

Mass Cytometry Publications

November 2017

This bibliography contains over 400 peer-reviewed publications, reviews and commentaries featuring mass cytometry. Skim through these articles by category online at fluidigm.com/publications/cytof--helios.

2017 Publications

- 1 Abraham, Y. et al. "Exploring glucocorticoid receptor agonists mechanism of action through mass cytometry and radial visualizations." *Cytometry Part B: Clinical Cytometry* 92 (2017): 42–56.
- 2 Aghaeepour, N. et al. "An immune clock of human pregnancy." *Science Immunology* 2 (2017): eaan2946.
- 3 Aghaeepour, N. et al. "Deep immune profiling of an arginine-enriched nutritional intervention in patients undergoing surgery." *Journal of Immunology* 199 (2017): 2,171–2,180.
- 4 Amir, E.D. et al. "Average overlap frequency: a simple metric to evaluate staining quality and community identification in high dimensional mass cytometry experiments." *Journal of Immunological Methods* (2017): doi: 10.1016/j.jim.2017.08.011.
- 5 Aquino-López, A. et al. "Interferon gamma induces changes in natural killer (NK) cell ligand expression and alters NK cell-mediated lysis of pediatric cancer cell lines." *Frontiers in Immunology* 8 (2017): 391.
- 6 Aran, D. et al. "xCell: digitally portraying the tissue cellular heterogeneity landscape." *bioRxiv* (2017): doi: 10.1101/114165.
- 7 Avrahami, D. et al. "β-Cells are not uniform after all—Novel insights into molecular heterogeneity of insulin-secreting cells." *Diabetes, Obesity and Metabolism* 19 (2017): 147–152.
- 8 Bandyopadhyay, S. et al. "Analysis of signaling networks at the single-cell level using mass cytometry." *Methods in Molecular Biology: Kinase Signaling Networks*. Springer 1636 (2017): 371–392.

- 9 Bandyopadhyay, S. et al. "Cholesterol esterification inhibition and imatinib treatment synergistically inhibit growth of BCR-ABL mutation-independent resistant chronic myelogenous leukemia." *PLoS One* 12 (2017): e0179558.
- 10 Baughn, L.B. et al. "Phenotypic and functional characterization of a bortezomib-resistant multiple myeloma cell line by flow and mass cytometry." *Leukemia & Lymphoma* 58 (2017): 1,931–1,940.
- 11 Baumgart, S. et al. "Dual-labelled antibodies for flow and mass cytometry: a new tool for cross-platform comparison and enrichment of target cells for mass cytometry." *European Journal of Immunology* (2017): 1,377–1,385.
- 12 Baumgart, S. et al. "OMIP-034: comprehensive immune phenotyping of human peripheral leukocytes by mass cytometry for monitoring immunomodulatory therapies." *Cytometry Part A* 91 (2017): 34–38.
- 13 Behbehani, G.K. "Cell cycle analysis by mass cytometry." *Cellular Quiescence: Methods and Protocols*. Humana Press (2017): 105–124.
- 14 Bengsch, B. et al. "Deep immune profiling by mass cytometry links human T and NK cell differentiation and cytotoxic molecule expression patterns." *Journal of Immunological Methods* (2017): doi: 10.1016/j.jim.2017.03.009.
- 15 Bertaux-Skeirik, N. et al. "CD44 variant isoform 9 emerges in response to injury and contributes to the regeneration of the gastric epithelium." *Journal of Pathology* (2017): 463–475.
- 16 Blazkova, J. et al. "Multicenter systems analysis of human blood reveals immature neutrophils in males and during pregnancy." *Journal of Immunology* 198 (2017): 2,479–2,488.
- 17 Brodie, T.M. and Tosevski, V. "High-dimensional single-cell analysis with mass cytometry." *Current Protocols in Immunology* 118 (2017): 5.11.1–5.11.25.
- 18 Buckle, T. et al. "Hybrid imaging labels: providing the link between mass spectrometry-based molecular pathology and therapeutics." *Theranostics* 7 (2017): 624–633.
- 19 Cavois, M. et al. "Mass cytometric analysis of HIV entry, replication, and remodeling in tissue CD4+ T cells." *Cell Reports* 20 (2017): 984–998.
- 20 Chang, Q. et al. "Imaging Mass Cytometry™." *Cytometry Part A* 91 (2017): 160–169.
- 21 Chang, Q. et al. "Staining of frozen and formalin-fixed, paraffin-embedded tissues with metal-labeled antibodies for Imaging Mass Cytometry analysis." *Current Protocols in Cytometry* 82 (2017): 12.47.1–12.47.8.
- 22 Chevrier, S. et al. "An immune atlas of clear cell renal cell carcinoma." *Cell* 169 (2017): 736–749.

- 23 Chew, V. et al. "Delineation of an immunosuppressive gradient in hepatocellular carcinoma using high-dimensional proteomic and transcriptomic analyses." *Proceedings of the National Academy of Sciences of the United States of America* 114 (2017): E5900–E5909.
- 24 Chiang, N. et al. "Novel resolvin D2 receptor axis in infectious inflammation." *Journal of Immunology* 198 (2017): 842–851.
- 25 Choi, J. et al. "Systems approach to uncover signaling networks in primary immunodeficiency diseases." *Journal of Allergy and Clinical Immunology* 140 (2017): 881–884.e8.
- 26 Chretien, A. et al. "Natural killer defective maturation is associated with adverse clinical outcome in patients with acute myeloid leukemia." *Frontiers in Immunology* (2017): 573.
- 27 Comi, T. J. et al. "Categorizing cells on the basis of their chemical profiles: Progress in single-cell mass spectrometry." *Journal of the American Chemical Society* 139 (2017): 3,920–3,929.
- 28 Corneau, A. et al. "Comprehensive mass cytometry analysis of cell cycle, activation, and coinhibitory receptors expression in CD4 T cells from healthy and HIV-infected individuals." *Cytometry Part B: Clinical Cytometry* 92 (2017): 21–32.
- 29 David, B.A. et al. "Isolation and high-dimensional phenotyping of gastrointestinal immune cells." *Immunology* 151 (2017): 56–70.
- 30 Diggins, K.E. et al. "Characterizing cell subsets using marker enrichment modeling." *Nature Methods* 14 (2017): 275–278.
- 31 Dong, Y. et al. "Pregnane X receptor is associated with unfavorable survival and induces chemotherapeutic resistance by transcriptional activating multidrug resistance-related protein 3 in colorectal cancer." *Molecular Cancer* 16 (2017): 71.
- 32 Eizenberg-Magar, I. et al. "Diverse continuum of CD4+ T-cell states is determined by hierarchical additive integration of cytokine signals." *Proceedings of the National Academy of Sciences of the United States of America* (2017): E6447–E6456.
- 33 Elh mouzi-Younes, J. et al. "In depth comparative phenotyping of blood innate myeloid leukocytes from healthy humans and macaques using mass cytometry." *Cytometry Part A* (2017): 969–982.
- 34 Fehlings, M. et al. "Checkpoint blockade immunotherapy reshapes the high-dimensional phenotypic heterogeneity of murine intratumoural neoantigen-specific CD8⁺ T cells." *Nature Communications* 8 (2017): 562.
- 35 Fehlings, M. et al. "Multiplex peptide-MHC tetramer staining using mass cytometry for deep analysis of the influenza-specific T-cell response in mice." *Journal of Immunological Methods* (2017): doi: 10.1016/j.jim.2017.09.010.

- 36** Fernandez, M. et al. "Overexpression of the human antigen R suppresses the immediate paradoxical proliferation of melanoma cell subpopulations in response to suboptimal BRAF inhibition." *Cancer Medicine* 6 (2017): 1,652–1,664.
- 37** Fisher, D.A.C. et al. "Mass cytometry analysis reveals hyperactive NF kappa B signaling in myelofibrosis and secondary acute myeloid leukemia." *Leukemia* (2017): 1,962–1,974.
- 38** Fonseka, C.Y. et al. "Reverse association of single cells to rheumatoid arthritis accounting for mixed effects identifies an expanded CD27- HLA-DR+ effector memory CD4+ T cell population." *bioRxiv* (2017): doi: 10.1101/172403.
- 39** Furman, D. et al. "Expression of specific inflammasome gene modules stratifies older individuals into two extreme clinical and immunological states." *Nature Medicine* 23 (2017): 174–184.
- 40** Gao, J. et al. "VISTA is an inhibitory immune checkpoint that is increased after ipilimumab therapy in patients with prostate cancer." *Nature Medicine* 23 (2017): 551–555.
- 41** Gautreau, G. et al. "SPADEVizR: an R package for visualization, analysis and integration of SPADE results." *Bioinformatics* 33 (2017): 779–781.
- 42** Glassberg, J. et al. "Application of phospho-CyTOF to characterize immune activation in patients with sickle cell anemia in an *ex vivo* model of thrombosis." *Journal of Immunological Methods* (2017): doi: 10.1016/j.jim.2017.07.014.
- 43** Goswami, R. et al. "Systemic innate immune activation in food protein-induced enterocolitis syndrome." *Journal of Allergy and Clinical Immunology* 139 (2017): 1885–1896.e9.
- 44** Guo, Y. et al. "Mass cytometry for the detection of silver at the bacterial single cell level." *Frontiers in Microbiology* 8 (2017): 1326.
- 45** Gullaksen, S. et al. "Single cell immune profiling by mass cytometry of newly diagnosed chronic phase chronic myeloid leukemia treated with nilotinib." *Haematologica* 102 (2017): 1,361–1,367.
- 46** Gustafson, C.E. et al. "Immune checkpoint function of CD85j in CD8 T cell differentiation and aging." *Frontiers in Immunology* (2017): 692.
- 47** Hamlin, R.E. et al. "High-dimensional CyTOF analysis of dengue virus-infected human DCs reveals distinct viral signatures." *Journal of Clinical Investigation Insight* 2 (2017): 92,424.
- 48** Hawley, D. et al. "RNA-seq and CyTOF immuno-profiling of regenerating lacrimal glands identifies a novel subset of cells expressing muscle-related proteins." *PLoS One* 12 (2017): e0179385.

