

Biosketch – JOHN J. WHALEN III, Ph.D.

| NAME John J. Whalen III, Ph.D. | POSITION TITLE Partner, Bioengineering & Clinical Trials, NEATCap Medical, LLC | | |
|---|---|-------|-------------------------------|
| eRA COMMONS USER NAME (credential, e.g., agency login) jackwhalen3 | Assistant Professor of Research Ophthalmology, USC Keck School of Medicine | | |
| EDUCATION/TRAINING | | | |
| INSTITUTION AND LOCATION | DEGREE <i>(if applicable)</i> | MM/YY | FIELD OF STUDY |
| The Johns Hopkins University, Baltimore MD | B.S. | 05/98 | Biomedical Engineering |
| The Johns Hopkins University, Baltimore MD | M.S. | 05/00 | Materials Science & Eng |
| The Johns Hopkins University, Baltimore MD | Ph.D. | 08/04 | Materials Science & Eng |
| University of Southern California, Los Angeles CA | Post-Doc | 05/06 | Ophthalmology Research Fellow |

A. Personal Statement

Dr. Jack Whalen is a biomedical engineer and materials scientist focused on early stage research and development of medical device technologies. As Partner in NEATCap Medical, LLC, Dr. Whalen plays a leadership role in bioengineering and clinical trials, and interaction with federal research agencies. He leverages his experience in both pre-clinical and clinical product development to provide guidance and management on the design and execution of safety and efficacy assessments of NEATCap's products.

Since 2015, Dr. Whalen has served as an assistant professor of research ophthalmology at the USC Keck School of Medicine's Roski Eye Institute. His research focuses on the application of novel material technologies to address ophthalmologic and neurological disorders and conditions. Prior to his role as faculty, Dr. Whalen has served as the Director of Business Development and Industry Partnerships for U. Southern California's NSF-sponsored "Biomimetic Microelectronic Systems (BMES) Engineering Research Center". The center's mission is the development of novel and industry-disruptive implantable microelectronic technologies. Dr. Whalen has raised for BMES over \$800,000 in industry membership fees and over \$3.5 Million for BMES in collaborative projects with industry.

Dr. Whalen currently serves as President and CEO of Platinum Group Coatings (PGC), LLC (Pasadena, CA). PGC (www.platinumgroupcoatings.com) produces high-performance next generation implantable microelectrodes for neuromodulation applications to treat conditions like Parkinson's disease, chronic back pain, paralysis and sensory restoration. Dr. Whalen drives business development and operations for PGC. PGC has captured over \$3 Million in NIH grants from the National Institute for Neurological Diseases and Stroke and currently sells implantable microelectrodes for research applications.

Prior to joining USC, Dr. Whalen was one of a small (6 person) management team at Aspire Bariatrics Inc., that drove a novel Class-III implant for treatment of obesity from the prototype stage, through outside-US pilot clinical trials and through US feasibility clinical trials. The device received FDA PMA approval in summer 2016 and has raised over \$20 Million in funding. While in that role, Dr. Whalen was integral in the setup and management of both clinical trials (Mexico and US) along with preparation of IRB, FDA and other regulatory body notifications and reports. Dr. Whalen served as a clinical engineer while at Aspire, providing feedback to engineering teams as well as troubleshooting malfunctioning devices, performing device failure analyses when needed, and supporting preparation of patent documentation.

As a graduate student and post-doctoral fellow, Dr. Whalen published and patented research in novel implantable microelectrode materials for sensory neuromodulation. Dr. Whalen is a trained expert in electrochemistry for materials deposition and characterization, and experienced in other materials characterization and processing techniques.

