Curriculum Vita

Volkan Mujdat Tiryaki
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I. Education

2006	M.S.	Industrial Engineering	University of Istanbul, Turkey
2003	B.S.	Electronics Engineering	University of Istanbul, Turkey

II. Experience

2009-Present	Graduate Research Assistant	Electronic and Biological Nanostructures Laboratory, Engineering Research Complex, Michigan State University, USA
2004-2008	Research Assistant	Institute of Science, University of Istanbul, Turkey
2004	Electronics Engineer	Smart Systems, Istanbul, Turkey
2002	Intern	Institute for Semiconductor Technology, Braunschweig Technical University, Braunschweig, Germany

III. Research Interests

- Nanoscale cues for regenerative neural cell systems
- Computer vision and pattern recognition techniques for scanning probe recognition microscopy
- Nanoscale elasticity of tissue scaffolds with force volume imaging
- Transmission electron microscopy investigation of tissue scaffolds
- Confocal laser scanning microscopy investigation of astrocyte and neuron cultures
- Scanning electron microscopy of biomaterials for CNS implants

IV. Honors and Awards

- Supported, National Science Foundation grant PHY-0957776, USA, 2010-.
- Graduate School Travel Award, Michigan State University, USA, 2009.
- General Directorate for Higher Education, Ministry of National Education of the Republic of Turkey, fellowship for PhD studies in the USA, 2007.
- Turkish Institution of Higher Education, scholarship for undergraduate studies, Ankara, Turkey, 1999-2003.
- Finans Vakfi, scholarship for undergraduate studies, Istanbul, Turkey, 1999-2003.

V. Papers Published/Submitted/In preparation

Refereed Archival Journal Articles

1. **Tiryaki, V.M.**, Ayres, V.M., Ahmed, I., Shreiber, D.I. “Differentiation of reactive-like astrocytes cultured on nanofibrillar and comparative culture surfaces”, in preparation.
2. **Tiryaki, V.M.**, Ayres, V.M. “Adaptive cell segmentation for AFM using texture features”, in preparation.
3. **Tiryaki, V.M.**, Ayres, V.M., Khan, A.A., Ahmed, I., Shreiber, D.I., and Meiners, S. “Nanofibrillar scaffolds induce preferential activation of Rho GTPases in cerebral cortical astrocytes”, Int. J. Nanomedicine Vol. 07, pp. 3891-3905 (2012)
4. **Tiryaki, V.M.**, Khan, A.A., Ayres, V.M. “AFM Feature Definition for Neural Cells on Nanofibrillar Tissue Scaffolds”, Scanning Vol. 34, pp. 316-324 (2012)

Refereed Conference Proceedings Papers

1. **Tiryaki, V.M.**, Adia-Nimuwa, U., Hartz, S.A., Xie, K., Ayres, V.M., Ahmed, I. and Shreiber, D.I. (2013). New Atomic Force Microscopy Based Astrocyte Cell Shape Index. MRS Online Proceedings Library, 1527, mrsf12-1527-uu05-08 doi:10.1557/opl.2013.417.
2. Ayres, V.M., Xie, K., **Tiryaki, V.M.**, Ahmed, I., Shreiber, D.I., "Investigation of Nanophysical Properties of Aging Nanofibrillar Tissue Scaffolds by TEM, SAED, Contact Angle and Raman Spectroscopies". In MRS Online Proceedings Library, Volume 1417 *Biomaterials for Tissue Regeneration*, edited by C Sorrell. Published by Cambridge University Press, Cambridge UK (2012). DOI: 10.1557/opl.2012.747. ISSN: 1946-4274.
3. **Tiryaki, V.M.**, Ayres, V.M., Ahmed, I., Shreiber, D.I., "Differences in Nanoscale Elasticity of Planar and Nanofibrillar Tissue Cultures". In MRS Online Proceedings Library, Volume 1417 *Biomaterials for Tissue Regeneration*, edited by C Sorrell. Published by Cambridge University Press, Cambridge UK (2012). DOI: 10.1557/opl.2012.746. ISSN: 1946-4274.
4. **Tiryaki, V.M.**, Ayres, V.M., Khan, A.A., Flowers, D.A., Ahmed, I., Delgado-Rivera, R., Meiners, S., "Investigation of Nanofibrillar Influence on Cell-Cell Interactions of Astrocytes by Atomic Force Microscopies". In MRS Online Proceedings Library, Volume 1316E: *Nanofunctional Materials, Nanostructures, and Nanodevices for Biomedical Applications II*, edited by L A Nagahara, R Sinclair, R Bashir, T Thundat, W Lin. Published by Cambridge University Press, Cambridge, UK (2011). 1316-QQ09-16, DOI: 10.1557/opl.2011.434. ISSN: 1946-4274.
5. **Tiryaki, V.M.**, Ayres, V.M., Khan, A.A., Delgado-Rivera, R., Ahmed, I., Meiners, S., "Quantitative Investigations of Nanoscale Elasticity of Nanofibrillar Matrices". In MRS Symposium Proceedings Series, Volume 1240E *Polymer Nanofibers-Fundamental Studies and Emerging Applications*, edited by A. Tanioka. Published by The Materials Research Society, Warrendale, PA (2010). DOI: 10.1557/PROC-1240-WW09-13. ISSN: 1946-4274.

