

Mara Macdonald

12425 W 86 Ave ▪ Arvada, CO 80005 ▪ Phone: (617) 549-6458 ▪ Email address: maralee@mit.edu

Education	HARVARD AND MASSACHUSETTS INSTITUTE OF TECHNOLOGY Cambridge, MA Candidate for PhD Degree in Medical Engineering, HST, May 2010 <ul style="list-style-type: none">• Qualified in Chemical Engineering, MIT with an additional 2 years of classes and clinical training at Harvard Medical School.• Developed a <i>platform technology</i> useful for <i>sequential delivery of pharmaceuticals</i> from proof of concept to collaboration with a startup interested in commercializing the project, resulting in an int'l patent, 3+ publications, and Fulbright Fellowship. Advisors: R. Langer and P. Hammond <i>GPA (4.2/5.0)</i>• <i>Business coursework</i>: Nuts and Bolts of the Business Plan, Introduction to Entrepreneurship, Introduction to Venture Capital, Economics of the Healthcare Industries <i>GPA (5.0/5.0)</i>. <i>Taking Finance I and Health Care Systems Innovation Fall 2009</i> UNIVERSITY OF COLORADO Boulder, CO Bachelor of Science in Chemical Engineering with Distinction <ul style="list-style-type: none">• Honors thesis in cancer cell biology <i>GPA (3.9/4.0; 3.96 in-major)</i>; Co-president Biomedical Engineering Society (group of 200) 2002
Experience	RESEARCH TECHNICIAN, LANGER LAB, 2002-2004 <ul style="list-style-type: none">• Researched independently under supervision to bring a project from proof-of-concept <i>in vitro</i> to completed <i>in vivo</i> studies, published in <i>Nature Biotechnology</i>. RESEARCH INTERN, UNIVERSITY OF COLORADO, BOULDER, LIU LAB, 2000-2002 <ul style="list-style-type: none">• Worked in close collaboration with advisor to start a new lab; as the first lab member, transferred techniques and established lab culture as a mentor to incoming members. At time of departure, lab had 8 members and sufficient funding for future endeavors. RESEARCH INTERN, MIT, LODISH LAB, Summer 2000 <ul style="list-style-type: none">• Elucidated novel possible cancer promoters and inhibitors through a rapid scanning technique. RESEARCH INTERN UNIVERSITY OF COLORADO, BOULDER, BOWMAN LAB, <ul style="list-style-type: none">• Spring 2000 Characterized novel polymers potentially used in regenerating organ tissues.
Leadership & Mentorship	PRESIDENT, DEPARTMENT GRADUATE STUDENT COUNCIL, 2008 <ul style="list-style-type: none">• Designed and executed social activities for 370+ students with a budget of \$35K, including launching a new series of social hours designed to strengthen community. Recruited necessary team members, coordinated and directed their efforts while cultivating creativity and excitement for projects. FINALIST, MIT 100K ENTREPRENEURIAL BUSINESS PLAN COMPETITION, 2007 <ul style="list-style-type: none">• “<i>MAD Nanolayers</i>” team, 1K (pre-competition) winner and selected as one of four finalist teams from 140+ groups for a prize of \$35K. Provided technical diligence to the team and worked with business student team members to refine the business strategy of the venture. STUDENT REP TO DEPARTMENT GRADUATE COMMITTEE, 2006-2007 <ul style="list-style-type: none">• One of three students elected to represent the student body of 370 students on curriculum reform. Gathered feedback from student community with diverse interests and backgrounds to ensure validity of changes. UNDERGRADUATE RESEARCH ADVISOR, MIT, 2006-2009 <ul style="list-style-type: none">• Managed and mentored a series of 7 students contributing to lab work on my thesis, including one student who stayed throughout her undergraduate education. BIG BUDDY, HST Buddy Program <ul style="list-style-type: none">• Mentored three younger HST students in beginning their studies at MIT
Honors	Fulbright Fellow, Singapore (2008-2009), National Science Foundation Fellow (2004-2007), McKinsey Insight Program (2009), Dean’s List CU Boulder (1999-2002) with competitive merit scholarships every possible semester. Research Experience for Undergraduates Grant (2000); one of 12 positions awarded nationally for paid research at MIT.
Activities	Tamahine O Tairi (Tahitian) Dance Troupe, Skiing, MIT Salsa Club, Rock climbing, International travel.
Patents	“Self assembled films for protein and drug delivery applications”, <i>US and PCT Application No. 066948</i> filed June 2008; extension of issued provisional patent <i>60/943,983</i>

