

Mass Cytometry Publication List

2014 Publications

Becher, B. et al. "High-dimensional analysis of the murine myeloid cell system." *Nat Immunol* 15(12) (2014): 1181–1189.

Behbehani, G.K. et al. "Transient partial permeabilization with saponin enables cellular barcoding prior to surface marker staining." *Cytometry A* 85(12) (2014): 1011–1019.

Edgar, L.J. et al. "Identification of hypoxic cells using an organotellurium tag compatible with mass cytometry." *Angew Chem Int Ed Engl* 53(43) (2014): 11473–11477.

Fergusson, J.R. et al. "CD161 defines a transcriptional and functional phenotype across distinct human T Cell lineages." *Cell Rep* 9(3) (2014): 1075–1088.

Gaudilliere, B. et al. "Clinical recovery from surgery correlates with single-cell immune signatures." *Sci Transl Med* 6(255) (2014): 255ra131.

Krishnaswamy, S. et al. "Systems biology. Conditional density-based analysis of T cell signaling in single-cell data." *Science* 346(6213) (2014): 1250689.

Mingueneau, M. et al. "Single-cell mass cytometry of TCR signaling: amplification of small initial differences results in low ERK activation in NOD mice." *Proc Natl Acad Sci USA* 111(46) (2014): 16466–16471.

O'Gorman, W.E. et al. "The split virus influenza vaccine rapidly activates immune cells through Fc(gamma) receptors." *Vaccine* 32(45) (2014): 5989–5997.

Sachs, Z. et al. "NRASG12V oncogene facilitates self-renewal in a murine model of acute myelogenous leukemia." *Blood* 124(22) (2014): 3274–3283.

Strauss-Albee, D.M. et al. "Coordinated regulation of NK receptor expression in the maturing human immune system." *J Immunol* 193(10): 4871–4879.

Swadling, L. et al. "A human vaccine strategy based on chimpanzee adenoviral and MVA vectors that primes, boosts, and sustains functional HCV-specific T cell memory." *Sci Transl Med* 6(261) (2014): 261ra153.

Yao, Y. et al. "CyTOF supports efficient detection of immune cell subsets from small samples." *J Immunol Methods* 415 (2014): 1–5.

Giesen, C. et al. "Highly multiplexed imaging of tumor tissues with subcellular resolution by mass cytometry." *Nat Methods* (2014).

O'Neill, K. et al. "Enhanced flowType/RchyOptimyx: a bioconductor pipeline for discovery in high-dimensional cytometry data." *Bioinformatics* (2014).

Shekhar, K., Brodin, P. et al. "Automatic Classification of Cellular Expression by Nonlinear Stochastic Embedding (ACCENSE)." *Proc Natl Acad Sci USA* 111(1) (2014): 202–207.

Wolchinsky, R. et al. "Antigen-dependent integration of opposing proximal TCR-signaling cascades determines the functional fate of T lymphocytes." *J. Immunol* 192(5) (2014): 2,109–2,119.

2014 Reviews and Commentary

Fienberg, H.G. et al. "Mass cytometry to decipher the mechanism of nongenetic drug resistance in cancer." *Curr Top Microbiol Immunol* (2014).

Kumar, V. et al. "Different subsets of natural killer T cells may vary in their roles in health and disease." *Immunology* (2014).

2013 Publications

Amir, el-A.D. et al. "viSNE enables visualization of high dimensional single-cell data and reveals phenotypic heterogeneity of leukemia." *Nat Biotechnol* 31(6) (2013): 545–552.

Finck, R. et al. "Normalization of mass cytometry data with bead standards." *Cytometry A* 83(5) (2013): 483–494.

Han, A. et al. "Dietary gluten triggers concomitant activation of CD4+ and CD8+ alphabeta T cells and gammadelta T cells in celiac disease." *Proc Natl Acad Sci USA* 110(32) (2013): 13,073–13,078.

Horowitz, A. et al. "Genetic and environmental determinants of human NK cell diversity revealed by mass cytometry." *Sci Transl Med* 5(208) (2013): 208ra145.

Majonis, D. et al. "Dual-purpose polymer labels for fluorescent and mass cytometric affinity bioassays." *Biomacromolecules* (2013).

