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Yinghui Zhong, Ph.D.

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Education

Ph.D. in Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, 2006
M.S. in Biological Sciences and Biotechnology, Tsinghua University, Beijing, China, 1999
B.S. in Materials Science and Engineering, Tsinghua University, Beijing, China, 1996

Research Experience

2008 – present Postdoctoral Fellow, Cleveland Clinic, Cleveland, OH

- Study the remyelination potential of neural stem cells or compounds that stimulate neural stem cell proliferation in a lysolecithin-induced spinal cord demyelination model
- Study the potential of neural stem cells and/or compounds to promote neural regeneration and functional recovery in a spinal cord injury model

2003 – 2006 Ph.D. Student, Georgia Institute of Technology, Atlanta, GA
1999 – 2003 Ph.D. Student, Case Western Reserve University, Cleveland, OH
(Thesis Advisor: Dr. Ravi Bellamkonda)

- Developed biocompatible coatings capable of sustained release of neurotropic proteins, anti-inflammatory neuropeptide, and small anti-inflammatory molecules for neural electrodes
- Developed neuro-adhesive, anti-inflammatory coatings to support neuron adhesion and reduce inflammatory tissue reaction via electrostatic adsorption or covalent coupling
- Explored deposition of anti-inflammatory molecules and polymer film onto silicon surface using a novel vacuum-based physical vapor deposition technique – Maple Assisted Pulsed Laser Evaporation (MAPLE).
- Designed in vitro cell assays to test cellular response to various modified surfaces and anti-inflammatory agents
- Characterized cellular and molecular responses of the brain to surface-modified implanted neural electrodes *in vivo*
- Quantitatively evaluated tissue reaction and neuronal loss around the implanted electrodes using a custom-built Matlab-based image analysis program

- Designed in vitro cell culture model to study cortical response to disrupted blood-brain barrier
- Studied effects of cyclic stain on mature and immature astrocytes

1996 –1999 Master Student, Tsinghua University, Beijing, China

- Modified chitosan with bioactive molecules to improve its neural cell affinity
- Investigated blood and ECM protein adsorption onto the biomaterial surfaces
- Characterized surface properties to understand the effect of surface chemistry on the interactions among cells, proteins and the material surfaces
- Fabricated chitosan conduits to bridge the transected rat sciatic nerves, and studied nerve regeneration, tissue responses, and biodegradation of the nerve conduits

Teaching Experience

2004-2006 Research Assistant, Georgia Institute of Technology, Atlanta, GA
Supervised undergraduate students participating in my research projects

2000-2003 Teaching Assistant, Case Western Reserve University, Cleveland, OH
Formulated homework problems and exam questions, graded class assignments and exams, and held regular office hours

1998-1999 Research Assistant, Tsinghua University, Beijing, China
Supervised an undergraduate project on relationship between heat treatment and mechanical properties of chitosan material

July-Aug 1995 Assistant Lecturer, summer school run by Tsinghua University, Beijing, China.
Organized class discussions, and occasionally gave lectures in a Mandarin course for Hong Kong college students

Awards and Honors

- 2005 ***Journal of Neural Engineering Award*** (highest award and the only winner) of the 2nd International IEEE EMBS Conference on Neural Engineering, Arlington, VA, USA
- 2005 ***Neural Engineering Excellence Travel Award*** of the 2nd International IEEE EMBS Conference on Neural Engineering, Arlington, VA, USA
- 2005 ***Neural Interfaces Workshop Competitive Travel Award*** of the National Institute of Neurological Disorders and Stroke (NINDS) workshop, Bethesda, MD, USA
- 1998 ***Guanghua Prize for Outstanding Research***, Tsinghua University, China

Patents

- Zhong Yinghui and Bellamkonda Ravi. "Nitrocellulose for Controlled and Sustained Drug Release from sensors". (U.S. patent pending, available for licensing)
- Zhang Xiufang, Gong Yandao, Li Jianchun, Gong Haipeng, Zhong Yinghui, and Zhang Miao. "Chitosan conduit for nerve repair". (CN1262961A, in Chinese)

