

Erica D. Pratt, Ph.D.

Postdoctoral Associate

Department of Biochemistry, Molecular Biology and Biophysics

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EDUCATION

PhD in Biomedical Engineering Cornell University, Ithaca NY "Characterizing cancer cells using GEDI devices: Capture, <i>in-situ</i> analysis, and elution for <i>ex-situ</i> analysis and culture" PI: <i>Brian J. Kirby, PhD</i>	2015
MS in Biomedical Engineering Cornell University, Ithaca NY "Measurement of genetic and signal transduction response, and biomechanical properties in CTCs" PI: <i>Brian J. Kirby, PhD</i>	2012
BS in Mechanical Engineering, Biomedical Engineering Carnegie Mellon University, Pittsburgh PA PI: <i>Philip R. LeDuc, PhD</i>	2008

ACADEMIC POSITIONS

Ruth L. Kirschstein NRSA Fellow PI: <i>Laurie L. Parker, PhD</i>	University of Minnesota, Biochemistry	2018 –
Postdoctoral Fellow PI: <i>Andrew D. Rhim, MD</i>	MD Anderson Cancer Center, Internal Medicine, University of Michigan, Internal Medicine	2015 – 2018
NSF Graduate Research Fellow PI: <i>Brian J. Kirby, PhD</i>	Cornell University, Biomedical Engineering	2008 –2015
Pre-Doctoral Research PI: <i>Philip R. LeDuc, PhD</i>	Carnegie Mellon University, Mechanical Engineering	2006-2008

GRANTS AND FELLOWSHIPS

University of Minnesota Targets of Cancer Training Program (T32 CA009138)	2020
Momental Foundation Unfettered Research Grant (PI)	2019
NIH R33 Diversity Supplement (CA217780)	2018
University of Michigan Cancer Biology Training Grant (T32 CA967622)	2015
Cornell Physical Sciences in Oncology Center (PS-OC) Young Investigator's Award (PI)	2012
NSF Graduate Research Fellowship	2009
Alfred P. Sloan Foundation Graduate Fellowship	2008

AWARDS

Cancer Disparities Research Network Early Career Scholarship, Travel Grant	2019
Gordon Conference on Liquid Biopsy in Cancer, Travel Grant	2018
Edward A. Bouchet Graduate Honor Society, Fellow	2014
International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), Travel Grant	2011
Cornell Diversity in Programs in Engineering (DPE), Travel Grant	2010
Gordon Research Conference (GRC) on Bioanalytical Sensors, Travel Grant	2010
Cornell Nanofabrication Facility (CNF) Annual Meeting, Poster Award	2010
Sibley Graduate Research Conference, Poster Award	2010
Cornell Biomedical Engineering Society, Poster Award	2008

LEADERSHIP & SERVICE

Ad Hoc Reviewer,

Analytical Chemistry	2020 –
Communications Biology	2020 –
ACS Sensors	2019 –
Translational Research	2019 –

Focus Scientist, University of Minnesota BIOL 1806: Nature of Life 2020

Co-Chair, Gordon Research Seminar on Liquid Biopsy for Cancer 2018

Co-Organizer, Power Hour, Gordon Research Conference on Liquid Biopsy for Cancer 2018

Session Chair, Gordon Research Conference on Rare Cells in Circulation 2016

Chair, Chalk Talk Workshop for Early Career Researchers, Cornell Mechanical & Aerospace Engineering 2013

Member, Faculty Search Ad-hoc Committee, Cornell Mechanical & Aerospace Engineering 2013

Chair, Faculty Search Ad-hoc Committee, Cornell Mechanical & Aerospace Engineering 2012