- 49 Hekim, C. et al. "Dasatinib changes immune cell profiles concomitant with reduced tumor growth in several murine solid tumor models." *Cancer Immunology Research* 5 (2017): 157–169.
- 50 Herndler-Brandstetter, D. et al. "Humanized mouse model supports development, function, and tissue residency of human natural killer cells." *Proceedings of the National Academy of Sciences of the United States of America* (2017): E9,626–E9,634 .
- 51 Huang, A.C. et al. "T-cell invigoration to tumor burden ratio associated with anti-PD-1 response." *Nature* 545 (2017): 60–65.
- 52 Japp, A.S. et al. "Wild immunology assessed by multidimensional mass cytometry." *Cytometry Part A* 91 (2017): 85–95.
- 53 Jiao, S. et al. "PARP inhibitor upregulates PD-L1 expression and enhances cancer-associated immunosuppression." *Clinical Cancer Research* (2017): 3,711–3,720.
- 54 Kaczorowski, K.J. et al. "Continuous immunotypes describe human immune variation and predict diverse responses." *Proceedings of the National Academy of Sciences of the United States of America* 114 (2017): E6097–E6106.
- 55 Kadic, E. et al. "Effect of cryopreservation on delineation of immune cell subpopulations in tumor specimens as determined by multiparametric single cell mass cytometry analysis." *BMC Immunology* 18 (2017): 6.
- 56 Kaiser, Y. et al. "Mass cytometry identifies distinct lung CD4+ T cell patterns in Löfgren's Syndrome and Non-Löfgren's Syndrome sarcoidosis." *Frontiers in Immunology* 8 (2017): 1,130.
- 57 Karnell, F.G. et al. "Reconstitution of immune cell populations in multiple sclerosis patients after autologous stem cell transplantation." *Clinical & Experimental Immunology* 189 (2017): 268–278.
- 58 Knapp, D.J. et al. "Distinct signaling programs control human hematopoietic stem cell survival and proliferation." *Blood* 129 (2017): 307–318.
- 59 Knapp, D.J.H.F. et al. "Mass cytometric analysis reveals viable activated caspase-3+ luminal progenitors in the normal adult human mammary gland." *Cell Reports* 21 (2017): 1,116–1,126.
- 60 Kronstad, L.M. et al. "Strain-specific human natural killer cell recognition of influenza A virus." *bioRxiv* (2017): doi: 10.1101/148528.
- 61 Korin, B. et al. "High-dimensional, single-cell characterization of the brain's immune compartment." *Nature Neuroscience* 20 (2017): 1,300–1,309.
- 62 Kume, K. and Nishizuka, S.S. "Colony lysate arrays for proteomic profiling of drug-tolerant persisters of cancer cell." *Analytical Chemistry* 89 (2017): 8,626–8,631.
- 63 Lai, L. et al. "Singlet gating in mass cytometry." *Cytometry Part A* 91 (2017): 170–172.

- 64 Lakshmikanth, T. et al. "Mass cytometry and topological data analysis reveal immune parameters associated with complications after allogeneic stem cell transplantation." *Cell Reports* 20 (2017): 2,238–2,250.
- 65 Lavin, Y. et al. "Innate immune landscape in early lung adenocarcinoma by paired single-cell analyses." *Cell* 169 (2017): 750–765.
- 66 Leelatian, N. et al. "Preparing viable single cells from human tissue and tumors for cytomic analysis." *Current Protocols in Molecular Biology* 118 (2017): 25C 1.1–25C 1.23.
- 67 Leelatian, N. et al. "Single cell analysis of human tissues and solid tumors with mass cytometry." *Cytometry Part B: Clinical Cytometry* 92 (2017): 68–78.
- 68 Li, H. et al. "Gating mass cytometry data by deep learning." *Bioinformatics* 33 (2017): 3,423–3,430.
- 69 Li, Y.H. et al. "Scalable multi-sample single-cell data analysis by partition-assisted clustering and multiple alignments of networks." *bioRxiv* (2017): doi: 10.1101/116566.
- 70 Lin, D. and Maecker, H.T. "Mass cytometry assays for antigen-specific T cells using CyTOF." *Flow Cytometry Protocols*. Humana Press (2017): 37–47.
- 71 Lomax, A.J. et al. "Immunotherapy-induced sarcoidosis in patients with melanoma treated with PD-1 checkpoint inhibitors: Case series and immunophenotypic analysis." *International Journal of Rheumatic Diseases* (2017): 1,277–1,285 .
- 72 Lun, A.T.L. et al. "Testing for differential abundance in mass cytometry data." *Nature Methods* 14 (2017): 707–709.
- 73 Lun, X.K. et al. "Influence of node abundance on signaling network state and dynamics analyzed by mass cytometry." *Nature Biotechnology* 35 (2017): 164–172.
- 74 Maus, R.L.G. et al. "Human melanoma-derived extracellular vesicles regulate dendritic cell maturation." *Frontiers in Immunology* 8 (2017): 358.
- 75 McArthur, M.A. et al. "Impact of CD4+ T cell responses on clinical outcome following oral administration of wild-type enterotoxigenic *Escherichia coli* in humans." *PLoS Neglected Tropical Diseases* 11 (2017): e0005291.
- 76 McCarthy, R.L. et al. "Rapid monoisotopic cisplatin based barcoding for multiplexed mass cytometry." *Scientific Reports* 7 (2017): 3,779.
- 77 Melchiotti, R. et al. "Cluster stability in the analysis of mass cytometry data." *Cytometry Part A* 91 (2017): 73–84.
- 78 Moon, K.R. "PHATE: a dimensionality reduction method for visualizing trajectory structures in high-dimensional biological data." *bioRxiv* (2017): doi: 10.1101/120378.
- 79 Mrdjen, D. et al. "High dimensional cytometry of central nervous system leukocytes during neuroinflammation." *Methods in Molecular Biology* 1559 (2017): 321–332.

- 80** Mukai, K. et al. "Assessing basophil activation by using flow cytometry and mass cytometry in blood stored 24 hours before analysis." *Journal of Allergy and Clinical Immunology* 139 (2017): 889–899.e11.
- 81** Mukherjee, S. et al. "*In silico* modeling identifies CD45 as a regulator of IL-2 synergy in the NKG2D-mediated activation of immature human NK cells." *Science Signaling* 10 (2017): eaai9062.
- 82** Nassar, A.F. et al. "Automation of sample preparation for mass cytometry barcoding in support of clinical research: protocol optimization." *Analytical and Bioanalytical Chemistry* (2017): 2,363–2,372.
- 83** Nishida, Y. et al. "The novel BMI-1 inhibitor PTC596 downregulates MCL-1 and induces p53-independent mitochondrial apoptosis in acute myeloid leukemia progenitor cells." *Blood Cancer Journal* 7 (2017): e527.
- 84** Nolo, R. et al. "Targeting P-selectin blocks neuroblastoma growth." *Oncotarget* 8 (2017): 86,657–86,670.
- 85** Norris, P.C. et al. "A cluster of immunoresolvents links coagulation to innate host defense in human blood." *Science Signaling* 10 (2017): eaan1471.
- 86** Nowicka, M. et al. "CyTOF workflow: differential discovery in high-throughput high-dimensional cytometry datasets." *F1000 Research* 6 (2017): 748.
- 87** Orecchioni, M. et al. "Single-cell mass cytometry and transcriptome profiling reveal the impact of graphene on human immune cells." *Nature Communications* 8 (2017): 1,109.
- 88** Panaccione, A. et al. "MYB fusions and CD markers as tools for authentication and purification of cancer stem cells from salivary adenoid cystic carcinoma." *Stem Cell Research* 21 (2017): 160–166.
- 89** Pelak, O. et al. "Lymphocyte enrichment using CD81-targeted immunoaffinity matrix." *Cytometry Part A* 91 (2017): 62–72.
- 90** Pichaandi, J. et al. "Liposome-encapsulated NaLnF₄ nanoparticles for mass cytometry: Evaluating nonspecific binding to cells." *Chemistry of Materials* 29 (2017): 4,980–4,990.
- 91** Platon, L. et al. "A computational approach for phenotypic comparisons of cell populations in high-dimensional cytometry data." *Methods* (2017): doi: 10.1016/j.ymeth.2017.09.005.
- 92** Porpiglia, E. et al. "High-resolution myogenic lineage mapping by single-cell mass cytometry." *Nature Cell Biology* 19 (2017): 558–567.
- 93** Qui, P. "Toward deterministic and semiautomated SPADE analysis." *Cytometry Part A* 91 (2017): 281–289.

