

THEODORUS DE GROOT

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EDUCATION

UNIVERSITY OF WISCONSIN - MADISON, College of Engineering, Madison, WI, Sept. 2012-
Biomedical Engineering PhD Program

CORNELL UNIVERSITY, College of Engineering, Ithaca, NY
Master of Engineering degree in Biomedical Engineering, May 2010

BOSTON UNIVERSITY, College of Engineering, Boston, MA
Bachelor of Science degree in Biomedical Engineering, May 2009

RESEARCH EXPERIENCE

University of Wisconsin-Madison September 2012 - Present
Biomedical Engineering, Madison, WI
PhD Candidate

Advisor: David Beebe

- Developed integrated platform for multi-functional readouts in multiple myeloma co-culture model.
- Advanced techniques in microdevice fabrication to improve bonding, optical characteristics, and functionality of thermoplastic cell-culture devices.

Massachusetts General Hospital September 2010 - August 2012
Center for Engineering in Medicine, Charlestown, MA
Research Engineer

Advisor: Mehmet Toner

- Developed microfluidic device to capture circulating tumor cells from whole blood.
- Validated device capabilities in prostate, lung, pancreas, and mouse tumor models.
- Trained collaborators to use technology and exported device for clinical trials around the country.

Cornell University September 2009 - August 2010
Dept. of Biomedical Engineering, Ithaca, NY
M.Eng. Research Project: “*Decoupling Microenvironmental Impacts on Angiogenesis in a Tumor Model*”
Advisors: Claudia Fischbach, Scott Verbridge

- Worked with 11 other institutes under NIH grant for cancer metastasis and microenvironment.
- Developed biomimetic 3-D tumor to study chemical response of tumor cells to microenvironmental factors such as oxygen concentration and pH.

Boston University September 2008 - May 2009
Dept. Biomedical Engineering, Boston MA
Senior Design Project: “*A Thermoplastic Micro-Electro-Mechanical System (MEMS) for Microfluidic Diagnostic Platforms*”

Advisor: Catherine Klapperich

- Designed and fabricated a reusable, programmable pneumatic platform to control lab-on-a-chip reactions performed on disposable microfluidic chips for multiple biosensor applications as member of a two-person team.
- Designed and constructed electronic pressure sensor for project and general lab use.

Suffolk University Summer 2008
Electrical and Computer Engineering Dept., Boston, MA
Advisor: Lisa Shatz

- Conducted research on modeling response of seal vibrissae for application to electron sensor design (co-author on *PLoS One* paper on this research)
- Supervised and mentored sophomore student in research.

COURSEWORK

Genomic science, biosensors, stem cell biology, tissue engineering, protein structure and function, DNA applications, nanobiotechnology, nucleic acid engineering, biomedical instrumentation, bioinformatics

PUBLICATIONS

de Groot TE, Guckenberger DJ, Young EWK, Beebe DJ. Micromilling of plastic devices for cell-based assays. *In preparation*

de Groot TE, Howard AJ, Theberge AB, Berthier E, Beebe DJ. Styrene-Ethylene/Butylene-Styrene (SEBS)-Based Adhesive for Bonding of Similar and Dissimilar Materials. *In preparation*

de Groot TE, Nguyen EH, Yu X, Theberge AB, Murphy WL, Miyamoto S, Beebe DJ. Three-Dimensional Multiple Myeloma Model for Studying Mechanisms of Drug Resistance. *Submitted (Abstract)*

Shatz L, **de Groot T**. The Frequency Response of the Vibrissae of Harp Seal, *Pagophilus Groenlandicus*, to Sound in Air and Water, *PLoS One* 8(1): e54876. doi: 10.1371/journal.pone.0054876, 2013

de Groot TE, Casavant BP, Veserat K, Srotman LM, Berry SM, Beebe DJ. Streamlining cell biology workflows: Integrating suspension culture, cell lysis, protein extraction and nucleic acid extraction, Abstract, the 17th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS 2013), Freiburg, Germany

de Groot TE, Verbridge, SS, Fischbach, C. Decoupling microenvironmental impacts on angiogenesis in a 3-D tumor model, poster, UNYBECC 2010 (Upstate New York Biomedical Engineering Career Conference)

de Groot TE, Fischbach, SS Decoupling 3D microenvironmental impacts on angiogenesis in a tumor model, Abstract, Cornell Engineering Research Conference (CERC) 2010.