PUBLICATIONS

* co-equal contribution; # corresponding author; † highlighted

Google Scholar: > 950 total citations

- [10] S Jena*, NP Damayanti*, J Tan, **ED Pratt**, JMK Irudayaraj and LL Parker, "Multiplexable fluorescence lifetime imaging (FLIM) probes for Abl and Src-family kinases" **Chemical Communications**, (*accepted*).
- [9] **ED Pratt**#, RW Cowan, SL Manning, E Qiao, H Cameron, K Schradle, DM Simeone and DB Zhen, "Multiplex Enrichment and Detection of Rare KRAS Mutations in Liquid Biopsy Samples using Digital Droplet Pre-Amplification," **Analytical Chemistry**, 91(12) 7516-7523 2019.
- [8] AS Farrell, MM Joly, BL Allen-Petersen, PJ Worth, C Lanciault, D Sauer, J Link, C Pelz, LM Heiser, JP Morton, N Muthalagu, MT Hoffman, SL Manning, **ED Pratt**, ND Kendersky, N Egbukichi, TS Amery, MC Thoma, ZP Jenny, AD Rhim, DJ Murphy, OJ Sansom, HC Crawford, BC Sheppard, RC Sears, "MYC regulates ductal-neuroendocrine lineage plasticity in pancreatic ductal adenocarcinoma associated with poor outcome and chemoresistance", **Nature Communications**, 8(1) 1728 2017
- [7] ES Antonarakis, ST Tagawa, G Galletti, D Worroll, K Ballman, M Vanhuysse, G Sonpavde, S North, C Albany, CK Tsao, J Stewart, A Zaher, T Szatrowski, W Zhou, A Gjyrezi, S Tasaki, L Portella, Y Bai, TB Lannin, S Suri, CN Gruber, **ED Pratt**, BJ Kirby, MA Eisenberger, DM Nanus, F Saad and P Giannakakou, "A Randomized Non-Comparative Phase II Trial of Early Switch from Docetaxel to Cabazitaxel or Vice Versa, with Integrated Biomarker Analysis, in Men with Chemotherapy-Naïve Metastatic Castration-Resistant Prostate Cancer," **Journal of Clinical Oncology**, 35(28) 3181 2017.
- [6] **ED Pratt**, A Stepanyk, J Hicks and BJ Kirby, "Single-Cell Copy Number Analysis of Prostate Cancer Cells using GEDI Microdevices," **Analytical Chemistry**, 88(22) 11013-11017 2014. †[Featured in Chemical & Engineering News \(C&EN\)](#).
- [5] WC Ruder, **ED Pratt**, NZD Brandy, DA LaVan, PR LeDuc and JF Antaki, "Calcium signaling is gated by a mechanical threshold in three dimensional environments," **Scientific Reports**, 2 2012.
- [4] WC Ruder, **ED Pratt**, S Bakhru, M Sitti, S Zappe, CM Cheng, JF Antaki and PR LeDuc, "Three-Dimensional Microfiber Devices that Mimic Physiological Environments to Probe Cell Mechanics and Signaling," **Lab on a Chip**, 12(10) 1775-1779 2012. †[Lab on a Chip Top 10% article](#).
- [3] BJ Kirby, M Jodari, MS Loftus, **ED Pratt**, G Gakhar, JP Gleghorn, SM Santana, H Liu, JP Smith, VN Navarro, ST Tagawa, NH Bander, DM Nanus and P Giannakakou, "Functional characterization of circulating tumor cells with a prostate-cancer-specific microfluidic device," **PLoS ONE**, 7(4) e35976 2012.
- [2] **ED Pratt***, C Huang*, BG Hawkins, JP Gleghorn and BJ Kirby, "Rare cell capture in microfluidic devices," **Chemical Engineering Science**, 66(7) 1508-1522 2011. †[Top Cited Paper for 2011 & 2012](#).
- [1] JP Gleghorn, **ED Pratt**, D Denning, H Liu, NH Bander, ST Tagawa, DM Nanus, PA Giannakakou and BJ Kirby, "Capture of circulating tumor cells from whole blood of prostate cancer patients using geometrically enhanced differential immunocapture GEDI and a prostate-specific antibody," **Lab on a Chip**, 10(1) 27-29 2010. †[Top Cited Paper for 2012](#).

