

Stanford



Holden Maecker

Professor (Research) of Microbiology and Immunology
Microbiology & Immunology

Bio

BIO

Dr. Maecker received a BS in Microbiology from Purdue University and a PhD in Cancer Biology from Stanford University. He did postdoctoral work with Ronald and Shoshana Levy at Stanford, and was an Assistant Professor of Biology at Loyola University Chicago, as well as a Senior Scientist at BD Biosciences, San Jose, CA. He is currently a Professor of Microbiology and Immunology, and Director of the Human Immune Monitoring Center, at Stanford University.

ACADEMIC APPOINTMENTS

- Professor (Research), Microbiology & Immunology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Human Immune Monitoring Center, (2009- present)
- Member, Institute for Immunity, Transplantation, and Infection, (2009- present)
- Member, Immunology Interdisciplinary Degree Program, (2012- present)
- Director, Service Centers and Enabling Technologies, Stanford University School of Medicine, (2014- present)
- Member, Stanford Diabetes Research Center, (2017- present)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Scientific Advisory Board, Cytex (2017 - present)
- Member, SITC Biomarker Task Force (2014 - present)
- Member, Stanford Cancer Institute Scientific Review Committee (2011 - present)
- Co-chair, FOCIS Human Immunophenotyping Consortium (HIPC) (2009 - present)

PROFESSIONAL EDUCATION

- PhD, Stanford University , Cancer Biology (1988)
- BS, Purdue University , Microbiology (1984)

COMMUNITY AND INTERNATIONAL WORK

- Human Immunophenotyping Consortium

PATENTS

- Vernon Maino, Holden Maecker, Douglas Petry. "United States Patent 2007/109161 Detection of HIV-infected cell subsets", Becton, Dickinson, and Company, Jan 1, 2007
- Shoshana Levy, Rosemarie Dekruyff, Dale Umetsu, Holden Maecker. "United States Patent 2001/0044418 Treatment of allergies", Stanford University, Jan 1, 2001

LINKS

- HIMC website: <http://himc.stanford.edu>
- Maeckerlab weblog: <http://maeckerlab.typepad.com>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

A major theme in our group is to define metrics of immune competence in various settings, including cancer immunotherapy, organ transplantation, allergy, and chronic viral infection. We use CyTOF mass cytometry, often in combination with other technologies, to broadly survey immune features at the cellular level, then examine links between features or groups of features and clinical outcome. A long-term goal is to create an assay of global immune competence that could predict risk for various immune-related outcomes in both healthy individuals and in disease.

Teaching

COURSES

2019-20

- Introduction to Applied Computational Tools in Immunology: IMMUNOL 206 (Win)

2018-19

- Introduction to Applied Computational Tools in Immunology: IMMUNOL 206 (Win)

2017-18

- Introduction to Applied Computational Tools in Immunology: IMMUNOL 206 (Win)

2016-17

- Introduction to Applied Computational Tools in Immunology: IMMUNOL 206 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Bryan Xie

Postdoctoral Faculty Sponsor

Caroline Duault

Doctoral Dissertation Co-Advisor (AC)

Makeda Robinson

Postdoctoral Research Mentor

Caroline Duault

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Immunology (Phd Program)
- Microbiology and Immunology (Phd Program)

