



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE ____6101____

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at Dipartimento di __Oncologia ed Emato-Oncologia____

Scientist- in - charge: __Giorgio Scita_____

[Name and surname]

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Green
Name	Brenda

PRESENT OCCUPATION

Appointment	Structure
Project Leader	IFOM

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	Bachelor in Chemical Engineering, Bachelor in Biochemistry	University of Ottawa	2007
Specialization			
PhD	Biomedical Engineering	University of Toronto	2018
Master	Biomedical Engineering	University of Toronto	2012
Degree of medical specialization			
Degree of European specialization			
Other			

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date registration	of Association	City



FOREIGN LANGUAGES

Languages	level of knowledge
Italian	B1

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2023	My First AIRC Grant
2019	Marie Skłodowska-Curie Post-Doctoral Fellowship Award
2016	Natural Sciences and Engineering Research Council of Canada scholarships

TRAINING OR RESEARCH ACTIVITY

Description of activity
<p>Mechanical deformability is emerging as a biomarker for aggressivity of tumor cells, as several studies link cell and nuclei deformability with increased metastases. In the current project, we developed a microfluidic device that can simulate the mechanical forces experienced by tumor cells in their natural environments. The system was tested by employing MCF10DCIS.com breast cancer spheroids as a model of early-stage breast ductal carcinoma in situ that can progress to invasive carcinoma when injected into immuno-compromised mice. Using widefield microscopy, we are able to track tumor spheroids as they deform through narrow constrictions. The spheroids are subsequently collected and analyzed for changes in transcriptome and invasion capacity.</p> <p>During my PhD, I validated a microfluidic device to capture rare cancer cells in blood, and we showed that this device out-performed the gold standard commercially available Cell Search technology. I worked with oncologists at the Princess Margaret Hospital in Toronto to track CTCs in metastatic prostate cancer patients over 3 years. We optimized the fluidic system for CTC detection from prostate cancer, lung cancer and mesothelioma patients and published our work in Analytical Chemistry 2019: “Phenotypic Profiling of Circulating Tumor Cells in Metastatic Prostate Cancer Patients Using Nanoparticle-Mediated Ranking” and EBioMedicine 2020: “A liquid biopsy for detecting circulating mesothelial precursor cells: A new biomarker for diagnosis and prognosis in mesothelioma”.</p> <p>At ETH Zurich, we developed a nanopore system to measure deformability of single breast cancer spheroids in real time. Here we demonstrated that metastatic MCF10CA1a.cl1 passed through pores more rapidly than normal breast cells MCF10A, and were more likely to disengage from pores and reverse direction. This work was published in NanoLetters: “Pore shape defines paths of metastatic cell migration. Nano Lett 2018”.</p>

PROJECT ACTIVITY

Year	Project
2023-Present	▫ Created reproducible microfluidic systems to link biophysical properties of tumor clusters to disease state.
2019-2023	▫ Managed a project for the development and validation of a novel microfluidic device for capture of circulating tumor cells (CTCs) and clusters from whole blood.
2014-2018	▫ Employed silicon-oxide microscale devices for analysis of breast cancer cell migration through pores of variable size and aspect ratio, for diagnostic and therapeutic purposes. Carried out experiments using cell transfection protocols and high resolution live-cell fluorescence imaging.
2010-2014	▫ Designed and implemented microfluidic devices for pancreatic islet culture and vascular regeneration.



PATENTS

Patent

CONGRESSES AND SEMINARS

Date	Title	Place
December 2023	Cell Shape in Fate	Paris, France
November 2023	Precision Liquid Handling workshop	Neuchatel, Switzerland
November 2021	NanoBioTech-Montreux Conference 2021	Montreux, Switzerland
November 2019	Breaking Boundaries: Metabolism at the Cross-roads	Milan, Italy
March 2019	Nanoengineering for Mechanobiology Conference	Camogli, Italy
March 2017	Nanoengineering for Mechanobiology Conference	Camogli, Italy
May 2016	Institute of Biomaterials and Bioengineering Scientific Day	Toronto, Canada

