CURRICULUM VITAE: Joe Y. Tien

Boston University
Department of Biomedical Engineering
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Born August 1, 1976, in Boston, MA

EDUCATION & TRAINING

Postdoctoral training in biomedical engineering, Johns Hopkins School of Medicine (1999-2001) [with C.S. Chen]
Ph.D., Physics, Harvard University (1999) [with G.M. Whitesides]
A.M., Physics, Harvard University (1995)
B.S., Physics, *summa cum laude*, University of California, Irvine (1993) [with G.L. Shaw]
B.S., Mathematics, *summa cum laude*, University of California, Irvine (1993)

PROFESSIONAL EXPERIENCE

2008-present	Visiting Fellow, Department of Chemical Engineering, Princeton University [sabbatical leave with C.M. Nelson].
2008-present	Member, Program in Materials Science and Engineering, Boston University.
2008-present	Associate Professor of Biomedical Engineering (tenured), Boston University.
2003-present	Member, Program in Molecular Biology, Cell Biology, and Biochemistry, Boston University.
2002-2008	Assistant Professor of Biomedical Engineering, Boston University.

HONORS

NIH/NIBIB Edward C. Nagy New Investigator Award (2006), Boston University Provost's Innovation Award (2002-2003), NIH/NHLBI National Research Service Award (2001-2002), Johns Hopkins University Distinguished Postdoctoral Fellow (1999-2001), NSF Fellow (1993-1996), Sigma Xi (1993), UC Irvine Herbert H. Chen Award (1992), Barry Goldwater Fellow (1991-1993), UC Irvine Campuswide Honors Program (1990-1993), UC Regents Scholar (1990-1993), National Merit Scholar (1990), Tandy Technology Scholar (1990)

PROFESSIONAL ACTIVITIES

Students advised: Min Tang (2002-2005; Ph.D., Biomed. Eng.), Andrew P. Golden (2002-2008; Ph.D., Biomed. Eng.), Kenneth M. Chrobak (2003-2007; Ph.D., Biomed. Eng.), Gavrielle M. Price (2004-present), James G. Truslow (2006-present), Keith H. K. Wong (2007-present), Shamit Shrivastava (2009-present)

Courses taught: Thermodynamics and Statistical Mechanics (2003-2008), Introduction to Stem Cells and Cloning (2004-2008)

Manuscript and proposal reviews: *Advanced Materials*, *Angewandte Chemie*, *Annals of Biomedical*

Engineering, *Journal of the American Chemical Society*, *Lab on a Chip*, *Langmuir*, *Microcirculation*, *Microvascular Research*, *Small*, *Tissue Engineering*; National Institutes of Health, National Science Foundation, Canadian Institutes of Health Research, Smithsonian Institute

PUBLICATIONS
(Underscores denote corresponding authors)
(*, **, *, †, and †† denote ≥10, 25, 50, 100, and 250 citations, respectively)**

36. Truslow, J.G., Price, G.M. & Tien, J., Computational design of drainage systems for vascularized scaffolds. *Biomaterials* **2009**, *30*, 4435-4443.

35. Price, G.M. & Tien, J. Methods for forming human microvascular tubes in vitro and measuring their macromolecular permeability. in *Biological Microarrays (Methods in Molecular Biology series)* (eds. Khademhosseini, A., Suh, K.-Y. & Zourob, M.), in press (Humana Press, Totowa, NJ, 2009).

34. Price, G.M. & Tien, J. Subtractive methods for forming microfluidic gels of extracellular matrix proteins. in *Microdevices in Biology and Engineering* (eds. Bhatia, S.N. & Nahmias, Y.), in press (Artech House, Boston, MA, 2009).

33. Price, G.M., Chu, K.K., Truslow, J.G., Tang-Schomer, M.D., Golden, A.P., Mertz, J. & Tien, J., Bonding of macromolecular hydrogels using perturbants. *J. Am. Chem. Soc.* **2008**, *130*, 6664-6665.

32. Price, G.M., Chrobak, K.M. & Tien, J., Effect of cyclic AMP on barrier function of human lymphatic microvascular tubes. *Microvasc. Res.* **2008**, *76*, 46-51.

*31. Golden, A.P. & Tien, J., Fabrication of microfluidic hydrogels using molded gelatin as a sacrificial element. *Lab Chip* **2007**, *7*, 720-725.

*30. Nelson, C.M. & Tien, J., Microstructured extracellular matrices in tissue engineering and development. *Curr. Opin. Biotechnol.* **2006**, *17*, 518-523.

29. Chrobak, K.M., Potter, D.R. & Tien, J., Formation of perfused, functional microvascular tubes in vitro. *Microvasc. Res.* **2006, *71*, 185-196.

28. Tien, J., Golden, A.P. & Tang, M.D. Engineering of blood vessels. in *Microvascular Research: Biology and Pathology*, Vol. 2 (eds. Shepro, D. & D'Amore, P.A.), pp. 1087-1093 (Elsevier Academic Press, San Diego, CA, 2006).

27. Tang, M.D., Golden, A.P. & Tien, J., Fabrication of collagen gels that contain patterned, micrometer-scale cavities. *Adv. Mater.* **2004**, *16*, 1345-1348.

***26. Gray, D.S., Tien, J. & Chen, C.S., High conductivity elastomeric electronics. *Adv. Mater.* **2004**, *16*, 393-397.

†25. Chen, C.S., Tan, J.L. & Tien, J., Mechanotransduction at cell-matrix and cell-cell contacts. *Annu. Rev. Biomed. Eng.* **2004**, *6*, 275-302.

24. Tang, M.D., Golden, A.P. & Tien, J., Molding of three-dimensional microstructures of gels. *J. Am. Chem. Soc.* **2003, *125*, 12988-12989.

