165,155 Multipathway electronically-controlled drug delivery system
10. 6,160,478 Wireless health monitoring system
11. 6,086,562 Disposable automatic injection device
12. 6,045,534 Disposable fluid injection module
13. 5,860,957 Multipathway electronically-controlled drug delivery system
14. 5,730,716 Iontophoretic delivery device with integral hydrating means
15. 5,558,632 Electrodes for iontophoresis
16. 5,374,241 Electrodes for iontophoresis
17. 5,328,455 Rehydratable product and method of preparation thereof
18. 5,281,287 Method of making a hydratable bioelectrode
19. 5,248,295 Bioelectrode seal

20. 5,236,412 Rehydratable product and method of preparation thereof
21. 5,196,002 Implantable drug delivery system with piston actuation
22. 5,167,625 Multiple vesicle implantable drug delivery system
23. 5,087,242 Hydratable bioelectrode
24. 5,059,175 Implantable drug delivery system with piston actuation
25. 5,037,380 Iontophoretic electrode with solution containment system
26. 4,979,938 Method of iontophoretically treating acne, furuncles and like skin disorders
27. 4,968,297 Iontophoretic electrode with solution containment system
28. 4,915,685 Methods and apparatus for iontophoresis application of medicaments at a controlled pH6 through ion exchange
29. 4,886,489 Flow-through methods and apparatus for iontophoresis application of medicaments at controlled pH
30. 4,752,285 Methods and apparatus for iontophoresis application of medicaments