- 94** Rahman, A.H. et al. "High-dimensional single cell mapping of cerium distribution in the lung immune microenvironment of an active smoker." *Cytometry Part B: Clinical Cytometry* (2017); doi: 10.1002/cyto.b.21545.
- 95** Raju, R. et al. "Cell expansion during directed differentiation of stem cells toward the hepatic lineage." *Stem Cells and Development* 26 (2017): 274–284.
- 96** Rao, D. A. et al. "Pathologically expanded peripheral T helper cell subset drives B cells in rheumatoid arthritis." *Nature* 542 (2017): 110–114.
- 97** Roussel, M. et al. "Mass cytometry deep phenotyping of human mononuclear phagocytes and myeloid-derived suppressor cells from human blood and bone marrow." *Journal of Leukocyte Biology* 102 (2017): 437–447.
- 98** Saenz, D.T. et al. "Novel BET protein proteolysis-targeting chimera exerts superior lethal activity than bromodomain inhibitor (BETi) against post-myeloproliferative neoplasm secondary (s) AML cells." *Leukemia* 31 (2017): 1,951–1,961.
- 99** Schapiro, D. et al. "histoCAT: analysis of cell phenotypes and interactions in multiplex image cytometry data." *Nature Methods* 14 (2017): 873–876.
- 100** Schapiro, D. et al. "Systematic analysis of cell phenotypes and cellular social networks in tissues using the multiplexed image cytometry analysis toolbox (miCAT)." *bioRxiv* (2017); doi: 10.1101/109207.
- 101** Schulz, A.R. et al. "Silver nanoparticles for the detection of cell surface antigens in mass cytometry." *Cytometry Part A* 91 (2017): 25–33.
- 102** See, P. et al. "Mapping the human DC lineage through the integration of high-dimensional techniques." *Science* 356 (2017): eaag3009.
- 103** Seshadri, A. et al. "Phenotyping the immune response to trauma: a multiparametric systems immunology approach." *Critical Care Medicine* 45 (2017): 1,523–1,530.
- 104** Siervo, F. et al. "A liver capsular network of monocyte-derived macrophages restricts hepatic dissemination of intraperitoneal bacteria by neutrophil recruitment." *Immunity* 47 (2017): 374–388.e6.
- 105** Simoni, Y. et al. "Human innate lymphoid cell subsets possess tissue-type based heterogeneity in phenotype and frequency." *Immunity* 46 (2017): 148–161.
- 106** Siska, P.J. et al. "Mitochondrial dysregulation and glycolytic insufficiency functionally impair CD8 T cells infiltrating human renal cell carcinoma." *Journal of Clinical Investigation Insight* (2017): e93411.
- 107** Spitzer, M.H. et al. "Systemic immunity is required for effective cancer immunotherapy." *Cell* 168 (2017): 487–502.
- 108** Stern, A.D. et al. "Cell size assays for mass cytometry." *Cytometry Part A* 91 (2017): 14–24.

- 109** Stikvoort, A. et al. "Combining flow and mass cytometry in the search for biomarkers in chronic graft-versus-host disease." *Frontiers in Immunology* (2017): 717.
- 110** Strauss-Albee, D.M. et al. "The newborn human NK cell repertoire is phenotypically formed but functionally reduced." *Cytometry Part B: Clinical Cytometry* 92(2017): 33–41.
- 111** Subrahmanyam, P.B. and Maecker, H.T. "CyTOF measurement of immunocompetence across major immune cell types." *Current Protocols in Cytometry* 82 (2017) 9.54.1–9.54.12.
- 112** Sumatoh, H.R. et al. "Optimization of mass cytometry sample cryopreservation after staining." *Cytometry Part A* 91(2017): 48–61.
- 113** Takahashi, C. et al. "Mass cytometry panel optimization through the designed distribution of signal interference." *Cytometry Part A* 91(2017): 39–47.
- 114** Thomas, G.D. et al. "Human blood monocyte subsets: a new gating strategy defined using cell surface markers identified by mass cytometry." *Arteriosclerosis, Thrombosis, and Vascular Biology* 37 (2017): 1,548–1,558.
- 115** Tosevski, V. et al. "CyTOF mass cytometry for click proliferation assays." *Current Protocols in Cytometry* (2017): 7.50.1–7.50.14.
- 116** Triantafyllou, S. et al. "Predicting causal relationships from biological data: Applying automated causal discovery on mass cytometry data of human immune cells." *Scientific Reports* 7 (2017): 12,724.
- 117** Vadstrup, K. et al. "NKG2D ligand expression in Crohn's disease and NKG2D-dependent stimulation of CD8(+) T cell migration." *Experimental and Molecular Pathology* 103 (2017): 56–70.
- 118** Vasquez, J.C. "SOX2 immunity and tissue resident memory in children and young adults with glioma." *Journal of Neuro-Oncology* 134 (2017): 1–13.
- 119** Vendrame, E. et al. "Mass cytometry analytical approaches reveal cytokine-induced changes in natural killer cells." *Cytometry Part B: Clinical Cytometry* 92 (2017): 57–67.
- 120** Warner, J.D. et al. "STING-associated vasculopathy develops independently of IRF3 in mice." *Journal of Experimental Medicine* (2017): 3,279–3,292 .
- 121** Wei, S.C. et al. "Distinct cellular mechanisms underlie anti-CTLA-4 and anti-PD-1 checkpoint blockade." *Cell* (2017): 1,120–1,133.e17.
- 122** Welters, M.J.P. et al. "Intratumoral HPV16-specific T-cells constitute a Type 1 oriented tumor microenvironment to improve survival in HPV16-driven oropharyngeal cancer." *Clinical Cancer Research* (2017): doi: 10.1158/1078-0432.CCR-17-2140.
- 123** Wistuba-Hamprecht, K. et al. "Establishing high dimensional immune signatures from peripheral blood via mass cytometry in a discovery cohort of stage IV melanoma patients." *Journal of Immunology* 198 (2017): 927–936.

- 124** Wogsland, C.E. et al. “Mass cytometry of follicular lymphoma tumors reveals intrinsic heterogeneity in proteins including HLA-DR and a deficit in nonmalignant plasmablast and germinal center B cell populations.” *Cytometry Part B: Clinical Cytometry* 92 (2017): 79–87.
- 125** Wu, X. et al. “Lanthanide-coordinated semiconducting polymer dots used for flow cytometry and mass cytometry.” *Angewandte Chemie International Edition in English* 56 (2017): 14,908–14,912.
- 126** Yang, Y.S. et al. “High-throughput quantitation of inorganic nanoparticle biodistribution at the single-cell level using mass cytometry.” *Nature Communications* 8 (2017): 14,069.
- 127** Yang, Z.Z. et al. “Expression of LAG-3 defines exhaustion of intratumoral PD-1+ T cells and correlates with poor outcome in follicular lymphoma.” *Oncotarget* 8 (2017): 61,425–61,439.
- 128** Yao, Y. et al. “Multiparameter single cell profiling of airway inflammatory cells.” *Cytometry Part B: Clinical Cytometry* 92 (2017): 12–20.
- 129** Yao, Y. et al. “The natural killer cell response to West Nile virus in young and old individuals with or without a prior history of infection.” *PLoS One* 12 (2017): e0172625.
- 130** Zeng, Z. et al. “Single-cell mass cytometry of acute myeloid leukemia and leukemia stem/progenitor cells.” *Methods in Molecular Biology*. 1633 (2017): 75–86.
- 131** Zhou, H. et al. “Combined inhibition of β -catenin and Bcr-Abl synergistically targets tyrosine kinase inhibitor-resistant blast crisis chronic myeloid leukemia blasts and progenitors in vitro and *in vivo*.” *Leukemia* (2017): 2,065–2,074.

2017 Reviews and Commentary

- 1** Baca, Q. et al. “The road ahead: implementing mass cytometry in clinical studies, one cell at a time.” *Cytometry Part B: Clinical Cytometry* 92 (2017): 10–11.
- 2** Brodin, P. and Davis, M.M. “Human immune system variation.” *Nature Reviews Immunology* 17 (2017): 21–29.
- 3** Dempsey, L.A. “CyTOF analysis of anti-tumor responses.” *Nature Immunology* 18 (2017): 254.
- 4** Ealey, K.N. and Koyasu, S. “How many subsets of innate lymphoid cells do we need?” *Immunity* 46 (2017): 10–13.
- 5** Fonseka, C. Y. et al. “Leveraging blood and tissue CD4+ T cell heterogeneity at the single cell level to identify mechanisms of disease in rheumatoid arthritis.” *Current Opinion in Immunology* 49 (2017): 27–36.

- 6 Loke, et al. “By CyTOF: Heterogeneity of human monocytes.” *Arteriosclerosis, Thrombosis, and Vascular Biology* 37 (2017): 1,423–1,424.
- 7 Matos, T.R. et al. “Research techniques made simple: experimental methodology for single-cell mass cytometry.” *Journal of Investigative Dermatology* 137 (2017): e31–e38.
- 8 Nelson, P.J. and Kretzler, M. “Defining renal neoplastic disease, one cell at a time: mass cytometry, a new tool for the study of kidney biology and disease.” *American Journal of Kidney Diseases* (2017): 758–761.
- 9 Papalexli, E. and Satija, R. “Single-cell RNA sequencing to explore immune cell heterogeneity.” *Nature Reviews, Immunology* (2017): doi: 10.1038/nri.2017.76.
- 10 Reeves, P.M. et al. “Application and utility of mass cytometry in vaccine development.” *FASEB Journal* (2017): doi: 10.1096/fj.201700325R.
- 11 Su, Y. et al. “Single cell proteomics in biomedicine: high-dimensional data acquisition, visualization and analysis.” *Proteomics* 17 (2017): doi:10.1002/pmic.201600267.
- 12 Ye, F. et al. “Studying hematopoiesis using single-cell technologies.” *Journal of Hematology & Oncology* 10 (2017): 27.

