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Associate Professor

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Field of research:

Stem cell tissue engineering

Academic appointments:

Oct. 2004- present: Senior Lecturer, Biomedical Engineering Department, Technion, Israel Institute of Technology

Summer 2006: Visiting Scientist, Prof. Robert Langer Lab, Chemical Engineering Department, MIT

Sept. 2002- July 2004: Research Associate, Prof. Robert Langer Lab, Chemical Engineering Department, MIT.

Sept. 2001- Aug 2002: Post Doctorate Associate, Prof. Robert Langer Lab, Chemical Engineering Department, MIT.

Sept. 1999- Aug 2001: Post Doctorate fellow (EMBO Fellowship), Prof. Robert Langer Lab, Chemical Engineering Department, MIT.

Honors and Awards:

Honors and awards

1990: Award by the Faculty of Life Sciences, Hebrew University.

1990-1992: Dean's List, Faculty of Life Sciences, Hebrew University, Israel.

1999: Fulbright Israeli Post-doctoral award.

1999-2001: EMBO (European Molecular Biology Organization) Long- Term Post-doctoral fellowship.

2004: ASAIO (American Society for Artificial Internal Organs) Willem J. Kolff Young Investigators Award.

2004: Landau Fellow, *Leaders in Science and Technology* program

2006-2007: Marie Curie International Reintegration Grant leader in Engineering

2006: Krill Prize of the **Wolf foundation** for excellence in scientific research

2006: 2006 Scientific American 50 Award- **Research Leader** in Tissue Engineering

2007: The Henry Taub Prize for Academic Excellence

2007: "Yediot Acharonot" list of 50 people of the year

2008: France-Israel Foundation Prize for scientific excellence in stem cell research

Selected publications:

LIST OF PUBLICATIONS- Levenberg Shulamit 10.08

Papers

1. Geiger, B., Yehuda-Levenberg, S. and Barshadsky, A. Molecular Interactions In The Submembrane Plac of Cell-Cell and Cell-Matrix Adhesions. *Acta Anat.* 154:46-62 (1995)
 2. Simcha, I., Geiger, B., Yehuda-Levenberg, S., Salomon, D., and Ben-Ze'ev, A. Suppression of Tumorigenicity by Plakoglobin: An Augmenting Effect of N-cadherin. *J. Cell. Biolog.* 133:199-209 (1998)
 3. Levenberg, S., Yamada, K.M., Kats, B.Z. and Geiger, B. Long-Range and Selective Autoregulation of Cell or Cell Matrix Adhesions by Cadherin or Integrin Ligands. *J. Cell Science.* 111:347-357 (1998)
 4. Levenberg, S., Sadot, E., Goichberg, P. and Geiger, B. Cadherin- Mediated Transmembrane Interactions. *Cell adhesion and Communication.* 6:161-170 (1998)
 5. Kats, B.Z., Levenberg, S., Yamada, K.M., and Geiger, B. Modulation of Cell-Cell Adherence Junctions Surface Clustering of the N-Cadherin Cytoplasmic Tail. *Experimental Cell Research.* 243:415-424 (1998)
 6. Levenberg, S., Yarden, A., Kam, Z. and Geiger, B. p27 is Involved in N-cadherin-mediated Contact Inhibition of Growth and S-phase Entry. *Oncogene.* 18:869-876 (1999)
 7. Levenberg, S., Golub, J. S., Amit, M., Itskovitz-Eldor, J. and Langer, R. Endothelial Cells Derived From Human Embryonic Stem Cells. *PNAS* 99: 4391-4396 (2002)
- Cited in the list of 20 most cited papers on hESC from 1998-2004**
8. Levenberg, S., Huang, N., Erin, L., Rogers, A., Itskovitz-Eldor, J. and Langer, R. Differentiation of Human Embryonic stem cells on Three Dimensional Polymer Scaffolds. *PNAS.* 100:12741-12746 (2003)
 9. Levenberg, S., Huang, N. F., Lavik, E., Rogers, A. B., Itskovitz-Eldor, J., and Langer, R. Engineering three dimensional tissue structures using human embryonic stem cells. *ASAIO Journal.* 50(2):159(2004).
 10. Levenberg, S. and Langer, R. Advances in Tissue Engineering Review. *Current Topics in Developmental Biology.* 61:113-134 (2004)
 11. Khademhosseini, A., Suh, K.Y., Yang, J.M., Eng, G., Yeh, J., Levenberg, S. and Langer, R. Layer-by-layer Deposition of Hyaluronic Acid and Poly-L-lysine for Patterned Cell Co-Cultures. *Biomaterials.* 25/17:3583-3592. (2004)
 12. Anderson, D.G., Levenberg, S., and Langer, R. Nanoliter-scale synthesis of arrayed biomaterials and its application to human embryonic stem cells. *Nature Biotechnology.* 22:863-866. (2004)
 13. Levenberg, S., Burdick, J.A., Kraehenbuehl, T., and Langer, R. Neurotrophin Induced Differentiation of Human Embryonic Stem Cells on Three-Dimensional Polymeric Scaffolds. *Tissue Engineering.* 11:506-512. (2005)
 14. Levenberg, S., Rouwkema, J., Macdonald, M., Gerfein, E., Kohane, D., Darland D., Marini, R., van Blitterswijk, C.A., Mulligan, R., D'Amore, P. and Langer, R. Engineering Vascularized Skeletal Muscle Tissue. *Nature Biotechnology.* 23:879-884. (2005) **Cited as a Landmark paper in Nature Biotechnology News and Views.**
 15. Levenberg, S. Engineering blood vessels from stem cells: recent advances and applications. *Current opinion in Biotechnology.* 16: 516-523 (2005)
 16. Levenberg, S. Endothelial tissue engineering. *Journal of Vascular Research.* 42 supplII: 7 (2005)
 17. Korin N., Branski A., Dinnar U. and Levenberg, S. The culture of human embryonic stem cells in microchannel perfusion bioreactors. *Proc. SPIE Biomedical Applications of Micro- and Nanoengineering III* 6416-6424. (2006)
 18. Caspi O. and Lesman A., Basevitch Y., Gepstein A., Arbel G., Habib M., Gepstein L., and Levenberg, S. Tissue Engineering of Vascularized Cardiac Muscle from Human Embryonic Stem Cells. *Circulation Research.* 100(2):263-72. (2007)
 19. Korin N., Bransky A., Dinnar U. and Levenberg, S. A Parametric Study of Human Fibroblasts Culture Microchannel Bioreactor. *Lab on a Chip*, 7, 611 – 617. (2007)
 20. Korin N., Bransky A., Dinnar U., and Levenberg, S. " A micro-well perfusion bioreactor for human embryonic stem cell", *Proc. microTAS*, 772-774. (2007)
 21. Levenberg, S., Zoldan J., Bashevits Y. and Langer, R. Endothelial potential of Human Embryonic Stem Cells. *Blood.* 110(3):806-14 (2007)
 22. Korin N. and Levenberg, S. Engineering human embryonic stem cell differentiation. *Biotechnology and Genetic Engineering Reviews.* 24:243-61. (2007)
 23. Bransky A., Korin N. and Levenberg, S. Experimental and theoretical study of selective protein deposition using focused micro laminar flows. *Biomedical Microdevices.* 10:421-428 (2008)
 24. Lumelsky Y., Zoldan J., Levenberg, S. and Silverstein M.S. Porous Polycaprolactone-Polystyrene Semi

interpenetrating Polymer Networks Synthesized within High Internal Phase Emulsions. *Macromolecules* 1469-1474 (2008)

25. Michael I., Shmoish M., Walton D and Levenberg S. Interactions Between Trabecular Meshwork Cell: Lens Epithelial Cells – A Possible Mechanism of Infantile Aphakic Glaucoma. *IOVS* (Invest Ophthalmol Vis Sci). 49(9):3981-7. Epub May (2008)
26. Tzezana R. Zussman E., Levenberg S. A Layered Ultra-Porous Scaffold for Tissue Engineering, create a Hydrospinning Method. *Tissue Engineering*. Part C. Sep 10 (2008) (Epub ahead of print).
27. Korin N., Bransky A., Dinnar U. and Levenberg S. Periodic "Flow-Stop" Perfusion Microchannel Bioreactors for Mammalian and Human Embryonic Stem Cell Long-term Culture. *Biomedical Microdevices*. Sep 20 (2008) (Epub ahead of print)
28. Levy-Mishali M., Zoldan J and Levenberg S. Effect of Scaffold Stiffness on Myoblast Differentiation. *Tissue Engineering*. Part A. Sep 26 (2008). (Epub ahead of print)
29. Korin N., Bransky A., Dinnar U., and Levenberg S., "Periodic Perfusion Microchannel bioreactors for Human Embryonic Stem cell Culture", Proc. 9th Biennial ASME Conference on Design and Analysis, In print (2008)
30. Korin N., Bransky A., Dinnar U. and Levenberg S. Design of Well and Groove Microchannel Bioreactors for Cell Culture. *Biotechnology and Bioengineering Journal*. In Print (2008)
31. Bransky A., Korin N., Khoury M. and Levenberg S. A Microfluidic Droplet Generator Based on a Piezoelectric Actuator. *Lab on a chip*. In print (2008)