Publications

PUBLICATIONS

- **High-Parameter Immune Profiling with CyTOF.** *Methods in molecular biology (Clifton, N.J.)*
Sahaf, B., Rahman, A., Maecker, H. T., Bendall, S. C.
2020; 2055: 351–68
- **Reversal of epigenetic aging and immunosenescent trends in humans.** *Aging cell*
Fahy, G. M., Brooke, R. T., Watson, J. P., Good, Z., Vasanaawala, S. S., Maecker, H., Leipold, M. D., Lin, D. T., Kobor, M. S., Horvath, S.
2019; e13028
- **Comprehensive Immune Monitoring of Clinical Trials to Advance Human Immunotherapy.** *Cell reports*
Hartmann, F. J., Babbdor, J., Gherardini, P. F., Amir, E. D., Jones, K., Sahaf, B., Marquez, D. M., Krutzik, P., O'Donnell, E., Sigal, N., Maecker, H. T., Meyer, E., Spitzer, et al
2019; 28 (3): 819
- **The immune cell landscape in kidneys of patients with lupus nephritis** *NATURE IMMUNOLOGY*
Arazi, A., Rao, D. A., Berthier, C. C., Davidson, A., Liu, Y., Hoover, P. J., Chicoine, A., Eisenhaure, T. M., Jonsson, A., Li, S., Lieb, D. J., Zhang, F., Slowikowski, et al
2019; 20 (7): 902–+
- **Tubular cell and keratinocyte single-cell transcriptomics applied to lupus nephritis reveal type I IFN and fibrosis relevant pathways** *NATURE IMMUNOLOGY*
Der, E., Suryawanshi, H., Morozov, P., Kustagi, M., Goilav, B., Ranabathou, S., Izmirly, P., Clancy, R., Belmont, H., Koenigsberg, M., Mokrzycki, M., Rominiemi, H., Graham, et al
2019; 20 (7): 915–+
- **Diminished B-Cell Response After Repeat Influenza Vaccination** *JOURNAL OF INFECTIOUS DISEASES*
Sanyal, M., Holmes, T. H., Maecker, H. T., Albrecht, R. A., Dekker, C. L., He, X., Greenberg, H. B.
2019; 219 (10): 1586–95
- **Vaccine-Induced Memory CD8(+) T Cells Provide Clinical Benefit in HER2 Expressing Breast Cancer: A Mouse to Human Translational Study** *CLINICAL CANCER RESEARCH*
Crosby, E. J., Gwin, W. R., Blackwell, K., Marcom, P., Chang, S., Maecker, H. T., Broadwater, G., Hyslop, T. M., Kim, S., Rogatko, A., Lubkov, V., Snyder, J. C., Osada, et al
2019; 25 (9): 2725–36
- **Getting the Most from Your High-Dimensional Cytometry Data.** *Immunity*
Olsen, L. R., Pedersen, C. B., Leipold, M. D., Maecker, H. T.
2019; 50 (3): 535–36
- **A clinically meaningful metric of immune age derived from high-dimensional longitudinal monitoring.** *Nature medicine*
Alpert, A., Pickman, Y., Leipold, M., Rosenberg-Hasson, Y., Ji, X., Gaujoux, R., Rabani, H., Starosvetsky, E., Kveler, K., Schaffert, S., Furman, D., Caspi, O., Rosenschein, et al
2019
- **Penalized Supervised Star Plots: Example Application in Influenza-Specific CD4+T Cells** *VIRAL IMMUNOLOGY*
Holmes, T. H., Subrahmanyam, P. B., Wang, W., Maecker, H. T.
2019; 32 (2): 102–9
- **Mycophenolate mofetil reduces STAT3 phosphorylation in systemic lupus erythematosus patients.** *JCI insight*
Slight-Webb, S., Guthridge, J. M., Chakravarty, E. F., Chen, H., Lu, R., Macwana, S., Bean, K., Maecker, H. T., Utz, P. J., James, J. A.
2019; 4 (2)