Mingueneau, M. et al. "The transcriptional landscape of alphabeta T cell differentiation." *Nat Immunol* 14(6) (2013): 619–632.

Newell, E.W. et al. "Combinatorial tetramer staining and mass cytometry analysis facilitate T-cell epitope mapping and characterization." *Nat Biotechnol* 31(7) (2013): 623–629.

2013 Reviews and Commentary

Claassen, M. et al. "Shooting movies of signaling network dynamics with multiparametric cytometry." *Curr Top Microbiol Immunol* (2013).

Bjornson, Z.B. et al. "Single-cell mass cytometry for analysis of immune system functional states." *Curr Opin Immunol* (2013).

Harvey, C.J. et al. "Cracking the code of human T-cell immunity." *Nat Biotechnol* 31(7) (2013): 609–610.

Liu, R. et al. "Inductively coupled plasma mass spectrometry-based immunoassay: A review." *Mass Spectrom Rev* (2013).

Maecker, H.T. et al. "New tools for classification and monitoring of autoimmune diseases." *Nat Rev Rheumatol* 8(6) (2012): 317–328.

Newell, E.W. et al. "High-Dimensional Analysis of Human CD8 T Cell Phenotype, Function, and Antigen Specificity." *Curr Top Microbiol Immunol* (2013).

Newell, E.W. "Higher throughput methods of identifying T cell epitopes for studying outcomes of altered antigen processing and presentation." *Front Immunol* 4(430) (2013).

Strain, M.C. et al. "New assays for monitoring residual HIV burden in effectively treated individuals." *Curr Opin HIV AIDS* 8(2) (2013): 106–110.

Tanner, S.D. et al. "An introduction to mass cytometry: fundamentals and applications." *Cancer Immunol Immunother* 62(5) (2013): 955–965.

Wu, J. et al. "Deconstructing stem cell population heterogeneity: single-cell analysis and modeling approaches." *Biotechnol Adv* 31(7) (2013): 1047–1062.

Zivanovic, N. et al. "A practical guide to multiplexed mass cytometry." *Curr Top Microbiol Immunol* (2013).

2012 Publications

Aghaeepour, N. et al. "RchyOptimyx: cellular hierarchy optimization for flow cytometry." *Cytometry A* 81(12) (2012): 1022–1030.

Behbehani, G.K. et al. "Single-cell mass cytometry adapted to measurements of the cell cycle." *Cytometry A* 81(7) (2012): 552–566.

Bodenmiller, B. et al. "Multiplexed mass cytometry profiling of cellular states perturbed by small-molecule regulators." *Nat Biotechnol* 30(9) (2012): 858–867.

Chen, G. et al. "Analyzing the phenotypic and functional complexity of lymphocytes using CyTOF (cytometry by time-of-flight)." *Cell Mol Immunol* 9(4) (2012): 322–323.

Cao, P. et al. "Improving lanthanide nanocrystal colloidal stability in competitive aqueous buffer solutions using multivalent PEG-phosphonate ligands." *Langmuir* 28(35) (2012): 12,861–12,870.

Fienberg, H.G. et al. "A platinum-based covalent viability reagent for single-cell mass cytometry." *Cytometry A* 81(6) (2012): 467–475.

Illy, N. et al. "Metal-chelating polymers by anionic ring-opening polymerization and their use in quantitative mass cytometry." *Biomacromolecules* 13(8) (2012): 2359–2369.

Leipold, M.D. et al. "Mass cytometry: protocol for daily tuning and running cell samples on a CyTOF mass cytometer." *J Vis Exp* (69) (2012): e4,398.

Liang, Y. et al. "The release and extraction of lanthanide ions from metal-encoded poly(styrene-co-methacrylic acid) microspheres." *Polymer* 2012 (53) (2012): 998–1004.

Lu, Y. et al. "Effect of pendant group structure on the hydrolytic stability of polyaspartamide polymers under physiological conditions." *Biomacromolecules* 13(5) (2012): 1296–1306.

Newell, E.W. et al. "Cytometry by time-of-flight shows combinatorial cytokine expression and virus-specific cell niches within a continuum of CD8+ T cell phenotypes." *Immunity* 36(1) (2012): 142–152.

Poultney, C.S. et al. “Integrated inference and analysis of regulatory networks from multi-level measurements.” *Methods Cell Biol* 110 (2012) 19–56.