2016 Publications

- 1 Anchang, B. et al. “Visualization and cellular hierarchy inference of single-cell data using SPADE.” *Nature Protocols* 11 (2016): 1,264–1,279.
- 2 Angerer, P. et al. “destiny: diffusion maps for large-scale single-cell data in R.” *Bioinformatics* 32 (2016): 1,241–1,243.
- 3 Ben-Shaanan, T.L. et al. “Activation of the reward system boosts innate and adaptive immunity.” *Nature Medicine* 22 (2016): 940–944.
- 4 Boddupalli, C.S. et al. “Interlesional diversity of T cell receptors in melanoma with immune checkpoints enriched in tissue-resident memory T cells.” *Journal of Clinical Investigation Insight* (2016): e88955.
- 5 Carter, B.Z. et al. “Anti-apoptotic ARC protein confers chemoresistance by controlling leukemia-microenvironment interactions through a NFkB/IL1β signaling network.” *Oncotarget* 7 (2016): 20,054–20,067.
- 6 Carter, B.Z. et al. “Combined targeting of BCL-2 and BCR-ABL tyrosine kinase eradicates chronic myeloid leukemia stem cells.” *Science Translational Medicine* 8 (2016): 355ra117.
- 7 Catena, R. et al. “Enhanced multiplexing in mass cytometry using osmium and ruthenium tetroxide species.” *Cytometry Part A* 89 (2016): 491–497.

- 8 Catena, R. et al. "AirLab: a cloud-based platform to manage and share antibody-based single-cell research." *Genome Biology* 17 (2016): 142.
- 9 Chang, Q. et al. "Biodistribution of cisplatin revealed by Imaging Mass Cytometry identifies extensive collagen binding in tumor and normal tissues." *Scientific Reports* 6 (2016): 36641.
- 10 Chen, H. et al. "Cytokit: a bioconductor package for an integrated mass cytometry data analysis pipeline." *PLoS Computational Biology* 12 (2016): e1005112.
- 11 Cheng, Y. et al. "Categorical analysis of human T cell heterogeneity with one-dimensional soli-expression by nonlinear stochastic embedding." *Journal of Immunology* 196 (2016): 924–932.
- 12 Chuang, L.S. et al. "A frameshift in CSF2RB predominant among Ashkenazi Jews increases risk for Crohn's disease and reduces monocyte signaling via GM-CSF." *Gastroenterology* 151 (2016): 710–723.e2.
- 13 Ciarlo, E. et al. "Impact of the microbial derived short chain fatty acid propionate on host susceptibility to bacterial and fungal infections *in vivo*." *Scientific Reports* 6 (2016): 37,944.
- 14 Cols, M. et al. "Expansion of inflammatory innate lymphoid cells in patients with common variable immune deficiency." *Journal of Allergy and Clinical Immunology* 137 (2016): 1,206–1,215.
- 15 David, B.A. et al. "Combination of mass cytometry and imaging analysis reveals origin, location, and functional repopulation of liver myeloid cells in mice." *Gastroenterology* 151 (2016): 1,176–1,191.
- 16 Delmas, A. et al. "Informatics-based discovery of disease-associated immune profiles." *PLoS One* 11 (2016): e0163305.
- 17 Ding, J. et al. "densityCut: an efficient and versatile topological approach for automatic clustering of biological data." *Bioinformatics* 32 (2016): 2,567–2,576.
- 18 Edgar, L.J. et al. "Isotopologous organotellurium probes reveal dynamic hypoxia *in vivo* with cellular resolution." *Angewandte Chemie International Edition in English* 55 (2016): 13,159–13,163.
- 19 Ferrell, P.B., Jr. et al. "High-dimensional analysis of acute myeloid leukemia reveals phenotypic changes in persistent cells during induction therapy." *PLoS One* 11 (2016): e0153207.
- 20 Foltz, J.A. et al. "NCR1 expression identifies canine natural killer cell subsets with phenotypic similarity to human natural killer cells." *Frontiers in Immunology* 7 (2016): 521.
- 21 Fragiadakis, G.K. et al. "Mapping the fetomaternal peripheral immune system at term pregnancy." *Journal of Immunology* 197 (2016): 4,482–4,492.

- 22 Fread, K.I. et al. "An updated debarcoding tool for mass cytometry with cell type-specific and cell sample-specific stringency adjustment." *Pacific Symposium on Biocomputing* 22 (2016): 588–598.
- 23 Frei, A.P. et al. "Highly multiplexed simultaneous detection of RNAs and proteins in single cells." *Nature Methods* 13 (2016): 269–275.
- 24 Greenplate, A.R. et al. "Myelodysplastic syndrome revealed by systems immunology in a melanoma patient undergoing anti-PD-1 therapy." *Cancer Immunology Research* 4 (2016): 474–480.
- 25 Guillems, M. et al. "Unsupervised high-dimensional analysis aligns dendritic cells across tissues and species." *Immunity* 45 (2016): 669–684.
- 26 Gury-BenAri, M. et al. "The spectrum and regulatory landscape of intestinal innate lymphoid cells are shaped by the microbiome." *Cell* 166 (2016): 1,231–1,246.e13.
- 27 Hartmann, F.J. et al. "High-dimensional single-cell analysis reveals the immune signature of narcolepsy." *Journal of Experimental Medicine* 213 (2016): 2,621–2,633.
- 28 Haskett, S. et al. "Identification of novel CD4+ T cell subsets in the target tissue of Sjogren's syndrome and their differential regulation by the lymphotoxin/LIGHT signaling axis." *Journal of Immunology* 197 (2016): 3,806–3,819.
- 29 Hiniker, S.M. et al. "A prospective clinical trial combining radiation therapy with systemic immunotherapy in metastatic melanoma." *International Journal of Radiation Oncology Biology Physics* 96 (2016): 578–588.
- 30 Hirakawa, M. et al. "Low-dose IL-2 selectively activates subsets of CD4+ Tregs and NK cells." *Journal of Clinical Investigation Insight* 1 (2016): e89278.
- 31 Holtt, T. et al. "Cytosplore: interactive immune cell phenotyping for large single-cell datasets." *Computer Graphics Forum* 35 (2016): 171–180.
- 32 Horowitz, A. et al. "Class I HLA haplotypes form two schools that educate NK cells in different ways." *Science Immunology* 1 (2016): pii:eaag1672.
- 33 Huang, J. et al. "Detection, phenotyping, and quantification of antigen-specific T cells using a peptide-MHC dodecamer." *Proceedings of the National Academy of Sciences of the United States of America* 113 (2016): E1,890–1897.
- 34 Inoue, S. et al. "Mutant IDH1 downregulates ATM and alters DNA repair and sensitivity to DNA damage independent of TET2." *Cancer Cell* 30 (2016): 337–348.
- 35 Kay, A.W. et al. "Application of mass cytometry (CyTOF®) for functional and phenotypic analysis of natural killer cells." *Methods in Molecular Biology* 1441 (2016): 13–26.
- 36 Keller, B.C. et al. "Significant interference in mass cytometry from medicinal iodine in human lung" *American Journal of Respiratory Cell and Molecular Biology* 55 (2016): 150–151.

- 37** Kidd, B.A. et al. "Mapping the effects of drugs on the immune system." *Nature Biotechnology* 34 (2016): 47–54.
- 38** Kleinstueber, K. et al. "Standardization and quality control for high-dimensional mass cytometry studies of human samples." *Cytometry Part A* 89 (2016): 903–913.
- 39** Kordasti, S. et al. "Deep-phenotyping of Tregs identifies an immune signature for idiopathic aplastic anemia and predicts response to treatment." *Blood* (2016): 1,193–1,205.
- 40** Lau, A.H. et al. "Mass cytometry reveals a distinct immunoprofile of operational tolerance in pediatric liver transplantation." *Pediatric Transplant* 20(2016): 1,072–1,080.
- 41** Leelatian, N. et al. "Characterizing phenotypes and signaling networks of single human cells by mass cytometry." *Methods in Molecular Biology* 1346 (2016): 99–113.
- 42** Lim, S.O. et al. "Deubiquitination and stabilization of PD-L1 by CSN5." *Cancer Cell* 30 (2016): 925–939.
- 43** Lowther, D.E. et al. "PD-1 marks dysfunctional regulatory T cells in malignant gliomas." *Journal of Clinical Investigation Insight* 1 (2016): e85935.
- 44** Mei, H.E. et al. "Platinum-conjugated antibodies for application in mass cytometry." *Cytometry Part A* 89 (2016): 292–300.
- 45** Mingueneau, M. et al. "Cytometry by time-of-flight immunophenotyping identifies a blood Sjogren's signature correlating with disease activity and glandular inflammation." *Journal of Allergy and Clinical Immunology* 137 (2016): 1,809–1,821.
- 46** Nair, N. et al. "High-dimensional immune profiling of total and rotavirus VP6-specific intestinal and circulating B cells by mass cytometry." *Mucosal Immunology* 9 (2016): 68–82.
- 47** Nicholas, K.J. et al. "Multiparameter analysis of stimulated human peripheral blood mononuclear cells: a comparison of mass and fluorescence cytometry." *Cytometry Part A* 89 (2016): 271–280.
- 48** Pejoski, D. et al. "Identification of vaccine-altered circulating B cell phenotypes using mass cytometry and a two-step clustering analysis." *Journal of Immunology* 196 (2016): 4,814–4,831.
- 49** Rahman, A.H. et al. "Heparin reduces nonspecific eosinophil staining artifacts in mass cytometry experiments." *Cytometry Part A* 89 (2016): 601–607.
- 50** Raju, R. et al. "Cell expansion during directed differentiation of stem cells toward the hepatic lineage." *Stem Cells and Development* (2016): 274–284.
- 51** Romee, R. et al. "Cytokine-induced memory-like natural killer cells exhibit enhanced responses against myeloid leukemia." *Science Translational Medicine* 8 (2016): 357ra123.