B. Positions & Honors

Positions

- 2000-2004: **Graduate Research Assistant.** Electrochemistry Laboratory. PI: Dr. Peter Searson. The Johns Hopkins University. ARCS Fellowship Recipient (DC Chapter, 2001, 2003 awardee)
- 2004-2006: **Post-Doctoral Research Fellow.** Bioelectronics Laboratory. PI: Dr. James Weiland. U. Southern California's Doheny Eye Institute.
- 2006-2010: **Project Manager and Clinical Engineer.** Aspire Bariatrics, Inc. (King of Prussia, PA).
- 2009-2012: **Director of Business Development & Industry Relations.** NSF-Sponsored "Biomimetic Microelectronic Systems Engineering Research Center". U. Southern California.
- 2012-present: **NSF Industry Liaison Consultant** (NSF ERC Program Consultant). Elysium Holdings, LLC.
- 2011-present: **Partner, Technical Lead Bioengineering & Clinical Trials,** NEATCap, LLC and NEATCap Medical, LLC
- 2012-present: **Founding CEO** of Platinum Group Coatings, LLC. (www.platinumgroupcoatings.com)
- 2015-present: **Assistant Professor of Research in Ophthalmology.** USC Roski Eye Institute. U. Southern California.

Invitations, Academic Activities & Service

- Jun 2010: **Invited Panelist.** 2010 Neural Interfaces Conference. "Getting Hired in the Medical Device Industry".
- Nov 2011: **Invited Internal Grant Reviewer.** 2011 USC-Johnson & Johnson Translational Innovation Review Committee Member.
- Nov 2011: **Co-Chair of Best-Practices for Industry Relations Session.** "Best practices for implementing inputs from the IAB and SAB in center strategic planning." 2011 Annual NSF Research Meeting. National Science Foundation. Bethesda, MD.
- Feb 2012: **Fundraising Committee Member.** 2012 34th Annual Conference of the IEEE Engineering in Medicine & Biology Society. Aug 28-Sep 1, 2012. San Diego, CA.
- Nov 2012: **Co-Moderator.** Sustaining an ERC After Graduation. 2012 Annual ERC Meeting. Bethesda MD.
- Feb 2013: **Invited Contributor.** NSF ERC Program Best Practices Manual. Chapter 5 Industry Collaborations & Innovation. National Science Foundation.
- Feb 2013: **Invited Manuscript Reviewer.** IEEE Transactions on Neural Systems & Neural Rehabilitation.
- Oct 2014: **Invited Speaker and Panelist.** 2015 Innovate Pasadena's Connect Week. "Emerging Life Science Technology".
- Apr 2015: **Invited Panelist.** "Careers in Academia and Industry." 2015 USC Grodins Annual Biomedical Engineering Research Symposium. Los Angeles, CA.
- Apr 2016: **Invited Panelist** on Translation and Applications for Bioprinting in Ophthalmology. DoD Mantech Workshop National Academies Materials & Manufacturing Board.
- Jul 2016: **Invited Manuscript Reviewer.** Journal of Ophthalmology.
- Jun 2017: **Invited Committee Member.** Pasadena City College Biotechnology Program Advisory Committee.

Honors and Awards

- 2001: **Achievement Rewards for College Scientists (ARCS) Foundation Scholar. (Washington D.C. Chapter).** *For research in characterizing electrodeposited nanomaterials.*
- 2003: **Achievement Rewards for College Scientists (ARCS) Foundation Scholar. (Washington D.C. Chapter).** *For research in nanomaterials for functional retinal stimulation.*
- 2012: **2015 NAEVR Emerging Vision Scientist Award.** One of 21 awardees in inaugural program recognizing emerging vision research scientists. Sponsored by the National Alliance for Eye and Vision Research.
- 2015: **2nd Place Finalist.** USC Maseeh Entrepreneurship Pitch Competition (MEPC) USC Viterbi School of Engineering.