- **SIMON, an Automated Machine Learning System, Reveals Immune Signatures of Influenza Vaccine Responses.** *Journal of immunology (Baltimore, Md. : 1950)*
Tomic, A., Tomic, I., Rosenberg-Hasson, Y., Dekker, C. L., Maecker, H. T., Davis, M. M.
2019
- **Pembrolizumab in Relapsed and Refractory Mycosis Fungoides and Sézary Syndrome: A Multicenter Phase II Study.** *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*
Khodadoust, M. S., Rook, A. H., Porcu, P., Foss, F., Moskowitz, A. J., Shustov, A., Shanbhag, S., Sokol, L., Fling, S. P., Ramchurren, N., Pierce, R., Davis, A., Shine, et al
2019: JCO1901056
- **Guidelines for Gating Flow Cytometry Data for Immunological Assays.** *Methods in molecular biology (Clifton, N.J.)*
Staats, J., Divekar, A., McCoy, J. P., Maecker, H. T.
2019; 2032: 81–104
- **Sustained outcomes in oral immunotherapy for peanut allergy (POISED study): a large, randomised, double-blind, placebo-controlled, phase 2 study.** *Lancet (London, England)*
Chinthrajah, R. S., Purington, N., Andorf, S., Long, A., O'Laughlin, K. L., Lyu, S. C., Manohar, M., Boyd, S. D., Tibshirani, R., Maecker, H., Plaut, M., Mukai, K., Tsai, et al
2019
- **Autoimmunity to hypocretin and molecular mimicry to flu in type 1 narcolepsy.** *Proceedings of the National Academy of Sciences of the United States of America*
Luo, G., Ambati, A., Lin, L., Bonvalet, M., Partinen, M., Ji, X., Maecker, H. T., Mignot, E. J.
2018
- **The anatomy of single cell mass cytometry data.** *Cytometry. Part A : the journal of the International Society for Analytical Cytology*
Olsen, L. R., Leipold, M. D., Pedersen, C. B., Maecker, H. T.
2018
- **Interleukin 4 is inactivated via selective disulfide-bond reduction by extracellular thioredoxin.** *Proceedings of the National Academy of Sciences of the United States of America*
Plugis, N. M., Weng, N., Zhao, Q., Palanski, B. A., Maecker, H. T., Habtezion, A., Khosla, C.
2018
- **JAK-STAT signaling is activated in the kidney and peripheral blood cells of patients with focal segmental glomerulosclerosis.** *Kidney international*
Tao, J., Mariani, L., Eddy, S., Maecker, H., Kambham, N., Mehta, K., Hartman, J., Wang, W., Kretzler, M., Lafayette, R. A.
2018
- **Baseline immune profile by CyTOF can predict response to an investigational adjuvanted vaccine in elderly adults.** *Journal of translational medicine*
Lingblom, C. M., Kowli, S., Swaminathan, N., Maecker, H. T., Lambert, S. L.
2018; 16 (1): 153
- **Comparison of CyTOF assays across sites: Results of a six-center pilot study** *JOURNAL OF IMMUNOLOGICAL METHODS*
Leipold, M. D., Obermoser, G., Fenwick, C., Kleinstuber, K., Rashidi, N., McNevin, J. P., Nau, A. N., Wagar, L. E., Rozot, V., Davis, M. M., DeRosa, S., Pantaleo, G., Scriba, et al
2018; 453: 37–43
- **Food allergy and omics.** *The Journal of allergy and clinical immunology*
Dhondalay, G. K., Rael, E., Acharya, S., Zhang, W., Sampath, V., Galli, S. J., Tibshirani, R., Boyd, S. D., Maecker, H., Nadeau, K. C., Andorf, S.
2018; 141 (1): 20–29
- **Differences in multiple immune parameters between Indian and U.S. infants.** *PLoS one*
Rathore, D. K., Holmes, T. H., Nadeau, K. C., Mittal, P., Batra, A., Rosenberg-Hasson, Y., Sopory, S., Gupta, R., Chellani, H. K., Aggarwal, K. C., Bal, V., Natchu, U. C., Bhatnagar, et al
2018; 13 (11): e0207297
- **Baseline Gastrointestinal Eosinophilia Is Common in Oral Immunotherapy Subjects With IgE-Mediated Peanut Allergy.** *Frontiers in immunology*
Wright, B. L., Fernandez-Becker, N. Q., Kambham, N., Purington, N., Tupa, D., Zhang, W., Rank, M. A., Kita, H., Shim, K. P., Bunning, B. J., Doyle, A. D., Jacobsen, E. A., Boyd, et al
2018; 9: 2624