- 52** Saenz, D.T. et al. "BET protein bromodomain inhibitor-based combinations are highly active against post-myeloproliferative neoplasm secondary AML cells." *Leukemia* 31 (2016): 678–687.
- 53** Salmon, H. et al. "Expansion and activation of CD103⁺ dendritic cell progenitors at the tumor site enhances tumor responses to therapeutic PD-L1 and BRAF inhibition." *Immunity* 44 (2016): 924–938.
- 54** Samusik, N. et al. "Automated mapping of phenotype space with single-cell data." *Nature Methods* 13 (2016): 493–496.
- 55** Sen, N. and Arvin, A.M. "Dissecting the molecular mechanisms of the tropism of varicella-zoster virus for human T cells." *Journal of Virology* 90 (2016): 3,284–3,287.
- 56** Setty, M. et al. "Wishbone identifies bifurcating developmental trajectories from single-cell data." *Nature Biotechnology* 34 (2016): 637–645.
- 57** Simmons, A.J. et al. "Impaired coordination between signaling pathways is revealed in human colorectal cancer using single-cell mass cytometry of archival tissue blocks." *Science Signaling* 9 (2016): rs11.
- 58** Spada, F. et al. "Characterization by mass cytometry of different methods for the preparation of muscle mononuclear cells." *New Biotechnology* 33 (2016): 514–523.
- 59** Sulen, A. et al. "Signaling effects of sodium hydrosulfide in healthy donor peripheral blood mononuclear cells." *Pharmacological Research* 113 (2016): 216–227.
- 60** Tong, L. et al. "Synthesis of uniform NaLnF₄ (Ln: Sm to Ho) nanoparticles for mass cytometry." *The Journal of Physical Chemistry* (2016): 6,269–6,280.
- 61** Tordesillas, L. et al. "Mass cytometry profiling the response of basophils and the complete peripheral blood compartment to peanut." *Journal of Allergy and Clinical Immunology* (2016): 1,741–1,744.
- 62** Van Unen, V. et al. "Mass cytometry of the human mucosal immune system identifies tissue- and disease-associated immune subsets." *Immunity* 44 (2016): 1,227–1,239.
- 63** Wang, G. et al. "Targeting YAP-dependent MDSC infiltration impairs tumor progression." *Cancer Discovery* 6 (2016): 80–95.
- 64** Wang, Y.J. et al. "Single-cell mass cytometry analysis of the human endocrine pancreas." *Cell Metabolism* 24 (2016), 616–626.
- 65** Wanke-Jellinek, L. et al. "Beneficial effects of CpG-oligodeoxynucleotide treatment on trauma and secondary lung infection." *Journal of Immunology* 196 (2016): 767–777.
- 66** Wanke-Jellinek, L. et al. "Characterization of lung infection-induced TCR gamma delta T cell phenotypes by CyTOF mass cytometry." *Journal of Leukocyte Biology* 99 (2016): 483–493.

- 67 Weber, L.M. and Robinson, M.D. "Comparison of clustering methods for high-dimensional single-cell flow and mass cytometry data." *Cytometry Part A* 89 (2016): 1,084–1,096.
- 68 Wong, M.T. et al. "A high-dimensional atlas of human T cell diversity reveals tissue-specific trafficking and cytokine signatures." *Immunity* 45 (2016), 442–456.
- 69 Woodhouse, S. et al. "Processing, visualising and reconstructing network models from single-cell data." *Immunology Cell Biology* 94 (2016), 256–265.
- 70 Yabu, J.M. et al. "Immune profiles to predict response to desensitization therapy in highly HLA-sensitized kidney transplant candidates." *PloS One* 11 (2016): e0153355.
- 71 Zaunder, J. et al. "Computationally efficient multidimensional analysis of complex flow cytometry data using second order polynomial histograms." *Cytometry Part A* 89 (2016): 44–58.
- 72 Zeng, Z. et al. "MLN0128, a novel mTOR kinase inhibitor, disrupts survival signaling and triggers apoptosis in AML and AML stem/ progenitor cells." *Oncotarget* 7 (2016): 55,083–55,097.

2016 Reviews and Commentary

- 1 Blish, C.A. "Natural killer cell diversity in viral infection: Why and how much?" *Pathogens and Immunity* 1 (2016), 165–192.
- 2 Bodenmiller, B. "Multiplexed epitope-based tissue imaging for discovery and healthcare applications." *Cell Systems* 2 (2016): 225–238.
- 3 Carter, B.Z. and Andreeff, M. "Eradication of CML stem cells." *Oncoscience* 3 (2016): 313–315.
- 4 Cheng, Y. and Newell, E.W. "Deep profiling human T cell heterogeneity by mass cytometry." *Advances in Immunology* 131 (2016): 101–134.
- 5 Gavasso, S. et al. "Single-cell proteomics: potential implications for cancer diagnostics." *Expert Review of Molecular Diagnostics* 16 (2016): 579–589.
- 6 Greenplate, A.R. et al. "Systems immune monitoring in cancer therapy." *European Journal of Cancer* 61 (2016): 77–84.
- 7 Hsieh, E.W. and Hernandez, J.D. "Novel tools for primary immunodeficiency diagnosis: Making a case for deep profiling." *Current Opinion in Allergy and Clinical Immunology* 16 (2016), 549–556.
- 8 Janes, K.A. "Single-cell states versus single-cell atlases—two classes of heterogeneity that differ in meaning and method." *Current Opinion in Biotechnology* 39 (2016): 120–125.

- 9 Krams, S.M. et al. "Applying mass cytometry to the analysis of lymphoid populations in transplantation." *American Journal of Transplantation* (2016); doi:10.1111/ajt.14145.
- 10 Mair, F. et al. "The end of gating? An introduction to automated analysis of high dimensional cytometry data." *European Journal of Immunology* 46 (2016): 34–43.
- 11 Marr, C. et al. "Single-cell gene expression profiling and cell state dynamics: collecting data, correlating data points and connecting the dots." *Current Opinion in Biotechnology* 39 (2016): 207–214.
- 12 Montgomery, R. "High standards for high dimensional investigations" *Cytometry Part A* 89 (2016): 886–888.
- 13 Nassar, A.F. et al. "Mass cytometry moving forward in support of clinical research: advantages and considerations." *Bioanalysis* 8 (2016): 255–257.
- 14 Newell, E.W. and Cheng, Y. "Mass cytometry: Blessed with the curse of dimensionality." *Nature Immunology* 17 (2016), 890–895.
- 15 Perie, L. and Duffy, K.R. "Retracing the in vivo haematopoietic tree using single-cell methods." *FEBS Letters* 590 (2016) 4,068–4,083.
- 16 Proserpio, V. and Lonnberg, T. "Single-cell technologies are revolutionizing the approach to rare cells." *Immunology and Cell Biology* 94 (2016): 225–229.
- 17 Robinson, W.H. and Mao, R. "Biomarkers to guide clinical therapeutics in rheumatology?" *Current Opinion in Rheumatology* 28 (2016): 168–175.
- 18 Saeys, Y. et al. "Computational flow cytometry: helping to make sense of high-dimensional immunology data." *Nature Reviews: Immunology* (2016): 449–462.
- 19 Santegoets, S.J. et al. "Monitoring of the immune dysfunction in cancer patients." *Vaccines (Basel)* 4 (2016): 29.
- 20 Scully, E. and Alter, G. "NK cells in HIV disease." *Current HIV/AIDS Reports* 13 (2016): 85–94.
- 21 Spitzer, M.H. and Nolan, G.P. "Mass cytometry: single cells, many features." *Cell* 165 (2016): 780–791.
- 22 Strauss-Albee, D.M. and Blish, C.A. "Human NK cell diversity in viral infection: ramifications of ramification." *Frontiers in Immunology* 7 (2016): 66.
- 23 Tape, C.J. "Systems biology analysis of heterocellular signaling." *Trends in Biotechnology* (2016): 627–637.
- 24 Woodhouse, S. et al. "Processing, visualising and reconstructing network models from single-cell data." *Immunology Cell Biology* 94 (2016): 256–265.
- 25 Yao, Y. and Montgomery, R.R. "Role of immune aging in susceptibility to West Nile Virus." *Methods in Molecular Biology* 1435 (2016): 235–247.

2015 Publications

- 1 Behbehani, G.K. et al. “Mass cytometric functional profiling of acute myeloid leukemia defines cell cycle and immunophenotypic properties that correlate with known responses to therapy.” *Cancer Discovery* 5 (2015): 988–1,003.
- 2 Bolinger, B. et al. “Adenoviral vector vaccination induces a conserved program of CD8+ T cell memory differentiation in mouse and man.” *Cell Reports* 13 (2015): 1,578–1,588.
- 3 Brodin, P. et al. “Variation in the human immune system is largely driven by non-heritable influences.” *Cell* 160 (2015): 37–47.
- 4 Chang, Q. et al. “Single-cell measurement of the uptake, intratumoral distribution and cell cycle effects of cisplatin using mass cytometry.” *International Journal of Cancer* 136 (2015): 1,202–1,209.
- 5 Das, R. et al. “Combination therapy with anti-CTLA-4 and anti-PD-1 leads to distinct immunologic changes *in vivo*.” *Journal of Immunology* 194 (2015): 950–959.
- 6 Diggins, K.E. et al. “Methods for discovery and characterization of cell subsets in high dimensional mass cytometry data.” *Methods* 82 (2015): 55–63.
- 7 ElSohly, A.M. et al. “Synthetically modified viral capsids as versatile carriers for use in antibody-based cell targeting.” *Bioconjugate Chemistry* 87 (2015): 1,590–1,596.
- 8 Fernandez, R. and Maecker, H. “Cytokine-stimulated phosphoflow of whole blood using CyTOF mass cytometry.” *Bio-protocol* 5 (2015): e1496.
- 9 Fragiadakis, G.K. et al. “Patient-specific immune states before surgery are strong correlates of surgical recovery.” *Anesthesiology* 123 (2015): 1,241–1,255.
- 10 Gaudilliere, B. et al. “Implementing mass cytometry at the bedside to study the immunological basis of human diseases: distinctive immune features in patients with a history of term or preterm birth.” *Cytometry Part A* 87 (2015): 817–829.
- 11 Han, L. et al. “Single-cell mass cytometry reveals intracellular survival/proliferative signaling in FLT3-ITD-mutated AML stem/progenitor cells.” *Cytometry* 87 (2015): 346–356.
- 12 Hansmann, L. et al. “Mass cytometry analysis shows that a novel memory phenotype B cell is expanded in multiple myeloma.” *Cancer Immunology Research* 3 (2015): 650–660.
- 13 Horowitz, A. et al. “Regulation of adaptive NK cells and CD8 T cells by HLA-C correlates with allogeneic hematopoietic cell transplantation and with cytomegalovirus reactivation.” *Journal of Immunology* 195 (2015): 4,524–4,536.
- 14 Karr, J.R. et al. “NetworkPainter: dynamic intracellular pathway animation in Cytobank.” *BMC Bioinformatics* 16 (2015): 172.