IN PREPARATION

- [2] **ED Pratt**, JM Kang, D Early, V Kushnir, G Lang, D Mullady, RW Cowan, V Chandarasekhara, K Das, AK Rustigi, AD Rhim, "Digital Droplet PCR-Enabled Targeted Sequencing is Effective for Genotyping of Pancreatic Tumors Independent of EUS-Sampling Technique"
- [1] **ED Pratt**, DB Zhen, SL Manning, H Cameron, K Schradle, V Gunchick, RW Cowan, V Sahai DM Simeone and AD Rhim, "MED-Amp for High-Sensitivity Detection of Circulating Tumor DNA in Early-Stage Pancreatic Cancer"

INVITED PRESENTATIONS

- The Ohio State University** Department of Mechanical and Aerospace Engineering Seminar Series 11/20
"Blood-Based Assays for Cancer"
- University of Minnesota** Center for Genome Engineering 09/19
"Detection of oncogenic mutations in cell-free DNA using digital PCR"
- Medical College of Milwaukee** Pancreatic Cancer Translational Science Symposium, 10/19
"Ultrasensitive detection of oncogenic mutations in liquid biopsy samples"
- University of Minnesota** Gastrointestinal Cancer Translational Working Group 11/19
"Multiplex detection of rare oncogenic mutations in liquid biopsy samples"
- AACR Pancreatic Cancer: Advances in Science and Clinical Care** 09/18
"Multiplex enrichment and detection of *KRAS* mutations in liquid biopsy samples using digital droplet pre-amplification" [†Plenary Session on Blood-Based Early Detection](#)
- Gordon Research Conference** on Liquid Biopsy in Cancer, 08/18
"Quantitative High-Sensitivity Multiplex Detection of Rare *KRAS* Mutations in Liquid Biopsy Samples Using Digital Droplet PCR"
- University of Minnesota** Biochemistry, Molecular Biology and Biophysics 05/18
"Liquid biopsy-based strategies for cancer detection and monitoring"
- The Scripps Research Institute** Cell Biology 06/14
"Microfluidic nuclei extraction and whole-cell release of cancer cells from GEDI microdevices"
- University of Michigan** Internal Medicine 06/14
"Microfluidic nuclei extraction and whole-cell release of cancer cells from GEDI microdevices"
- World Circulating Tumor Cell Summit** 11/12
"Functional and genetic analysis of CTCs captured with GEDI microdevices"

CONFERENCES (10 of 30 total)

(*) indicates podium presentation

- [10] (*) **ED Pratt**, RW Cowan, SL Manning, E Qiao, H Cameron, K Schradle, DM Simeone, DB Zhen, "Ultrasensitive Detection of Circulating Tumor DNA using Digital Droplet Pre-Amplification", in Proceedings of the Biomedical Engineering Society Fall Meeting (BMES), Atlanta, GA, 2019
- [9] (*) **ED Pratt**, DB Zhen, SL Manning, H Cameron, K Schradle, V Gunchick, RW Cowan, V Sahai, DM Simeone and A. D. Rhim, "Multiplex enrichment and detection of *KRAS* mutations in liquid biopsy samples using digital droplet pre-amplification," in AACR Special Conference on Pancreatic Cancer: Advances in Science and Clinical Care, Boston, MA, 2018.
- [8] (*) **ED Pratt**, DB Zhen, SL Manning, H Cameron, K Schradle, V Gunchick, RW Cowan, V Sahai, DM Simeone and A. D. Rhim, "Quantitative High-Sensitivity Multiplex Detection of Rare *KRAS* Mutations in Liquid Biopsy Samples using Picodroplet Digital PCR," in Gordon Research Conference on Liquid Biopsy for Cancer, South Hadley, MA 2018.
- [7] **ED Pratt**, DB Zhen, RW Cowan, SL Manning, E Qiao, H Cameron, K Schradle, DM Simeone and A. D. Rhim, "Quantitative High-Sensitivity Multiplex Detection of Rare *KRAS* Mutations in Liquid Biopsy Samples using Picodroplet Digital PCR," in MDACC Internal Medicine Research Retreat, Houston, TX 2018.
- [6] **ED Pratt**, A Londoño, E Qiao, L. Brennan, DM Simeone, P Ulintz, M. Samuels and Andrew, "Prediction of histologic grade of precancerous cystic lesions using picodroplet PCR-enabled targeted

sequencing," in AACR Special Conference on Pancreatic Cancer: Advances in Science and Clinical Care, Orlando, FL 2016.