- **Multiparameter Intracellular Cytokine Staining** *FLOW CYTOMETRY PROTOCOLS, 4TH EDITION*
Lovelace, P., Maecker, H. T., Hawley, T. S., Hawley, R. G.
2018; 1678: 151–66
- **Mass Cytometry Assays for Antigen-Specific T Cells Using CyTOF** *FLOW CYTOMETRY PROTOCOLS, 4TH EDITION*
Lin, D., Maecker, H. T., Hawley, T. S., Hawley, R. G.
2018; 1678: 37–47
- **Distinct predictive biomarker candidates for response to anti-CTLA-4 and anti-PD-1 immunotherapy in melanoma patients.** *Journal for immunotherapy of cancer*
Subrahmanyam, P. B., Dong, Z., Gusenleitner, D., Giobbie-Hurder, A., Severgnini, M., Zhou, J., Manos, M., Eastman, L. M., Maecker, H. T., Hodi, F. S.
2018; 6 (1): 18
- **Value of Circulating Cytokine Profiling During Submaximal Exercise Testing in Myalgic Encephalomyelitis/Chronic Fatigue Syndrome.** *Scientific reports*
Moneghetti, K. J., Skhiri, M., Contrepolis, K., Kobayashi, Y., Maecker, H., Davis, M., Snyder, M., Haddad, F., Montoya, J. G.
2018; 8 (1): 2779
- **Lupus Nephritis in Isolation or Accompanied By Extra-Renal Manifestations: Early Lessons from the Accelerating Medicines Partnership**
James, J. A., Petri, M., Putterman, C., Diamond, B., Wofsy, D., Lee, C., Fine, D., Broder, A. R., Clancy, R. M., Izmirly, P. M., Belmont, M., Bornkamp, N., Davidson, et al
WILEY.2017
- **Guidelines for the use of flow cytometry and cell sorting in immunological studies** *EUROPEAN JOURNAL OF IMMUNOLOGY*
Cossarizza, A., Chang, H., Radbruch, A., Akdis, M., Andrae, I., Annunziato, F., Bacher, P., Barnaba, V., Battistini, L., Bauer, W. M., Baumgart, S., Becher, B., Beisker, et al
2017; 47 (10): 1584–1797
- **Continuous immunotypes describe human immune variation and predict diverse responses** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Kaczorowski, K. J., Shekhar, K., Nkulikiyimfura, D., Dekker, C. L., Maecker, H., Davis, M. M., Chakraborty, A. K., Brodin, P.
2017; 114 (30): E6097–E6106
- **Cord blood T cell subpopulations and associations with maternal cadmium and arsenic exposures** *PLOS ONE*
Nygaard, U. C., Li, Z., Palys, T., Jackson, B., Subbiah, M., Malipatlolla, M., Sampath, V., Maecker, H., Karagas, M. R., Nadeau, K. C.
2017; 12 (6): e0179606
- **Antigen Availability Shapes T Cell Differentiation and Function during Tuberculosis** *CELL HOST & MICROBE*
Moguche, A. O., Musvosvi, M., Penn-Nicholson, A., Plumlee, C. R., Mearns, H., Geldenhuys, H., Smit, E., Abrahams, D., Rozot, V., Dintwe, O., Hoff, S. T., Kromann, I., Ruhwald, et al
2017; 21 (6): 695–+
- **Immune Checkpoint Function of CD85j in CD8 T Cell Differentiation and Aging** *FRONTIERS IN IMMUNOLOGY*
Gustafson, C. E., Qi, Q., Hutter-Saunders, J., Gupta, S., Jadhav, R., Newell, E., Maecker, H., Weyand, C. M., Goronzy, J. J.
2017; 8: 692
- **Reconstitution of immune cell populations in multiple sclerosis patients after autologous stem cell transplantation.** *Clinical and experimental immunology*
Karnell, F. G., LIN, D., Motley, S., Duhon, T., Lim, N., Campbell, D. J., Turka, L. A., Maecker, H. T., Harris, K. M.
2017
- **Systems approach to uncover signaling networks in primary immunodeficiency diseases.** *journal of allergy and clinical immunology*
Choi, J., Fernandez, R., Maecker, H. T., Butte, M. J.
2017
- **Immunotherapy biomarkers 2016: overcoming the barriers** *JOURNAL FOR IMMUNOTHERAPY OF CANCER*
Gulley, J. L., Berzofsky, J. A., Butler, M. O., Cesano, A., Fox, B. A., Gnjjatic, S., Janetzki, S., Kalavar, S., Karanikas, V., Khleif, S. N., Kirsch, I., Lee, P. P., Maccalli, et al
2017; 5: 29
- **Assessing basophil activation by using flow cytometry and mass cytometry in blood stored 24 hours before analysis** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY*
Mukai, K., Gaudenzio, N., Gupta, S., Vivanco, N., Bendall, S. C., Maecker, H. T., Chinthrajah, R. S., Tsai, M., Nadeau, K. C., Galli, S. J.