***23. Gray, D.S., Tien, J. & Chen, C.S., Repositioning of cells by mechanotaxis on surfaces with micropatterned Young's modulus. *J. Biomed. Mater. Res.* **2003**, *66A*, 605-614.

††22. Tan, J.L., Tien, J., Pirone, D.M., Gray, D.S., Bhadriraju, K. & Chen, C.S., Cells lying on a bed of microneedles: an approach to isolate mechanical force. *Proc. Natl. Acad. Sci. USA* **2003**, *100*, 1484-1489.

21. Clark, T.D., Ferigno, R., Tien, J., Paul, K.E. & Whitesides, G.M., Template-directed self-assembly of 10-µm-sized hexagonal plates. *J. Am. Chem. Soc.* **2002, *124*, 5419-5426.

***20. Tien, J., Nelson, C.M. & Chen, C.S., Fabrication of aligned microstructures with a single elastomeric stamp. *Proc. Natl. Acad. Sci. USA* **2002**, *99*, 1758-1762.

19. Tien, J. & Chen, C.S., Patterning the cellular microenvironment. *IEEE Eng. Med. Biol.* **2002**, *21*, 95-98.

***18. Tan, J.L., Tien, J. & Chen, C.S., Microcontact printing of proteins on mixed self-assembled monolayers. *Langmuir* **2002**, *18*, 519-523.

17. Tien, J. & Chen, C.S. Microarrays of cells. in *Methods of Tissue Engineering* (eds. Atala, A. & Lanza, R.), pp. 113-120 (Academic Press, San Diego, CA, 2001).

16. Bowden, N., Tien, J., Huck, W.T.S. & Whitesides, G.M. Mesoscale self-assembly: the assembly of micron- and millimeter-sized objects using capillary forces. in *Supramolecular Organization and Materials Design* (eds. Jones, W. & Rao, C.N.R.), pp. 103-145 (Cambridge University Press, New York, NY, 2001).

***15. Clark, T.D., Tien, J., Duffy, D.C., Paul, K.E. & Whitesides, G.M., Self-assembly of 10-µm-sized objects into ordered three-dimensional arrays. *J. Am. Chem. Soc.* **2001**, *123*, 7677-7682.

†14. Gracias, D.H., Tien, J., Breen, T.L., Hsu, C. & Whitesides, G.M., Forming electrical networks in three dimensions by self-assembly. *Science* **2000**, *289*, 1170-1172.

†13. Dike, L.E., Chen, C.S., Mrksich, M., Tien, J., Whitesides, G.M. & Ingber, D.E., Geometric control of switching between growth, apoptosis, and differentiation during angiogenesis using micropatterned substrates. *In Vitro Cell. Dev. Biol. Anim.* **1999**, *35*, 441-448.

12. Deng, T., Tien, J., Xu, B. & Whitesides, G.M., Using patterns in microfiche as photomasks in 10-µm-scale microfabrication. *Langmuir* **1999, *15*, 6575-6581.

†11. Breen, T.L., Tien, J., Oliver, S.R.J., Hadzic, T. & Whitesides, G.M., Design and self-assembly of open, regular, 3D mesostructures. *Science* **1999**, *284*, 948-951.

††10. Lahiri, J., Isaacs, L., Tien, J. & Whitesides, G.M., A strategy for the generation of surfaces

presenting ligands for studies of binding based on an active ester as a common reactive intermediate. *Anal. Chem.* **1999**, *71*, 777-790.

9. Tien, J., Breen, T.L. & Whitesides, G.M., Crystallization of millimeter-scale objects with use of capillary forces. *J. Am. Chem. Soc.* **1998, *120*, 12670-12671.

***8. Huck, W.T.S., Tien, J. & Whitesides, G.M., Three-dimensional mesoscale self-assembly. *J. Am. Chem. Soc.* **1998**, *120*, 8267-8268.

*7. Marzolin, C., Terfort, A., Tien, J. & Whitesides, G.M., Patterning of a polysiloxane precursor to silicate glasses by microcontact printing. *Thin Solid Films* **1998**, *315*, 9-12.

**6. Tien, J., Xia, Y. & Whitesides, G.M. Microcontact printing of SAMs. in *Self-Assembled Monolayers of Thiols*, Vol. 24 (ed. Ulman, A.), pp. 227-250 (Academic Press, San Diego, CA, 1998).

***5. Xia, Y., Venkateswaran, N., Qin, D., Tien, J. & Whitesides, G.M., Use of electroless silver as the substrate in microcontact printing of alkanethiols and its application in microfabrication. *Langmuir* **1998**, *14*, 363-371.

††4. Mrksich, M., Dike, L.E., Tien, J., Ingber, D.E. & Whitesides, G.M., Using microcontact printing to pattern the attachment of mammalian cells to self-assembled monolayers of alkanethiolates on transparent films of gold and silver. *Exp. Cell Res.* **1997**, *235*, 305-313.

†3. Tien, J., Terfort, A. & Whitesides, G.M., Microfabrication through electrostatic self-assembly. *Langmuir* **1997**, *13*, 5349-5355.

***2. Xia, Y., Tien, J., Qin, D. & Whitesides, G.M., Non-photolithographic methods for fabrication of elastomeric stamps for use in microcontact printing. *Langmuir* **1996**, *12*, 4033-4038.

1. Shaw, G.L. & Tien, J., Energy levels of quark atoms. *Phys. Rev. D* **1993**, *47*, 5075-5078.

PATENT

US 7,007,370 Self-assembled electrical networks
D. H. Gracias, J. Tien, and G. M. Whitesides