Book Chapters

1. Levenberg, S., Huang, N. and Langer, R. *Derivation of Endothelial Cells from Human ES Cells* Human Pluripotent Stem Cells, Editors: Jon S. Odorico, Roger A. Pedersen, and Su-Chun Zhang. B Scientific Publishers Ltd. London. 137-148. 2005
2. Levenberg, S., Khademhosseini, A. and Langer, R. *Embryonic Stem Cells in Tissue Engineering* Handbook of Embryonic Stem Cells. Editors: Robert Lanza, Doug Melton, James Thomson, John Gear, Brigid Hogan, Ron McKay, Roger Pedersen and Mike West. Academic Press. Boston. 737-764. 2006
3. Levenberg, S., Khademhosseini, A., Fuller, J. and Langer, R. *Methods of Human Embryonic Stem Cell Culture*. In Culture of Cells for Tissue Engineering. Editors: Ian Freshney and Gordana Vunjak-Novakovic. John Wiley & Sons. NJ. 61-83. 2006
4. Levenberg, S., Mcdonald, M. and Langer, R. *Derivation and Characterization of Endothelial Cells from Human Embryonic Stem Cells*. In Human Embryonic Stem Cells: Methods and Protocols. Editor: Kursad Turksen. Humana Press. In Press
5. J. Zoldan and S. Levenberg, "Engineering Three-Dimensional Tissue Structures Using Stem Cells". *Methods in Enzymology: Stem Cells Volume*. Edited by R. Lanza and I. Kilmanskaya, Elsevier. 381-3420 (2006).
6. Malda, J., Baaijens, F., Levenberg, S., Radisic, M., Svalander, P., Woodfield, T. and Vunjak-Novakovic G. *Cell nutrition*. In Textbook on tissue engineering. Editors: van Blitterswijk, C., Lindahl, A., Thomser P., Williams, D., Hubbell, J. and Cancellah, R. Academic Press. Amsterdam. 327-362. (2008)
7. Soukup C., Levenberg S. and Cleaver O. *In vitro differentiation of endothelial cells from human embryonic stem cells*. Human Embryonic Stem Cells: A Practical Approach. Editors: Stephen Sullivar Chad A Cowan, Kevin Eggan. John Wiley & Sons. NJ. 13, 229-248 (2007)
8. Zoldan, J. and Levenberg, S. *Culturing and Differentiation of hES cells on three dimensional scaffolds*. *Methods in Molecular Biology - New Stem Cell Techniques*. Humana Press. In Press

Patents

1. US Patent: Levenberg, S., Amit, M., Itskovitz-Eldor, J. and Langer, R. Endothelial Cells Derived from Human Embryonic Stem Cells. (2003) Pending.
2. US Patent: Levenberg, S., Huang, N., Erin, L., Itskovitz-Eldor, J. and Langer, R. Engineering Three-Dimensional Tissue Structures Using Differentiating Human Embryonic Stem Cells. (2003) Pending
3. US Patent: Anderson, D.G., Levenberg, S., and Langer, R. Nanoliter-scale synthesis of arrayed

- biomaterials and screening with human embryonic stem cells. (2004) Pending
4. US Patent: Anderson, D.G., Levenberg, S., and Langer, R. Enrichment of Embryonic epithelial cells from human embryonic stem cells. (2004) Pending
 5. US patent: Levenberg, S., Rouwkema, J. and Langer, R. Engineering Vascularized Skeletal Muscle Tissue. (2004) Pending
 6. Francis K. and Levenberg S. Engineering vascularized pancreatic islets in vitro. (2006) Pending
 7. Bransky A., Korin N. and Levenberg S. Precise temporal and spatial reagents conveying in microchannels. (2006) Pending
 8. Lesman A, Caspi O., Gepstein L. and Levenberg S. Engineering Vascularized cardiac tissue from embryonic stem cells. (2007)Pending
 9. Tzezana R. Zussman E., Levenberg S. A Layered Ultra-Porous Scaffold for Tissue Engineering, created via a Hydrosponning Method. (2007) Pending
 10. Bransky A., Korin N. and Levenberg S. Microfluidic device for single cell interrogation. (2008) Pending
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