**Publications,
Presentations**

- Macdonald ML**, Rodriguez NM, Langer R and Hammond PT. "Growth inhibition through thin film delivery of anti-Vascular Endothelial Growth Factor" Manuscript in preparation
- Macdonald ML**, Chuang H, Rodriguez NM, Easley J, Langer R, and Hammond PT. "Polyelectrolyte multilayers for sequential release of an antibiotic and a growth factor" Manuscript in preparation
- Macdonald ML**, Shukla A, Krogman K, Rodriguez NM, Boushell M, Langer R and Hammond PT. "A novel technique for multilayer deposition of bioactive thin films" Manuscript in preparation
- Macdonald ML**, Rodriguez NM, Langer R, and Hammond PT. "Characterization of tunable FGF-2 releasing polyelectrolyte multilayers". Submitted
- Macdonald ML**, Chan-Park MB, and Hammond PT. "Stamp Templated Co-Cultures for Microvascular Tissue Engineering". Submitted
- Macdonald ML**, Rodriguez NM, Smith R, Hammond PT. "Release of a Model Protein from Biodegradable Layer by Layer Assembled Films for Surface Delivery Applications" *Journal of Controlled Release* 2008
- Levenberg S, Khademhosseini A, **Macdonald M**, Fuller J, and Langer R. "Methods of Human Embryonic Stem Cell Culture", Submitted to the book "Culture of Cells for Tissue Engineering"
- Levenberg S, Rouekema J, **Macdonald M**, Garfein E, D'Amore P, Darland D, Langer R. "Engineering Vascularized Skeletal Muscle Tissue" *Nature Biotechnology* 2005
- Macdonald M**, Wan Y, Wang W, Roberts E, Cheung TH, Erickson R, Knuesel MT, Liu X. "Cdc34 is Required for Cell Cycle Dependent Degradation of c-Ski Proto-oncoprotein" *Oncogene*. 2004
- Elliott JE, **Macdonald M**, Nie J, Bowman CN. "Structure and swelling of poly(acrylic acid) hydrogels: effect of pH, ionic strength, and dilution on the crosslinked polymer structure" *Polymer* 2004
- Macdonald ML**, Rodriguez N.M, and Hammond PT Poster: "Polyelectrolyte Multilayers for Sequential Multi-Drug Delivery" Gordon Conference on Biocompatibility and Tissue Engineering, July 19-24, 2009
- Macdonald ML**, Langer R, and Hammond PT. *Oral Presentation*: "Multilayer films for the release of active therapeutic proteins" American Chemical Society Fall Meeting, Philadelphia, PA, August 2008.
- Macdonald ML**, Langer R, and Hammond PT. *Oral Presentation*: "Towards Sequential Drug Delivery", US Japan Symposium on Drug Delivery, Maui, HI, December 2007.
- Macdonald M** and Hammond PT. *Oral Presentation*: "Toward Sequential Release of Proteins", American Chemical Society Fall Meeting, Boston MA, August 2007.
- Macdonald M**, Chuang H, Smith R, and Hammond PT, "MAD Nanolayers: Polymer thin films for Multi-Agent Delivery", Deshpande Open House Boston, MA August 2007.
- Macdonald M**, Chuang H, and Hammond PT, MAD Nanolayers: Polymer thin films for Multi-Agent Delivery", IdeaStream Convention, Boston MA April 2007.
- Macdonald M**, Langer R, and Hammond PT. "Polyelectrolyte Multilayers for Sequential Multi-Drug Delivery", Health Sciences and Technology Forum, Charlestown, MA March 2007
- Macdonald M**, Chuang H, and Hammond PT, MAD Nanolayers: Polymer thin films for Multi-Agent Delivery", Deshpande Open House Boston, MA August 2006.
- Macdonald M**, Chuang H, and Hammond PT. "Polyelectrolyte Multilayers for Sequential Multi-Drug Delivery", Methods of Bioengineering Conference, Boston MA Spring 2006.