- 15 Kay, A.W. et al. "Pregnancy does not attenuate the antibody or plasmablast response to inactivated influenza vaccine." *Journal of Infectious Diseases* 212 (2015): 861–870.
- 16 Lai, L. et al. "A CD45-based barcoding approach to multiplex mass-cytometry (CyTOF)." *Cytometry Part A* 87 (2015): 369–374.
- 17 Lee, H. et al. "Phenotype and function of nasal dendritic cells." *Mucosal Immunology* 8 (2015): 1,083–1,098.
- 18 Leipold, M.D. and Maecker, H.T. "Phenotyping of live human PBMC using CyTOF mass cytometry." *Bio-Protocol* 5 (2015): e1382.
- 19 Levine, J.H. et al. "Data-driven phenotypic dissection of AML reveals progenitor-like cells that correlate with prognosis." *Cell* 162 (2015): 184–197.
- 20 Levy, O. et al. "A small-molecule screen for enhanced homing of systemically infused cells." *Cell Reports* 10 (2015): 1,261–1,268.
- 21 Lujan, E. et al. "Early reprogramming regulators identified by prospective isolation and mass cytometry." *Nature* 521 (2015): 352–356.
- 22 Lutz, C. et al. "Increased lymphocyte apoptosis in mouse models of colitis upon ABT-737 treatment is dependent on BIM expression." *Clinical and Experimental Immunology* 181 (2015): 343–356.
- 23 Martin, V. et al. "Age-related aspects of human IgM⁺ B cell heterogeneity." *Annals of the New York Academy of Sciences* 1362 (2015): 153–163.
- 24 Mason, G.M. et al. "Phenotypic complexity of the human regulatory T cell compartment revealed by mass cytometry." *The Journal of Immunology* 195 (2015): 2,030–2,037.
- 25 McArthur, M.A. et al. "Activation of *Salmonella typhi*-specific regulatory T cells in typhoid disease in a wild-type *S. typhi* challenge model." *PLoS Pathogens* 11 (2015): e1004914.
- 26 Mei, H.E. et al. "Barcoding of live human peripheral blood mononuclear cells for multiplexed mass cytometry." *Journal of Immunology* 194 (2015): 2,022–2,031.
- 27 Miner, J.J. et al. "Chikungunya viral arthritis in the United States: a mimic of seronegative rheumatoid arthritis." *Arthritis and Rheumatology* 67 (2015): 1,214–1,220.
- 28 O'Gorman, W.E. et al. "Single-cell systems-level analysis of human Toll-like receptor activation defines a chemokine signature in patients with systemic lupus erythematosus." *Journal of Allergy and Clinical Immunology* 136 (2015): 1,326–1,336.
- 29 Park, H. et al. "Organotellurium scaffolds for mass cytometry reagent development." *Organic & Biomolecular Chemistry* 13 (2015): 7,027–7,033.
- 30 Polikowsky, H.G. et al. "Cutting edge: redox signaling hypersensitivity distinguishes human germinal center B cells." *The Journal of Immunology* 195 (2015): 1,364–1,367.

- 31 Raval, A. et al. “Reversibility of defective hematopoiesis caused by telomere shortening in telomerase knockout mice.” *PLoS One* 10(7) (2015): e0131722.
- 32 Schuffler, P.J. et al. “Automatic single cell segmentation on highly multiplexed tissue images.” *Cytometry* 87A (2015): 936–942.
- 33 Sen, N. et al. “Single cell mass cytometry reveals remodeling of human T cell phenotypes by varicella zoster virus.” *Methods* 90 (2015): 85–94.
- 34 Simmons, A.J. et al. “Cytometry-based single-cell analysis of intact epithelial signaling reveals MAPK activation divergent from TNF- α -induced apoptosis *in vivo*.” *Molecular Systems Biology* 11 (2015): 835.
- 35 Sorensen, T. et al. “immunoClust—an automated analysis pipeline for the identification of immunophenotypic signatures in high-dimensional cytometric datasets.” *Cytometry Part A* 87 (2015): 603–615.
- 36 Spitzer, M.H. et al. “An interactive reference framework for modeling a dynamic immune system.” *Science* 349 (2015): 1,259,425.
- 37 Strauss-Albee, D.M. et al. “Human NK cell repertoire diversity reflects immune experience and correlates with viral susceptibility.” *Science Translational Medicine* 7 (2015): 297ra115.
- 38 Tricot, S. et al. “Evaluating the efficiency of isotope transmission for improved panel design and a comparison of the detection sensitivities of mass cytometer instruments.” *Cytometry Part A* 87 (2015): 357–368.
- 39 Van Gassen, S. et al. “FlowSOM: Using self-organizing maps for visualization and interpretation of cytometry data.” *Cytometry Part A* 87 (2015): 636–645.
- 40 Watanabe, R. et al. “Human skin is protected by four functionally and phenotypically discrete populations of resident and recirculating memory T cells.” *Science Translational Medicine* 7 (2015): 279ra39.
- 41 Whiting, C.C. et al. “Large-scale and comprehensive immune profiling and functional analysis of normal human aging.” *PLoS One* 10 (2015): e0133627.
- 42 Wong, M.T. et al. “Mapping the diversity of follicular helper T cells in human blood and tonsils using high-dimensional mass cytometry analysis.” *Cell Reports* 11 (2015): 1,822–1,833.
- 43 Zunder, E.R. et al. “A continuous molecular roadmap to iPSC reprogramming through progression analysis of single-cell mass cytometry.” *Cell Stem Cell* 16 (2015): 323–337.
- 44 Zunder, E.R., et al. “Palladium-based mass tag cell barcoding with a doublet-filtering scheme and single-cell deconvolution algorithm.” *Nature Protocols* 10 (2015): 316–333.

2015 Reviews and Commentary

- 1 Atkuri, K.R. et al. “Mass cytometry: A highly multiplexed single-cell technology for advancing drug development.” *Drug Metabolism and Disposition* 43 (2015): 227–233.
- 2 Chester, C. and Maecker, H.T. “Algorithmic tools for mining high-dimensional cytometry data.” *Journal of Immunology* 195 (2015): 773–779.
- 3 Cosma, A. “A time to amaze, a time to settle down, and a time to discover.” *Cytometry Part A* 87 (2015): 795–796.
- 4 Di Palma, S. and Bodenmiller, B. “Unraveling cell populations in tumors by single-cell mass cytometry.” *Current Opinion in Biotechnology* 31 (2015): 122–129.
- 5 Do, P. and Byrd, J.C. “Mass cytometry: a high-throughput platform to visualize the heterogeneity of acute myeloid leukemia.” *Cancer Discovery* 5 (2015): 912–914.
- 6 Ermann, J., et al. “Immune cell profiling to guide therapeutic decisions in rheumatic diseases.” *Nature Reviews Rheumatology* 11 (2015): 541–551.
- 7 Gross, M., et al. “Guardians of the gut—murine intestinal macrophages and dendritic cells.” *Frontiers in Immunology* 6 (2015): 254.
- 8 Helou, Y.A. and Salomon, A.R. “Protein networks and activation of lymphocytes.” *Current Opinion in Immunology* 33C (2015): 78–85.
- 9 Herderschee, J. et al. “Emerging single-cell technologies in immunology.” *Journal of Leukocyte Biology* 98 (2015): 23–32.
- 10 Kling, J. “Cytometry: measure for measure.” *Nature* 518 (2015): 439–443.
- 11 Leipold, M.D. “Another step on the path to mass cytometry standardization.” *Cytometry Part A* 87 (2015): 380–382.
- 12 Leipold, M.D. et al. “Multiparameter phenotyping of human PBMCs using mass cytometry.” *Methods in Molecular Biology* 1343 (2015): 81–95.
- 13 Leong, M.L. and Newell, E.W. “Multiplexed peptide-MHC tetramer staining with mass cytometry.” *Methods in Molecular Biology* 1346 (2015): 115–131.
- 14 Maecker, H.T. and Harari, A. “Immune monitoring technology primer: flow and mass cytometry.” *Journal for ImmunoTherapy of Cancer* 44 (2015): 44.
- 15 Martino, D. and Allen, K. “Meeting the challenges of measuring human immune regulation.” *Journal of Immunological Methods* 424 (2015): 1–6.
- 16 Nair, N. et al. “Mass cytometry as a platform for the discovery of cellular biomarkers to guide effective rheumatic disease therapy.” *Arthritis Research & Therapy* 17 (2015): 127.
- 17 Nassar, A.F. et al. “Impact of recent innovations in the use of mass cytometry in support of drug development.” *Drug Discovery Today* 20 (2015): 1,169–1,175.

- 18 Parker, S.J. et al. “Emerging proteomic technologies for elucidating context-dependent cellular signaling events: a big challenge of tiny proportions.” *Proteomics* 15 (2015): 1,486–1,502.
- 19 Robinson, W.H. and Mao, R. “Technological advances transforming rheumatology.” *Nature Reviews Rheumatology* 11 (2015): 626–628.
- 20 Wen, L. and Tang, F. “Charting a map through the cellular reprogramming landscape.” *Cell Stem Cell* 16 (2015): 215–216.
- 21 Winter, D.R. et al. “From mass cytometry to cancer prognosis” *Nature Biotechnology* 33 (2015): 931–932.