Publications

- Zhong Y., and Bellamkonda R.V., "Biomaterials for the central nervous system". *Journal of the Royal Society Interface,* 5(26), 957-975, (2008).
- Zhong Y., and Bellamkonda R.V., "Dexamethasone-coated neural probes elicit attenuated inflammatory response and neuronal loss compared to uncoated neural probes". *Brain Research,* 1148, 15-27, (2007).
- Patz T.M., Doraiswamy A., Narayan R.J., Menegazzo N., Kranz C., Mizaikoff B., Zhong Y., Bellamkonda R., Bumgardner J.D.,. Elder S.H, Walboomers X.F., Modi R. and Chrisey D.B., "Matrix assisted pulsed laser evaporation of biomaterial thin films". *Materials Science and Engineering: C,* 27(3), 514-522, (2007).
- Zhong Y., and Bellamkonda R.V., "Cortical reponses to dexamethasone coated silicon neural probes". *Tissue Engineering,* 12(4), 1037, (2006).
- Patz T.M., Doraiswamy A., Narayan R.J., He W., Zhong Y., Bellamkonda R., Modi R., and Chrisey D.B., "Three-Dimensional Direct Writing of Neuroblasts", *Journal of Biomedical Materials Research B,* , 78 (1), 124-130, (2006).
- Zhong Y., and Bellamkonda R.V., "Controlled release of α-MSH using nitrocellulose coatings for neural implants". *Journal of Controlled Release*, 106(3), 309-318, (2005).
- Zhong Y., McConnell G.C., Ross J.D., DeWeerth S.P., And Bellamkonda R.V., "A Novel Dexamethasone-releasing, Anti-inflammatory Coating for Neural Implants". *Proceedings of the 2nd International IEEE EMBS Conference on Neural Engineering,* pp. 522-525, (2005). (win the Journal of Neural Engineering Award 2005)
- Zhong Y., Yu X., Gilbert R.J., and Bellamkonda R.V., "Stabilizing electrode-host interfaces: a tissue engineering approach". *Journal of Rehabilitation Research and Development*, 38(6), 627-632, (2001).
- Gong H., Zhong Y., Li J., Gong Y., Zhao N. and Zhang X., "Studies on nerve cell affinity of chitosan-derived materials", *Journal of Biomedical Materials Research,* 52(2), 285-295, (2000).
- Zhong Y., Li J., Gong Y., Zhao N., and Zhang X., "Feasibility of Using Chitosan in Nerve Repair", *Tsinghua Science and Technology*, 5(4), 432-435, (2000).
- Li J., Zhong Y., Gong Y., Zhao N., and Zhang X., "Chitosan Conduit for Peripheral Nerve Regeneration", *Tsinghua Science and Technology*, (4)3, 1515-1518, (1999).

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Presentations

- Zhong Y., Stokes N.W., and Bellamkonda R.V., "Effects of serum on cortical cells: Implications for neural electrode function". *Society for Neuroscience Annual Meeting,* Oct. 14-18, 2006, Atlanta, GA.
- Zhong Y., Stokes N.W., and Bellamkonda R.V., "Differential response of mature and immature astrocytes to cyclic strain". *Society for Neuroscience Annual Meeting,* Nov. 12-16, 2005, Washington, DC.
- Zhong Y., and Bellamkonda R.V., "Cortical responses to dexamethasone coated silicon neural probes". *The 8th Annual Meeting of Tissue Engineering Society International,* Oct. 22-25, 2005, Shanghai, China. (Oral presentation)
- Zhong Y., and Bellamkonda R.V., "An Anti-inflammatory Coating for Neural Implants". *BMES 2005 Fall Meeting,* Sep. 28-Oct. 1, 2005, Baltimore, MD. (Invited talk)
- Zhong Y., and Bellamkonda R.V., "*In vitro* Study of the Anti-inflammatory Effects of Dexamethasone for Cortical Neural Prosthetics". *National Institute of Neurological Disorders and Stroke Neural Interface Workshop,* Sep. 7-9, 2005, Bethesda, MD.
- Zhong Y., and Bellamkonda R.V., "Biocompatible, bioactive coatings for neural prosthesis". *Society for Neuroscience Annual Meeting,* Oct. 23-27, 2004, San Diego, CA. (Oral presentation)
- Zhong Y., McConnell G.C., and Bellamkonda R.V., "*In vitro* and *in vivo* study of a novel drug releasing coating for implanted neural electrodes". *National Institute of Neurological Disorders and Stroke Neural Interface Workshop,* Nov. 15-17, 2004, Bethesda, MD.
- Patz T.M, Doraiswamy A., Narayan R.J., Menegazzo N., Kranz C., Mizakoff C., Zhong Y., Bellamkonda R., Modi R., and Chrisey D.B, "Matrix assisted pulsed laser evaporation of dexamethasone thin films". *2004 Materials Research Society Fall Meeting,* Nov. 29-Dec. 3, 2004, Boston, MA.
- Zhong Y., and Bellamkonda R.V., "Bioactive neuro-integrative coatings for implantable electrodes". *Society for Biomaterials 2002 Annual Meeting,* Apr. 24-27, 2002, Tampa, FL.

Professional Development

- Helped with the writing of two awarded National Institute of Health (NIH) R01 grants: Neuro-integrative coatings for improved neural recordings, Strain-induced scarring and its effects on microelectrodes
- Attended a NIH grant writing workshop

Current and Previous Affiliations

- Member of Society for Neuroscience
- Member of Society for Biomaterials
- Member of IEEE Engineering in Medicine and Biology Society
- Graduate Student Senate for GT Student Government Association