2017; 139 (3): 889-?

- **Opening the Door on the CMV Immune Response in Aging.** *journal of infectious diseases*
Maecker, H. T.
2017
- **Wild immunology assessed by multidimensional mass cytometry.** *Cytometry. Part A : the journal of the International Society for Analytical Cytology*
Japp, A. S., Hoffmann, K., Schlickeiser, S., Glauen, R., Nikolaou, C., Maecker, H. T., Braun, J., Matzmohr, N., Sawitzki, B., Siegmund, B., Radbruch, A., Volk, H., Frensch, et al
2017; 91 (1): 85-95
- **Autoantibody profiling on a plasmonic nano-gold chip for the early detection of hypertensive heart disease.** *Proceedings of the National Academy of Sciences of the United States of America*
Li, X., Kuznetsova, T., Cauwenberghs, N., Wheeler, M., Maecker, H., Wu, J. C., Haddad, F., Dai, H.
2017; 114 (27): 7089-94
- **Cytokine signature associated with disease severity in chronic fatigue syndrome patients.** *Proceedings of the National Academy of Sciences of the United States of America*
Montoya, J. G., Holmes, T. H., Anderson, J. N., Maecker, H. T., Rosenberg-Hasson, Y., Valencia, I. J., Chu, L., Younger, J. W., Tato, C. M., Davis, M. M.
2017; 114 (34): E7150-E7158
- **CyTOF Measurement of Immunocompetence Across Major Immune Cell Types.** *Current protocols in cytometry*
Subrahmanyam, P. B., Maecker, H. T.
2017; 82: 9.54.1-9.54.12
- **Characterizing CD137 Upregulation on NK cells in Patients Receiving Monoclonal Antibody Therapy.** *Annals of oncology*
MAKKOUK, A., Sundaram, V., Chester, C., Chang, S., Colevas, A. D., Sunwoo, J. B., Maecker, H., Desai, M., Kohrt, H. E.
2016
- **Cytokine profiles in patients with toxoplasmic lymphadenitis in the setting of pregnancy.** *Cytokine*
Pomares, C., Holmes, T. H., Estran, R., Press, C. J., Ramirez, R., Talucod, J., Maecker, H., Rosenberg-Hasson, Y., Montoya, J. G.
2016; 90: 14-20
- **Defective T Memory Cell Differentiation after Varicella Zoster Vaccination in Older Individuals.** *PLoS pathogens*
Qi, Q., Cavanagh, M. M., Le Saux, S., Wagar, L. E., Mackey, S., Hu, J., Maecker, H., Swan, G. E., Davis, M. M., Dekker, C. L., Tian, L., Weyand, C. M., Goronzy, et al
2016; 12 (10)
- **Immune Profiles to Predict Response to Desensitization Therapy in Highly HLA-Sensitized Kidney Transplant Candidates** *PLOS ONE*
Yabu, J. M., Siebert, J. C., Maecker, H. T.
2016; 11 (4)
- **Successful immunotherapy induces previously unidentified allergen-specific CD4+ T-cell subsets.** *Proceedings of the National Academy of Sciences of the United States of America*
Ryan, J. F., Hovde, R., Glanville, J., Lyu, S., Ji, X., Gupta, S., Tibshirani, R. J., Jay, D. C., Boyd, S. D., Chinthrajah, R. S., Davis, M. M., Galli, S. J., Maecker, et al
2016; 113 (9): E1286-95
- **Platinum-conjugated antibodies for application in mass cytometry.** *Cytometry. Part A : the journal of the International Society for Analytical Cytology*
Mei, H. E., Leipold, M. D., Maecker, H. T.
2016; 89 (3): 292-300
- **Standardizing Flow Cytometry Immunophenotyping Analysis from the Human ImmunoPhenotyping Consortium** *SCIENTIFIC REPORTS*
Finak, G., Langweiler, M., Jaimes, M., Malek, M., Taghiyar, J., Korin, Y., Raddassi, K., Devine, L., Obermoser, G., Pekalski, M. L., Pontikos, N., Diaz, A., Heck, et al
2016; 6
- **Immunodynamics: a cancer immunotherapy trials network review of immune monitoring in immuno-oncology clinical trials.** *Journal for immunotherapy of cancer*
Kohrt, H. E., Tumei, P. C., Benson, D., Bhardwaj, N., Brody, J., Formenti, S., Fox, B. A., Galon, J., June, C. H., Kalos, M., Kirsch, I., Kleen, T., Kroemer, et al
2016; 4: 15-?