Refereed 1-2 Page Extended Abstracts

1. **Tiryaki, V.M.**, Ayres, V.M., AA Khan, A.A,, DA Flowers, "Nanoscale Cues and Astrocyte Responses in Neural System Regenerative Medicine". In ***Proceedings of the 6th Nanoscience and Nanotechnology Conference*** (NanoTR6), Izmir, Turkey, 15-18 June 2010, pp. 102-103.

   Tiryaki, VM: Oral presentation in Theme D; Nanobiotechnology, Nanomedicne, Nanotoxicology, and Biosensors.

Contributed Conference Proceedings and Presentations

1. **Tiryaki, V.M.**, Ayres, V.M., Xie, K., Ahmed, I., and Shreiber, D.I., "Quiescent Response of Cerebral Cortical Astrocytes to Nanoscale Scaffold Properties", 57th Annual Meeting of the Biophysical Society, February 2-6, 2013, Philadelphia, PA.
2. **Tiryaki, V.M.**, Adia-Nimuwa, U., Hartz, S.A., Xie, K., Ayres, V.M., Ahmed, I., and Shreiber, D.I. "New Atomic Force Microscopy Based Astrocyte Cell Shape Index", oral presentation, 2012 MRS Fall Meeting, Boston, MA.
3. Ayres, V.M., **Tiryaki, V.M.**, Xie K., Ahmed, I., and Shreiber, D.I., "Nanophysical Properties of Scaffolds Induce Cerebral Cortical Astrocyte Response", 2012 Annual Meeting, The American Society for Cell Biology, 5-19 December 2012, San Francisco, CA.
4. **Tiryaki, V.M.**, Ayres, V.M., Ahmed, I., and Shreiber, D.I., "Investigation of the Effect of Nanoscale Elasticity on Astrocyte Responses in Analysis of Neural Cell Regeneration", Symposium UU:

Scanning Probe Microscopy - Frontiers in Nanotechnology, Materials Research Society Fall Meeting, 25-30 November 2012, Boston, MA.

5. **Tiryaki, V.M.**, Xie, K., Ayres, V.M., Ahmed, I., and Shreiber, D.I., "A Method to Resolve Atomic Force Microscopy Feature Definition Issues for Neural Cells Cultured on Nanofibrillar Scaffolds", Proceedings of the Functional Imagining for Regenerative Medicine Workshop, NIST, poster presentation, 31 May-01 June 2012, Gaithersburg, MD.
6. Xie K., **Tiryaki, V.M.**, and Ayres, V.M., "A Method to Resolve Atomic Force Microscopy Feature Definition Issues for Cells Cultured on Nanofibrillar Scaffolds", Biophysical Journal 102(3) pp. 587a (2012).
7. Ayres, V.M., Xie, K., **Tiryaki, V.M.**, Ahmed, I., and Shreiber, D.I., "Investigation of Nanophysical Properties of Aging Nanofibrillar Tissue Scaffolds by SPRM, TEM, and FTIR and Raman Spectroscopies", Symposium KK: Biomaterials for Tissue Regeneration, Materials Research Society Fall Meeting, 28 November-02 December 2011, Boston, MA.
8. **Tiryaki, V.M.**, Ayres, V.M., Ahmed, I., Shreiber, D.I., "Investigation of the Effect of Nanoscale Elasticity on Astrocyte Responses in Analysis of Neural Cell Regeneration", Symposium KK: Biomaterials for Tissue Regeneration, Materials Research Society Fall Meeting, poster presentation, 28 November-02 December 2011, Boston, MA.
9. **Tiryaki, V.M.**, Ayres, V.M., Xie K., Khan A.A., Flowers D.A., Ahmed I., Delgado-Rivera R., and Meiners S. "Investigation of Nanofibrillar Influence on Cell-Cell Interactions of Astrocytes by Atomic Force Microscopies" Engineering Graduate Research Symposium Michigan State University, poster presentation, 3 November 2011, East Lansing, MI.
10. **Tiryaki, V.M.**, Ayres, V.M., Khan, A.A., Flowers, D.A., Meiners, S., Ahmed, I., and Delgado-Rivera, R. "Astrocyte Cell-Cell Interactions via Long-range Connective Bridges on Directive Surfaces", Biophysical Journal 100(3) pp. 162a (2011)
11. **Tiryaki, V.M.**, Ayres, V.M., Khan, A.A., Flowers, D.A., Ahmed, I., Delgado-Rivera, R., and Meiners, S., "Investigation of Nanofibrillar Influence on Cell-Cell Interactions of Astrocytes by Epi-Fluorescence and Atomic Force Microscopies", Symposium QQ: Nanofunctional Materials, Nanostructures, and Nanodevices for Biomedical Applications II Materials Research Society Fall Meeting, poster presentation, 30 November-04 December 2010, Boston, MA.
12. **Tiryaki, V.M.**, Ayres, V.M., Khan, A.A., Delgado-Rivera, R., Ahmed, I., and Meiners, S. "Nanoscale Tissue Scaffold Investigations to Optimize Central Nervous System Prosthetic", Biophysical Journal 98(3) pp. 189a - 190a (2010).
13. **Tiryaki, V.M.**, Ayres, V.M., Khan, A.A., Delgado-Rivera, R., Ahmed, I., and Meiners, S. "Quantitative Investigations of Nanoscale Elasticity of Nanofibrillar Matrices", Materials Research Society Fall Meeting, poster presentation, 30 November-04 December 2009, Boston, MA.

VI. Professional Memberships

2008 Member, Materials Research Society
2008 Member, Biophysical Society
2012 Member, IEEE
2012 Member, American Society for Cell Biology
2013 Member, American Physical Society