Wang, L. et al. “Human CD4(+) lymphocytes for antigen quantification: Characterization using conventional flow cytometry and mass cytometry.” *Cytometry A* 81(7) (2012): 567–575.

2012 Reviews and Commentary

Agnetti, G. “Mass spectrometry goes with the flow: mass cytometry and its potentials in regenerative medicine.” *Circ Cardiovasc Genet* 5(3) (2012): 379–380.

Bendall, S.C. et al. “A deep profiler’s guide to cytometry.” *Trends Immunol* 33(7) (2012): 323–332.

Bendall, S.C. et al. “From single cells to deep phenotypes in cancer.” *Nat Biotechnol* 30(7) (2012): 639–647.

Bonislawski, A. “Nolan Lab Profiles Small-Molecule Inhibitors Using New Multiplexing Method for DVS Sciences’ CyTOF.” *Genome Web* (August 24) (2012).

Chen, G. et al. “Analyzing the phenotypic and functional complexity of lymphocytes using CyTOF (cytometry by time-of-flight).” *Cell Mol Immunol* 9(4) (2012): 322–323.

Darzynkiewicz, Z. “Cycling into future: mass cytometry for the cell-cycle analysis.” *Cytometry A* 81(7) (2012): 546–548.

De Souza, N. “Improved single-cell methods are helping to unravel biological complexity.” *Nat Methods* 9(35) (2012).

Shen-Orr, S.S. “Challenges and promise for the development of human immune monitoring.” *Rambam Maimonides Med J* 3(4) (2012): e0023.

2011 Publications

Abdelrahman, A.I. et al. “Surface Functionalization Methods to Enhance Bioconjugation in Metal-Labeled Polystyrene Particles.” *Macromolecules* 44(12) (2011): 4801–4813.

Bendall, S.C. et al. “Single-cell mass cytometry of differential immune and drug responses across a human hematopoietic continuum.” *Science* 332(6030) (2011): 687–696.

Lathia, U.S. et al. "Multiplexed protease assays using element-tagged substrates." *Anal Biochem* 408(1) (2011): 157–159.

Leipold, M.D. et al. "Development of mass cytometry methods for bacterial discrimination." *Anal Biochem* 419(1) (2011): 1–8.

Liang, Y. et al. "The synthesis and characterization of lanthanide-encoded poly(styrene-co-methacrylic acid) microspheres." *Polymer* (52) 2011: 5040–5052.

Lin, W. et al. "Synthesis and mass cytometric analysis of lanthanide-encoded polyelectrolyte microgels." *Langmuir* 27(11) (2011): 7265–7275.

Majonis, D. et al. "Curious results with palladium- and platinum-carrying polymers in mass cytometry bioassays and an unexpected application as a dead cell stain." *Biomacromolecules* 12(11) (2011): 3997–4010.

Qiu, P. et al. "Extracting a cellular hierarchy from high-dimensional cytometry data with SPADE." *Nat Biotechnol* 29(10) (2011): 886–891.

2011 Reviews and Commentary

Benoist, C. et al. "Immunology. Flow cytometry, amped up." *Science* 332(6030) (2011): 677–678.

Cheung, R.K. et al. "Screening: CyTOF-the next generation of cell detection." *Nat Rev Rheumatol* 7(9) (2011): 502–503.

Cosma, A. et al. "[Brief introduction to mass cytometry]." *Med Sci (Paris)* 27(12) (2011): 1072–1074.

Doerr, A. "A flow cytometry revolution." *Nat Methods* 8(7) (2011): 531.

Janes, M.R. et al. "Next-generation flow cytometry." *Nat Biotechnol* 29(7) (2011): 602–604.

2002–2010 Publications

Abdelrahman, A.I. et al. "Metal-containing polystyrene beads as standards for mass cytometry." *J Anal At Spectrom* 25(3) (2010): 260–268.

Abdelrahman, A.I. et al. "Lanthanide-containing polymer microspheres by multiple-stage dispersion polymerization for highly multiplexed bioassays." *J Am Chem Soc* 131(42) (2009): 15276–15283.

AND ERRATUM. *J Am Chem Soc* 132 (2010): 2465.