- **Similarities in the Markers of Inflammation Between Men With Syphilis and Women With Increased Risk of HIV Acquisition.** *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*
Kojima, N., Bristow, C. C., Maecker, H., Rosenberg-Hasson, Y., Leon, S. R., Vargas, S. K., Konda, K. A., Caceres, C. F., Klausner, J. D.
2016; 62 (2): 265–66
- **Novel technologies and emerging biomarkers for personalized cancer immunotherapy.** *Journal for immunotherapy of cancer*
Yuan, J., Hegde, P. S., Clynes, R., Foukas, P. G., Harari, A., Kleen, T. O., Kvistborg, P., Maccalli, C., Maecker, H. T., Page, D. B., Robins, H., Song, W., Stack, et al
2016; 4: 3-?
- **Computationally efficient multidimensional analysis of complex flow cytometry data using second order polynomial histograms** *CYTOMETRY PART A*
Zaunders, J., Jing, J., Leipold, M., Maecker, H., Kelleher, A. D., Koch, I.
2016; 89A (1): 44-58
- **Cytokines profile in hypertensive patients with left ventricular remodeling and dysfunction.** *Journal of the American Society of Hypertension*
Kuznetsova, T., Haddad, F., Knez, J., Rosenberg-Hasson, Y., Sung, J., Cauwenberghs, N., Thijs, L., Karakikes, I., Maecker, H., Mahaffey, K. W., Wu, J. C., Staessen, J. A.
2015; 9 (12): 975-984 e3
- **Large-Scale and Comprehensive Immune Profiling and Functional Analysis of Normal Human Aging** *PLOS ONE*
Whiting, C. C., Siebert, J., Newman, A. M., Du, H., Alizadeh, A. A., Goronzy, J., Weyand, C. M., Krishnan, E., Fathman, C. G., Maecker, H. T.
2015; 10 (7)
- **Immunologic Network and Response to Intramyocardial CD34(+) Stem Cell Therapy in Patients With Dilated Cardiomyopathy** *JOURNAL OF CARDIAC FAILURE*
Haddad, F., Sever, M., Poglajen, G., Lezaic, L., Yang, P., Maecker, H., Davis, M., Kuznetsova, T., Wu, J. C., Vrtovec, B.
2015; 21 (7): 572-582
- **Cytokine-stimulated Phosphoflow of PBMC Using CyTOF Mass Cytometry.** *Bio-protocol*
Fernandez, R., Maecker, H.
2015; 5 (11)
- **Cytokine-Stimulated Phosphoflow of Whole Blood Using CyTOF Mass Cytometry.** *Bio-protocol*
Fernandez, R., Maecker, H.
2015; 5 (11)
- **Mass cytometry as a platform for the discovery of cellular biomarkers to guide effective rheumatic disease therapy** *ARTHRITIS RESEARCH & THERAPY*
Nair, N., Mei, H. E., Chen, S., Hale, M., Nolan, G. P., Maecker, H. T., Genovese, M., Fathman, C. G., Whiting, C. C.
2015; 17
- **flowCL: ontology-based cell population labelling in flow cytometry** *BIOINFORMATICS*
Courtot, M., Meskas, J., Diehl, A. D., Droumeva, R., Gottardo, R., Jalali, A., Taghiyar, M. J., Maecker, H. T., McCoy, J. P., Ruttenberg, A., Scheuermann, R. H., Brinkman, R. R.
2015; 31 (8): 1337-1339
- **Cytomegalovirus infection enhances the immune response to influenza.** *Science translational medicine*
Furman, D., Jojic, V., Sharma, S., Shen-Orr, S. S., Angel, C. J., Onengut-Gumuscu, S., Kidd, B. A., Maecker, H. T., Concannon, P., Dekker, C. L., Thomas, P. G., Davis, M. M.
2015; 7 (281): 281ra43-?
- **Barcoding of live human peripheral blood mononuclear cells for multiplexed mass cytometry.** *Journal of immunology*
Mei, H. E., Leipold, M. D., Schulz, A. R., Chester, C., Maecker, H. T.
2015; 194 (4): 2022-2031
- **Variation in the human immune system is largely driven by non-heritable influences.** *Cell*
Brodin, P., Jojic, V., Gao, T., Bhattacharya, S., Angel, C. J., Furman, D., Shen-Orr, S., Dekker, C. L., Swan, G. E., Butte, A. J., Maecker, H. T., Davis, M. M.
2015; 160 (1-2): 37-47
- **Mass cytometry as a platform for the discovery of cellular biomarkers to guide effective rheumatic disease therapy.** *Arthritis research & therapy*
Nair, N., Mei, H. E., Chen, S., Hale, M., Nolan, G. P., Maecker, H. T., Genovese, M., Fathman, C. G., Whiting, C. C.