PUBLICATIONS

Books

Articles peer reviewed
1. Green, B.J. ; Marazzini, M.; Hershey, B.; Fardin, A.; Li, Q.; Wang, Z.; Giangreco, G.; Pisati, F.; Marchesi, S.; Disanza, A.; Frittoli, E.; Martini, E.; Magni, S.; Beznoussenko, G.V.; Vernieri, C.; Lobefaro, R.; Parazzoli, D.; Maiuri, P.; Havas, K.; Labib, M.; Sigismund, S.; Di Fiore, P.P.; Gunby, R.; Kelley, S.O.; Scita, G., PillarX: A Microfluidic Device to Profile Circulating Tumor Cell Clusters Based on Geometry, Deformability and Epithelial State. <i>Small</i> , 2022;e2106097. IF=13.3
2. Duong, B. T. V.; Wu, L.; Green, B. J. ; Bavaghar-Zaeimi, F.; Wang, Z.; Labib, M.; Zhou, Y.; Cantu, F. J. P.; Jeganathan, T.; Popescu, S.; Pantea, J.; de Perrot, M.; Kelley, S. O., A liquid biopsy for detecting circulating mesothelial precursor cells: A new biomarker for diagnosis and prognosis in mesothelioma. <i>EBioMedicine</i> 2020, 61, 103031. IF=8.1
3. Labib, M.; Wang, Z.; Ahmed, S. U.; Mohamadi, R. M.; Duong, B.; Green, B. ; Sargent, E. H.; Kelley, S. O., Tracking the expression of therapeutic protein targets in rare cells by antibody-mediated nanoparticle labelling and magnetic sorting. <i>Nat Biomed Eng</i> 2021, 5 (1), 41-52. IF=25
4. Wang, Z.; Zhang, L.; Labib, M.; Chen, H.; Wei, M.; Poudineh, M.; Green, B. J. ; Duong, B.; Das, J.; Ahmed, S.; Sargent, E. H.; Kelley, S. O., Peptide-Functionalized Nanostructured Microarchitectures Enable Rapid Mechanotransductive Differentiation. <i>ACS Appl Mater Interfaces</i> 2019, 11 (44), 41030-41037. IF=9.2
5. Green, B. J. ; Nguyen, V.; Atenafu, E.; Weeber, P.; Duong, B. T. V.; Thiagalingam, P.; Labib, M.; Mohamadi, R. M.; Hansen, A. R.; Joshua, A. M.; Kelley, S. O., Phenotypic Profiling of Circulating Tumor Cells in Metastatic Prostate Cancer Patients Using Nanoparticle-Mediated Ranking. <i>Anal Chem</i> 2019, 91 (15), 9348-9355. IF=7.