2014 Publications

- 1 Becher, B. et al. “High-dimensional analysis of the murine myeloid cell system.” *Nature Immunology* 15 (2014): 1,181–1,189.
- 2 Behbehani, G.K. et al. “Transient partial permeabilization with saponin enables cellular barcoding prior to surface marker staining.” *Cytometry* 85 (2014): 1,011–1,019.
- 3 Bendall, S.C. et al. “Single-cell trajectory projection uncovers progression and regulatory coordination in human B cell development.” *Cell* 157 (2014): 714–725.
- 4 Bruggner, R.V. et al. “Automated identification of stratifying signatures in cellular subpopulations.” *Proceedings of the National Academy of Sciences of the United States of America* 111 (2014): E2770–E2777.
- 5 Edgar, L.J. et al. “Identification of hypoxic cells using an organotellurium tag compatible with mass cytometry.” *Angewandte Chemie International Edition in English* 53 (2014): 11,473–11,477.
- 6 Fergusson, J.R. et al. “CD161 defines a transcriptional and functional phenotype across distinct human T Cell lineages.” *Cell Reports* 9 (2014): 1,075–1,088.
- 7 Finak, G. et al. “OpenCyto: an open source infrastructure for scalable, robust, reproducible, and automated, end-to-end flow cytometry data analysis.” *PLoS Computational Biology* 10 (2014): e1003806.
- 8 Gaudilliere, B. et al. “Clinical recovery from surgery correlates with single-cell immune signatures.” *Science Translational Medicine* 6 (2014): 255ra131.
- 9 Giesen, C. et al. “Highly multiplexed imaging of tumor tissues with subcellular resolution by mass cytometry.” *Nature Methods* 11 (2014): 417–422.
- 10 Krishnaswamy, S. et al. “Conditional density-based analysis of T cell signaling in single-cell data.” *Science* 346 (2014): 1,250,689.

- 11 Lin, W. et al. "A high-sensitivity lanthanide nanoparticle reporter for mass cytometry: tests on microgels as a proxy for cells." *Langmuir* 30 (2014): 3,142–3,153.
- 12 Mingueneau, M. et al. "Single-cell mass cytometry of TCR signaling: amplification of small initial differences results in low ERK activation in NOD mice." *Proceedings of the National Academy of Sciences of the United States of America* 111 (2014): 16,466–16,471.
- 13 Mitra, R. et al. "Bayesian hierarchical models for protein networks in single-cell mass cytometry." *Cancer Informatics* 13 (2014): 79–89.
- 14 O’Gorman, W.E. et al. "The Split Virus Influenza Vaccine rapidly activates immune cells through Fc-gamma receptors." *Vaccine* 32 (2014): 5,989–5,997.
- 15 O’Neill, K. et al. "Enhanced flowType/RchyOptimyx: a bioconductor pipeline for discovery in high-dimensional cytometry data." *Bioinformatics* 30 (2014): 1,329–1,330.
- 16 Sachs, Z. et al. "NRASG12V oncogene facilitates self-renewal in a murine model of acute myelogenous leukemia." *Blood* 124 (2014): 3,274–3,283.
- 17 Sen, N. et al. "Single-cell mass cytometry analysis of human tonsil T cell remodeling by varicella zoster virus." *Cell Reports* 8 (2014): 633–645.
- 18 Shekhar, K. et al. "Automatic classification of cellular expression by nonlinear stochastic embedding (ACCENSE)." *Proceedings of the National Academy of Sciences of the United States of America* 111 (2014): 202–207.
- 19 Strauss-Albee, D.M. et al. "Coordinated regulation of NK receptor expression in the maturing human immune system." *Journal of Immunology* 193 (2014): 4,871–4,879.
- 20 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." *Science Translational Medicine* 6 (2014): 261ra153.
- 21 Wolchinsky, R. et al. "Antigen-dependent integration of opposing proximal TCR-signaling cascades determines the functional fate of T lymphocytes." *Journal of Immunology* 192 (2014): 2,109–2,119.
- 22 Yao, Y. et al. "CyTOF supports efficient detection of immune cell subsets from small samples." *Journal of Immunological Methods* 415 (2014): 1–5.

2014 Reviews and Commentary

- 1 Chang, S. et al. "Monitoring the immune competence of cancer patients to predict outcome." *Cancer Immunology, Immunotherapy* 63 (2014): 713–719.
- 2 Claassen, M. "Shooting movies of signaling network dynamics with multiparametric cytometry." *Current Topics in Microbiology and Immunology* 377 (2014): 177–189.

- 3 Fienberg, H.G. and Nolan, G.P. “Mass cytometry to decipher the mechanism of nongenetic drug resistance in cancer.” *Current Topics in Microbiology and Immunology* 377 (2014): 85–94.
- 4 Hassell, L.A. and Wagar, E.A. “Twenty (forward looking) questions.” *Journal of Pathology Informatics* 5 (2014): 27.
- 5 Kumar, V. and Delovitch, T.L. “Different subsets of natural killer T cells may vary in their roles in health and disease.” *Immunology* 142 (2014): 321–336.
- 6 Newell, E.W. and Davis, M.M. “Beyond model antigens: high-dimensional methods for the analysis of antigen-specific T cells.” *Nature Biotechnology* 32 (2014): 149–157.
- 7 Newell, E.W. and Lin W. “High-dimensional analysis of human CD8 T cell phenotype, function, and antigen specificity.” *Current Topics in Microbiology and Immunology* 377 (2014): 61–84.
- 8 Zivanovic, N. et al. “A practical guide to multiplexed mass cytometry.” *Current Topics in Microbiology and Immunology* 377 (2014): 95–101.

2013 Publications

- 1 Amir, el-A.D. et al. “viSNE enables visualization of high dimensional single-cell data and reveals phenotypic heterogeneity of leukemia.” *Nature Biotechnology* 31 (2013): 545–552.
- 2 Finck, R. et al. “Normalization of mass cytometry data with bead standards.” *Cytometry* 83 (2013): 483–494.
- 3 Han, A. et al. “Dietary gluten triggers concomitant activation of CD4+ and CD8+ alphabeta T cells and gammadelta T cells in celiac disease.” *Proceedings of the National Academy of Sciences of the United States of America* 110 (2013): 13,073–13,078.
- 4 Horowitz, A. et al. “Genetic and environmental determinants of human NK cell diversity revealed by mass cytometry.” *Science Translational Medicine* 5 (2013): 208ra145.
- 5 Majonis, D. et al. “Dual-purpose polymer labels for fluorescent and mass cytometric affinity bioassays.” *Biomacromolecules* 14 (2013): 1,503–1,513.
- 6 Mingueneau, M. et al. “The transcriptional landscape of $\alpha\beta$ T cell differentiation.” *Nature Immunology* 14 (2013): 619–632.
- 7 Newell, E.W. et al. “Combinatorial tetramer staining and mass cytometry analysis facilitate T-cell epitope mapping and characterization.” *Nature Biotechnology* 31 (2013): 623–629.

2013 Reviews and Commentary

- 1 Bjornson, Z.B. et al. "Single-cell mass cytometry for analysis of immune system functional states." *Current Opinion in Immunology* 25 (2013): 484–494.
- 2 Harvey, C.J. et al. "Cracking the code of human T-cell immunity." *Nature Biotechnology* 31 (2013): 609–610.
- 3 Liu, R. et al. "Inductively coupled plasma mass spectrometry-based immunoassay: a review." *Mass Spectrometry Reviews* 33 (2013): 373–393.
- 4 Newell, E.W. "Higher throughput methods of identifying T cell epitopes for studying outcomes of altered antigen processing and presentation." *Frontiers in Immunology* 4 (2013): 430.
- 5 Strain, M.C. and Richman, D.D. "New assays for monitoring residual HIV burden in effectively treated individuals." *Current Opinion HIV AIDS* 8 (2013): 106–110.
- 6 Tanner, S.D. et al. "An introduction to mass cytometry: fundamentals and applications." *Cancer Immunology and Immunotherapy* 62 (2013): 955–965.
- 7 Wu, J. and Tzanakakis, E.S. "Deconstructing stem cell population heterogeneity: single-cell analysis and modeling approaches." *Biotechnology Advances* 31 (2013): 1,047–1,062.

2012 Publications

- 1 Aghaeepour, N. et al. "RchyOptimyx: cellular hierarchy optimization for flow cytometry." *Cytometry Part A* 81 (2012): 1,022–1,030.
- 2 Behbehani, G.K. et al. "Single-cell mass cytometry adapted to measurements of the cell cycle." *Cytometry Part A* 81 (2012): 552–566.
- 3 Bodenmiller, B. et al. "Multiplexed mass cytometry profiling of cellular states perturbed by small-molecule regulators." *Nature Biotechnology* 30 (2012): 858–867.
- 4 Cao, P. et al. "Improving lanthanide nanocrystal colloidal stability in competitive aqueous buffer solutions using multivalent PEG- phosphonate ligands." *Langmuir* 28 (2012): 12,861–12,870.
- 5 Fienberg, H.G. et al. "A platinum-based covalent viability reagent for single-cell mass cytometry." *Cytometry* 81 (2012): 467–475.
- 6 Gibbs, K.D. et al. "Decoupling of tumor-initiating activity from stable immunophenotype in HoxA9-Meis1-driven AML." *Cell Stem Cell* 10 (2012): 210–217.