- Bandura, D.R. et al. "Mass cytometry: technique for real time single cell multitarget immunoassay based on inductively coupled plasma time-of-flight mass spectrometry." *Anal Chem* 81(16) (2009): 6813–6822.
- Bandura, D.R. et al. "Characterization of phosphorus content of biological samples by ICP-DRC-MS: potential tool for cancer research." *J. Anal. At. Spectrom.* 19(1) (2004): 96–100.
- Baranov, V.I. et al. "A sensitive and quantitative element-tagged immunoassay with ICPMS detection." *Anal Chem* 74(7) (2002): 1629–1636.
- Berger, S. et al. "Hybrid nanogels by encapsulation of lanthanide-doped LaF₃ nanoparticles as elemental tags for detection by atomic mass spectrometry." *J Mater Chem* 20(24) (2010): 5141–5150.
- Lathia, U.S. et al. "Development of inductively coupled plasma-mass spectrometry-based protease assays." *Anal Biochem* 398(1) (2010): 93–98.
- Leipold, M.D. et al. "ICP-MS-based multiplex profiling of glycoproteins using lectins conjugated to lanthanide-chelating polymers." *J Proteome Res* 8(2) (2009): 443–449.
- Majonis, D. et al. "Synthesis of a functional metal-chelating polymer and steps toward quantitative mass cytometry bioassays." *Anal Chem* (2010).
- Ornatsky, O.I. et al. "Study of cell antigens and intracellular DNA by identification of element-containing labels and metallointercalators using inductively coupled plasma mass spectrometry." *Anal Chem* 80(7) (2008): 2539–2547.
- Ornatsky, O.I. et al. "Development of analytical methods for multiplex bio-assay with inductively coupled plasma mass spectrometry." *J Anal At Spectrom* 23(4) (2008): 463–469.
- Ornatsky, O.I. et al. "Messenger RNA detection in leukemia cell lines by novel metal-tagged in situ hybridization using inductively coupled plasma mass spectrometry." *Translational Oncogenomics* (1) (2006): 1–9.
- Pich, A. et al. "The influence of PEG macromonomers on the size and properties of thermosensitive aqueous microgels." *Colloid and polymer science* 287(3) (2009): 269–275.
- Quinn, Z.A. et al. "Simultaneous determination of proteins using an element-tagged immunoassay coupled with ICP-MS detection." *J. Anal. At. Spectrom.* 17(8) (2002): 892–896.

Razumienko, E. et al. "Element-tagged immunoassay with ICP-MS detection: evaluation and comparison to conventional immunoassays." *J Immunol Methods* 336(1) (2008): 56–63.

Tanner, S.D. et al. "Flow cytometer with mass spectrometer detection for massively multiplexed single-cell biomarker assay." *Pure Appl. Chem.* 80(12) (2008): 2627–2641.

Tanner, S.D. et al. "Multiplex bio-assay with inductively coupled plasma mass spectrometry: Towards a massively multivariate single-cell technology." *Spectrochim Acta Part B At Spectrosc.* 62(3) (2007): 188–195.

Thickett, S.C. et al. "Bio-functional, lanthanide-labeled polymer particles by seeded emulsion polymerization and their characterization by novel ICP-MS detection." *J Anal At Spectrom* 25(3) (2010): 269–281.

Vancaeyzeele, C. et al. "Lanthanide-containing polymer nanoparticles for biological tagging applications: nonspecific endocytosis and cell adhesion." *J Am Chem Soc* 129(44) (2007): 13653–13660.

2002–2010 Reviews and Commentary

Baranov, V.I. et al. "The potential for elemental analysis in biotechnology." *J. Anal. At. Spectrom.* 17(9) (2002): 1148–1152.

Lou, X. et al. "Polymer-based elemental tags for sensitive bioassays." *Angew Chem Int Ed Engl* 46(32) (2007): 6111–6114.

Ornatsky, O. et al. "Highly multiparametric analysis by mass cytometry." *J Immunol Methods* 361(1–2) (2010): 1–20.

Ornatsky, O. et al. "Multiple cellular antigen detection by ICP-MS." *J Immunol Methods* 308(1–2) (2006): 68–76.

Pich, A. et al. "Biocompatible hybrid nanogels." *Small* 4(12) (2008): 2171–2175.

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