2015; 17: 127-?

- **Thinking outside the gate: single-cell assessments in multiple dimensions.** *Immunity*
Kvistborg, P., Gouttefangeas, C., Aghaeepour, N., Cazaly, A., Chattopadhyay, P. K., Chan, C., Eckl, J., Finak, G., Hadrup, S. R., Maecker, H. T., Maurer, D., Mosmann, T., Qiu, et al
2015; 42 (4): 591-92
- **Intracellular Cytokine Staining on PBMCs Using CyTOF™ Mass Cytometry.** *Bio-protocol*
Lin, D., Gupta, S., Maecker, H. T.
2015; 5 (1)
- **Algorithmic Tools for Mining High-Dimensional Cytometry Data.** *Journal of immunology (Baltimore, Md. : 1950)*
Chester, C., Maecker, H. T.
2015; 195 (3): 773-79
- **Predictors of clinical response to immunotherapy with or without radiotherapy.** *Journal of radiation oncology*
Hiniker, S. M., Maecker, H. T., Knox, S. J.
2015; 4: 339-345
- **Phenotyping of Live Human PBMC using CyTOF™ Mass Cytometry.** *Bio-protocol*
Leipold, M. D., Maecker, H. T.
2015; 5 (2)
- **Multiparameter Phenotyping of Human PBMCs Using Mass Cytometry.** *Methods in molecular biology (Clifton, N.J.)*
Leipold, M. D., Newell, E. W., Maecker, H. T.
2015; 1343: 81-95
- **Immune monitoring technology primer: flow and mass cytometry.** *Journal for immunotherapy of cancer*
Maecker, H. T., Harari, A.
2015; 3: 44-?
- **mTOR inhibition improves immune function in the elderly** *SCIENCE TRANSLATIONAL MEDICINE*
Mannick, J. B., Del Giudice, G., Lattanzi, M., Valiante, N. M., Praestgaard, J., Huang, B., Lonetto, M. A., Maecker, H. T., Kovarik, J., Carson, S., Glass, D. J., Klickstein, L. B.
2014; 6 (268)
- **In utero arsenic exposure and fetal immune repertoire in a US pregnancy cohort** *CLINICAL IMMUNOLOGY*
Nadeau, K. C., Li, Z., Farzan, S., Koestler, D., Robbins, D., Fei, D. L., Malipatlolla, M., Maecker, H., Enelow, R., Korrick, S., Karagas, M. R.
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