- 7 Illy, N. et al. "Metal-chelating polymers by anionic ring-opening polymerization and their use in quantitative mass cytometry." *Biomacromolecules* 13 (2012): 2,359–2,369.
- 8 Leipold, M.D. and Maecker, H.T. "Mass cytometry: protocol for daily tuning and running cell samples on a CyTOF mass cytometer." *Journal of Visualized Experiments* 69 (2012): e4398.
- 9 Liang, Y. et al. "The release and extraction of lanthanide ions from metal-encoded poly(styrene-co-methacrylic acid) microspheres." *Polymer* 53 (2012): 998–1,004.
- 10 Lu, Y. et al. "Effect of pendant group structure on the hydrolytic stability of polyaspartamide polymers under physiological conditions." *Biomacromolecules* 13 (2012): 1,296–1,306.
- 11 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 (2012): 142–152.
- 12 Poultney, C.S. et al. "Integrated inference and analysis of regulatory networks from multi-level measurements." *Methods Cell Biology* 110 (2012): 19–56.
- 13 Wang, L. et al. "Human CD4(+) lymphocytes for antigen quantification: Characterization using conventional flow cytometry and mass cytometry." *Cytometry Part A* 81 (2012): 567–575.

2012 Reviews and Commentary

- 1 Agnetti, G. "Mass spectrometry goes with the flow: mass cytometry and its potentials in regenerative medicine." *Circulation: Cardiovascular Genetics* 5 (2012): 379–380.
- 2 Bendall, S.C. et al. "A deep profiler's guide to cytometry." *Trends in Immunology* 33(2012): 323–332.
- 3 Bendall, S.C. and Nolan, G.P. "From single cells to deep phenotypes in cancer." *Nature Biotechnology* 30 (2012): 639–647.
- 4 Bonislawski, A. "Nolan lab profiles small-molecule inhibitors using new multiplexing method for DVS Sciences' CyTOF." *Genome Web* (2012).
- 5 Chen, G. and Weng, N.P. "Analyzing the phenotypic and functional complexity of lymphocytes using CyTOF (cytometry by time-of-flight)." *Cellular and Molecular Immunology* 9 (2012): 322–323.
- 6 Darzynkiewicz, Z. "Cycling into future: mass cytometry for the cell-cycle analysis." *Cytometry* 81 (2012): 546–548.
- 7 De Souza, N. "Single-cell methods." *Methods* 9 (2012): 35.

- 8 Haining, W.N. “The numerology of T cell functional diversity.” *Immunity* 36 (2012): 10–12.
- 9 Maecker, H.T. et al. “New tools for classification and monitoring of autoimmune diseases.” *Nature Reviews Rheumatology* 8 (2012): 317–328.
- 10 Saade, F. et al. “Pushing the frontiers of T-cell vaccines: Accurate measurement of human T-cell responses.” *Expert Review of Vaccines* 11 (2012): 1,459–1,470.
- 11 Shen-Orr, S.S. “Challenges and promise for the development of human immune monitoring.” *Rambam Maimonides Medical Journal* 3 (2012): e0023.

2011 Publications

- 1 Abdelrahman, A.I. et al. “Surface functionalization methods to enhance bioconjugation in metal-labeled polystyrene particles.” *Macromolecules* 44 (2011): 4,801–4,813.
- 2 Bendall, S.C. et al. “Single-cell mass cytometry of differential immune and drug responses across a human hematopoietic continuum.” *Science* 332 (2011): 687–696.
- 3 Lathia, U.S. et al. “Multiplexed protease assays using element-tagged substrates.” *Analytical Biochemistry* 408 (2011): 157–159.
- 4 Leipold, M.D. et al. “Development of mass cytometry methods for bacterial discrimination.” *Analytical Biochemistry* 419 (2011): 1–8.
- 5 Liang, Y. et al. “The synthesis and characterization of lanthanide-encoded poly(styrene-co-methacrylic acid) microspheres.” *Polymer* 52 (2011): 5,040–5,052.
- 6 Lin, W. et al. “Synthesis and mass cytometric analysis of lanthanide-encoded polyelectrolyte microgels.” *Langmuir* 27 (2011): 7,265–7,275.
- 7 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 (2011): 3,997–4,010.
- 8 Qiu, P. et al. “Extracting a cellular hierarchy from high-dimensional cytometry data with SPADE.” *Nature Biotechnology* 29 (2011): 886–891.

2011 Reviews and Commentary

- 1 Benoist, C. and Hacohen, N. “Immunology. Flow cytometry, amped up.” *Science* 332 (2011): 677–678.
- 2 Cheung, R.K. and Utz, P.J. “Screening: CyTOF-the next generation of cell detection.” *Nature Reviews Rheumatology* 7 (2011): 502–503.

- 3 Cosma, A. and Le Grand, R. “[Brief introduction to mass cytometry].” *Medecine Sciences* (Paris) 27 (2011): 1,072–1,074.
- 4 Doerr, A. “A flow cytometry revolution.” *Nature Methods* 8 (2011): 531.
- 5 Janes, M.R. and Rommel, C. “Next-generation flow cytometry.” *Nature Biotechnology* 29 (2011): 602–604.

2002–2010 Publications

- 1 Abdelrahman, A.I. et al. “Metal-containing polystyrene beads as standards for mass cytometry.” *Journal of Analytical Atomic Spectrometry* 25 (2010): 260–268.
- 2 Berger, S. et al. “Hybrid nanogels by encapsulation of lanthanide-doped LaF₃ nanoparticles as elemental tags for detection by atomic mass spectrometry.” *Journal of Materials Chemistry* 20 (2010): 5,141–5,150.
- 3 Lathia, U.S. et al. “Development of inductively coupled plasma-mass spectrometry-based protease assays.” *Analytical Biochemistry* 398 (2010): 93–98.
- 4 Maecker, H.T. et al. “New technologies for autoimmune disease monitoring.” *Current Opinion in Endocrinology Diabetes and Obesity* 17 (2010): 322–328.
- 5 Majonis, D. et al. “Synthesis of a functional metal-chelating polymer and steps toward quantitative mass cytometry bioassays.” *Analytical Chemistry* 82 (2010): 8,961–8,969.
- 6 Thickett, S.C. et al. “Bio-functional, lanthanide-labeled polymer particles by seeded emulsion polymerization and their characterization by novel ICP-MS detection.” *Journal of Analytical Atomic Spectrometry* 25 (2010): 269–281.
- 7 Abdelrahman, A.I. et al. “Lanthanide-containing polymer microspheres by multiple-stage dispersion polymerization for highly multiplexed bioassays.” *Journal of the American Chemical Society* 131 (2009): 15,276–15,283.
- 8 AND ERRATUM. *Journal of the American Chemical Society* 132 (2010): 2,465.
- 9 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.” *Analytical Chemistry* 81 (2009): 6,813–6,822.
- 10 Leipold, M.D. et al. “ICP-MS-based multiplex profiling of glycoproteins using lectins conjugated to lanthanide-chelating polymers.” *Journal of Proteome Research* 8 (2009): 443–449.
- 11 Poultney, A. et al. “The influence of PEG macromonomers on the size and properties of thermosensitive aqueous microgels.” *Colloid and Polymer Science* 287 (2009): 269–275.

- 12 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." *Analytical Chemistry* 80 (2008): 2,539–2,547.
- 13 Ornatsky, O.I. et al. "Development of analytical methods for multiplex bio-assay with inductively coupled plasma mass spectrometry." *Journal of Analytical Atomic Spectrometry* 23 (2008): 463–469.
- 14 Razumienko, E. et al. "Element-tagged immunoassay with ICP-MS detection: evaluation and comparison to conventional immunoassays." *Journal of Immunological Methods* 336 (2008): 56–63.
- 15 Tanner, S.D. et al. "Flow cytometer with mass spectrometer detection for massively multiplexed single-cell biomarker assay." *Pure Applied Chemistry* 80 (2008): 2,627–2,641.
- 16 Tanner, S.D. et al. "Multiplex bio-assay with inductively coupled plasma mass spectrometry: Towards a massively multivariate single-cell technology." *Spectrochimica Acta Part B Atomic Spectroscopy* 62 (2007): 188–195.
- 17 Vancaeyzeele, C. et al. "Lanthanide-containing polymer nanoparticles for biological tagging applications: nonspecific endocytosis and cell adhesion." *Journal of the American Chemical Society* 129 (2007): 13,653–13,660.
- 18 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.
- 19 Bandura, D.R. et al. "Characterization of phosphorus content of biological samples by ICP-DRC-MS: potential tool for cancer research." *Journal of Analytical Atomic Spectrometry* 19 (2004): 96–100.
- 20 Baranov, V.I. et al. "A sensitive and quantitative element-tagged immunoassay with ICPMS detection." *Analytical Chemistry* 74 (2002): 1,629–1,636.
- 21 Quinn, Z.A. et al. "Simultaneous determination of proteins using an element-tagged immunoassay coupled with ICP-MS detection." *Journal of Analytical Atomic Spectrometry* 17 (2002): 892–896.

2002–2010 Reviews and Commentary

- 1 Ornatsky, O. et al. "Highly multiparametric analysis by mass cytometry." *Journal of Immunological Methods* 361 (2010): 1–20.
- 2 Pich, A. et al. "Biocompatible hybrid nanogels." *Small* 4 (2008): 2,171–2,175.
- 3 Lou, X. et al. "Polymer-based elemental tags for sensitive bioassays." *Angewandte Chemie International Edition in English* 46 (2007): 6,111–6,114.

- 4 Ornatsky, O. et al. “Multiple cellular antigen detection by ICP-MS.” *Journal of Immunological Methods* 308 (2006): 68–76.
- 5 Baranov, V.I. et al. “The potential for elemental analysis in biotechnology.” *Journal of Analytical Atomic Spectrometry* 17 (2002): 1,148–1,152.

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