6. Green, B. J. ; Panagiotakopoulou, M.; Pramotton, F. M.; Stefopoulos, G.; Kelley, S. O.; Poulidakos, D.; Ferrari, A., Pore shape defines paths of metastatic cell migration. <i>Nano Lett</i> 2018. IF=11.2
7. Green, B. J. ; Kermanshah, L.; Labib, M.; Ahmed, S. U.; Silva, P. N.; Mahmoudian, L.; Chang, I. H.; Mohamadi, R. M.; Rocheleau, J. V.; Kelley, S. O., Isolation of Phenotypically Distinct Cancer Cells Using Nanoparticle-Mediated Sorting. <i>ACS Appl Mater Interfaces</i> 2017, 9 (24), 20435-20443. IF=9.2
8. Poudineh, M.; Aldridge, P. M.; Ahmed, S.; Green, B. J. ; Kermanshah, L.; Nguyen, V.; Tu, C.; Mohamadi, R. M.; Nam, R. K.; Hansen, A.; Sridhar, S. S.; Finelli, A.; Fleshner, N. E.; Joshua, A. M.; Sargent, E. H.; Kelley, S. O., Tracking the dynamics of circulating tumour cell phenotypes using nanoparticle-mediated magnetic ranking. <i>Nat Nanotechnol</i> 2017, 12 (3), 274-281. IF=39.2
9. Labib, M.; Green, B. ; Mohamadi, R. M.; Mephram, A.; Ahmed, S. U.; Mahmoudian, L.; Chang, I. H.; Sargent, E. H.; Kelley, S. O., Aptamer and Antisense-Mediated Two-Dimensional Isolation of Specific Cancer Cell Subpopulations. <i>J Am Chem Soc</i> 2016, 138 (8), 2476-9. IF=15.4
10. Green, B. J. ; Saberi Safaei, T.; Mephram, A.; Labib, M.; Mohamadi, R. M.; Kelley, S. O., Beyond the Capture of Circulating Tumor Cells: Next-Generation Devices and Materials. <i>Angew Chem Int Ed Engl</i> 2016, 55 (4), 1252-65. IF=15.3
11. Mohamadi, R. M.; Besant, J. D.; Mephram, A.; Green, B. ; Mahmoudian, L.; Gibbs, T.; Ivanov, I.; Malvea, A.; Stojcic, J.; Allan, A. L.; Lowes, L. E.; Sargent, E. H.; Nam, R. K.; Kelley, S. O., Nanoparticle-mediated binning and profiling of heterogeneous circulating tumor cell subpopulations. <i>Angew Chem Int Ed Engl</i> 2015, 54 (1), 139-43. IF=15.3
12. Silva, P. N.; Green, B. J. ; Altamentova, S. M.; Rocheleau, J. V., A microfluidic device designed to induce media flow throughout pancreatic islets while limiting shear-induced damage. <i>Lab Chip</i> 2013, 13 (22), 4374-84. IF=6.8
13. Sun, M. Y.; Yoo, E.; Green, B. J. ; Altamentova, S. M.; Kilkenny, D. M.; Rocheleau, J. V., Autofluorescence imaging of living pancreatic islets reveals fibroblast growth factor-21 (FGF21)-induced metabolism. <i>Biophys J</i> 2012, 103 (11), 2379-88. IF=4.
14. Sankar, K. S.; Green, B. J. ; Crocker, A. R.; Verity, J. E.; Altamentova, S. M.; Rocheleau, J. V., Culturing pancreatic islets in microfluidic flow enhances morphology of the associated endothelial cells. <i>PLoS One</i> 2011, 6 (9), e24904. IF=3.2
15. Hallett, W., Green, B. , Machula, T. and Yang, Y. "Packed bed combustion of non-uniformly sized char particles". 2013. <i>Chemical Engineering Science</i> . 2013, 96, 1-9. IF=4.3
16. Renton, P.; Green, B. ; Maddaford, S.; Rakhit, S.; Andrews, J. S., NOpiates: Novel Dual Action Neuronal Nitric Oxide Synthase Inhibitors with mu-Opioid Agonist Activity. <i>ACS Med Chem Lett</i> 2012, 3 (3), 227-31. IF=4.3
17. Copeland, S. J.; Green, B. J. ; Burchat, S.; Papalia, G. A.; Banner, D.; Copeland, J. W., The diaphanous inhibitory domain/diaphanous autoregulatory domain interaction is able to mediate heterodimerization between mDia1 and mDia2. <i>J Biol Chem</i> 2007, 282 (41), 30120-30. IF=5.2

Congress proceedings		
Dec 2023	Cell Shape in Fate workshop	Presentation
Nov 2023	Precision Liquid Handling workshop	Attendee
Nov 2021	NanoBioTech-Montreux Conference 2021	Poster
Nov 2019	Breaking Boundaries: Metabolism at the Cross-roads	Poster



Mar 2019	Nanoengineering for Mechanobiology Conference	Poster
Mar 2017	Nanoengineering for Mechanobiology Conference	Poster
May 2016	Institute of Biomaterials and Bioengineering Scientific Day	Poster
Sep 2015	SPIE Biomedical Engineering Conference	Poster
Jan 2014	NCI-NIBIB Point of Care Technologies for Cancer Conference	Poster
Nov 2013	World CTC Summit	Poster

OTHER INFORMATION

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

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Place and date: __Milan, Italy_____, ____December 22 2023_____