C. Publications, Presentations, and Patents

Publications

1. **J.J. Whalen III**, J.D. Weiland, P.C. Searson, "Electrochemical deposition of platinum from aqueous ammonium hexachloroplatinate solution." *Journal of Electrochemical Society*, 152 (2005) C738-C743.
2. **J.J. Whalen III**, J. Young, J.D. Weiland, P.C. Searson. "Electrochemical characterization of charge injection at electrodeposited platinum electrodes in phosphate buffered saline." *Journal of Electrochemical Society*, 153 (2006) C834-C839.
3. A. Petrossians, **J.J. Whalen III**, J.D. Weiland, F.B. Mansfeld. "Electrodeposition and characterization of thin-film platinum-iridium alloys for neural interface applications". *Journal of Electrochemical Society*, 158(5), (2011) D269-D276.
4. M.S. Humayun, A.P. Rowley, **J.J. Whalen**, J.D. Weiland, A.R. Tanguay Jr. "The Development of a Retinal Prosthesis: A Significant Biomaterials Challenge." *Biomaterials Science: An Introduction to Materials in Medicine*. 3rd Ed., December (2012). Chapter II.5.9.E, pp 946-957.
5. A. Petrossians, **J.J. Whalen III**, J.D. Weiland, F. Mansfeld. "Nanotechnology for Packaging." *Advances in Micro/Nano Electromechanical Systems and Fabrication Technologies*. Ed. K. Takahata; In-Tech Publishing. May (2013). ISBN 980-953-307-774-6
6. N. Bayat, Y.Zhang P. Falabella, R. Menefee, **J.J. Whalen III**^{*}, M.S. Humayun, M.E. Thompson. "A reversible thermoresponsive sealant for temporary closure of ocular trauma." *Sci Trans Med*. 9, eaan3879 (2017) 6 December 2017. (*corresponding author)

Abstracts

7. A. Petrossians, N. Davuluri, **J.J. Whalen III**, F. Mansfeld, J.D. Weiland. "Improved Biphasic Pulsing Power Efficiency with Pt-Ir Coated Microelectrodes." 2013 MRS Fall Meeting. MRS Proceedings. volume 1621.
8. Y. Zhang, P. Falabella, N. Bayat, S. Rauen, J.D. Weiland, **J.J. Whalen III**, M.E. Thompson and M.S. Humayun. "Thermoresponsive Reversible Adhesive for Temporary Intervention in Ocular Trauma." *Invest Ophthalmol Vis Sci* 2014; 55: 2353.
9. **J.J. Whalen III**, Y. Zhang, P. Falabella, N. Bayat, M.E. Thompson, M.S. Humayun. "Polymeric Shield to Reduce Conjunctival Scarring and Facilitate Re-Access for Multistage Surgical Procedures." *Invest Ophthalmol Vis Sci* (2015).
10. Y. Zhang, **J.J. Whalen III**, P. Falabella, N. Bayat, M.E. Thompson, M.S. Humayun. "Efficacy Studies of Thermoresponsive Reversible Adhesive for Temporary Intervention in Ocular Trauma Utilizing a Rabbit Model." *Invest Ophthalmol Vis Sci* (2015).

Patents

11. **J.J. Whalen III**, J. D. Weiland, M. S. Humayun, inventors; Doheny Eye Institute assignee; Microelectrode systems for neuro-stimulation and neuro-sensing and microchip packaging and related methods. United States Patent 8,195,266. June 5, 2012.
12. A. Petrossians, A. Arakelian, J.D. Weiland, F. B. Mansfield, **J.J. Whalen III**, inventors; Univ. of Southern California assignee. Electrodeposition of platinum/iridium (Pt/Ir) on Pt microelectrodes with improved charge injection properties. . United States Patent 8,795,504. Aug. 5, 2014.
13. **J. J. Whalen III**, N. Bayat, Y. Zhang, P. Fababella, M. E. Thompson, M. S. Humayun, inventors; Univ. of Southern California assignee. System for sutureless closure of scleral perforations and other ocular tissue discontinuities. United States Patent Appl. 15/013,632 filed Feb. 2, 2016.
14. A. Petrossians, A. Arakelian, J.D. Weiland, F. B. Mansfield, **J.J. Whalen III**, inventors; Univ. of Southern California assignee. Electrodeposition of platinum/iridium (Pt/Ir) on Pt microelectrodes with improved charge injection properties. United States Patent Appl. 15/010,777 filed Jan. 29, 2016.
15. F.M. Kimock, Z. Rambo, E.G. Thear, G.H. Thear, **J.J. Whalen III**, inventors; Neatcap, LLC assignee. Medical Headgear, United States Patent Appl. 15/881,111 filed Jan. 26, 2018.