- [5] **ED Pratt**, A Stepansky, J Hicks and BJ Kirby, "Single-Cell Copy Number Analysis of Prostate Cancer Cells Captured with GEDI Microdevices," in Gordon Research Conference on Rare Cells in Circulation, South Hadley, MA, 2014.
- [4] **ED Pratt**, M Blattner, A Stepansky, H Liu, N. Bander, M. Rubin, J Hicks and B. Kirby, "Microfluidic Nuclei Extraction from Circulating Tumor Cells for Genetic Analyses," in Proceedings of the Biomedical Engineering Society Fall Meeting (BMES), Atlanta, GA, 2012.
- [3] **ED Pratt**, S Santana, JP Gleghorn, H Liu, N. Bander, D Nanus, P Giannakakou and BJ Kirby, "Circulating tumor cell release by use of novel immunocapture chemistry in GEDI microdevices," in Proceedings from 2011 MicroTAS Meeting, Seattle, WA, 2011.
- [2] **ED Pratt**, JP Gleghorn, S Santana, M Loftus, M Jodari-Karimi, N. Bander, D Nanus, P Giannakakou and BJ Kirby, "Cancer cell assays by use of immunocapture, subcellular imaging, and cell release in GEDI microdevices," in Gordon Research Conference on Bioanalytical Sensors, New London, NH, 2010.
- [1] (*) JP Gleghorn, S Santana, **ED Pratt**, M Loftus, M Jodari-Karimi, N. Bander, D Nanus, P Giannakakou and BJ Kirby, "Cancer cell assays by use of immunocapture, subcellular imaging, and cell release in GEDI microdevices," in Proceedings of the Biomedical Engineering Society Fall Meeting (BMES), Austin, TX, 2010.

TEACHING & MENTORSHIP

COURSEWORK

Microfluidics in Biology and Medicine (BMEN 5321), University of Minnesota, Guest Lecturer	2020
Introductory Fluid Mechanics (MAE 3230), Cornell, Teaching Assistant	2014
Cancer for Engineers and Physicists (MAE/BME 6840), Cornell, Teaching Assistant	2013
Physics of Micro- and Nanoscale Fluid Mechanics (MAE 5240/6240), Cornell, Guest Lecturer	2009
Physics of Micro- and Nanoscale Fluid Mechanics (MAE 5240/6240), Cornell, Teaching Assistant	2009

MENTEES

Akaash Kannan, Directed graduate student rotation at University of Minnesota. Daily mentorship and training.	Oct 2019 –
Julia Sexton, Directed undergraduate research at University of Minnesota. Daily mentorship and weekly one-on-one meetings. Funded by Undergraduate Research Opportunities Program Grant.	Sept 2019 –
Blanche Cizubu, Directed undergraduate research at University of Minnesota. Daily mentorship and training. Research Technician at Duke University.	Jan 2019 – June 2019
Huda Adam, Directed undergraduate research at University of Minnesota. Daily mentorship and training. Currently in medical school.	Sept 2018 – June 2019
Julia Wang, Directed undergraduate research through Cornell Engineering Learning Initiatives Grant. 1 technical white paper. Senior scientist at Pfizer.	June 2011 – May 2012

PROFESSIONAL MEMBERSHIPS

Member, US Human Proteome Organization (US HUPO), **Associate Member**, American Association for Cancer Research (AACR), **Member**, Biomedical Engineering Society (BMES)

OUTREACH

Mentor , #Black2Class outreach in support of rising black and STEM scholars	2020
Volunteer , Nanodays K12 outreach in support of nanotechnology education, Cornell	2015
Chair , Faculty Search Ad-hoc Committee, Cornell Mechanical & Aerospace Engineering	2012
Volunteer , Expand Your Horizons (EYH) workshop for 7 th -9 th grade girls, Cornell	2011
Service Vice President , Alpha Phi Omega National Service Fraternity, Kappa Chapter	2007