**Adam T. Waickman, PhD**

**SUNY Upstate Medical University**

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Syracuse, NY 13210

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**CURRENT POSITION**

**SUNY Upstate Medical University** Syracuse, NY

**Department of Microbiology and Immunology** Sep 2020 - present

Assistant Professor

**Institute for Global Health and Translational Sciences** Syracuse, NY

Laboratory Director and Translational Science Coordinator Sep 2020 – present

**EDUCATION**

**Johns Hopkins University School of Medicine** Baltimore, MD

PhD, Immunology 2008 - 2013

Advisor: Dr. Jonathan Powell, MD PhD

**Cornell University, College of Agriculture and Life Sciences** Ithaca, NY

BS, Highest Honors in Research 2004 - 2008

**AWARDS**

**National Research Council Senior Fellowship Award** 2017 - 2019

National Academies of Sciences, Engineering, and Medicine

Host Laboratory: Viral Diseases Branch, Walter Reed Army Institute of Research

**Cancer Research Training Award** 2014 - 2017

Experimental Immunology Branch, National Cancer Institute

Postdoctoral Advisor: J. Hyun Park, PhD

**RESEARCH INTERESTS**

**Characterization and optimization of adaptive immune responses to vaccination**

* Identification and transcriptional characterization of memory-lymphocyte precursors
* Impact of pre-existing host immunity on viral evolution and pathogenicity
* Identification, functionalization, and delivery of monoclonal antibodies for the prevention of and treatment of infectious disease.

**Innate immune perimeters influencing viral pathogenesis and vaccine efficacy**

* Innate immune predictors of symptomatic viral infection
* Innate immune predictors of vaccine reactogenicity

**RESEARCH EXPERIENCE**

**Walter Reed Army Institute of Research** 2017 - 2020

Viral Diseases Branch

* Established and oversaw the first dedicated high-throughput single-cell RNA sequencing (scRNAseq) program within the intramural Department of Defense biomedical research network
* Developed and optimized the workflow and analysis pipelines for scRNAseq sample acquisition and data analysis
* Coordinated a team of cellular/molecular biologists and bioinformaticians to perform scRNAseq analysis of clinical samples from patients with natural pathogen infections (dengue virus, HIV), human challenge models infection (dengue virus, Enterotoxigenic Escherichia coli), and multiple vaccine platforms (dengue virus) with a range of Military, corporate, academic, and international partners
* Utilized scRNAseq technology to establish a monoclonal antibody discovery and characterization pipeline within the Viral Diseases Branch, WRAIR
* Secured independent funding to perform dedicated multi-omic analysis of vaccine and natural-infection elicited cellular immunity

**National Cancer Institute** 2013 - 2017

Experimental Immunology Branch, Bethesda, MD

Postdoctoral fellow

* Developed and utilized transgenic mouse models, *in vitro* cell culture assays, and computational modeling to dissect the role of the common  chain cytokine family in regulating the development and pathogenic potential of autoreactive and tissue-resident T cells

**Johns Hopkins University School of Medicine** 2008 - 2013

Kimmel Cancer Center, Baltimore, MD

Graduate student, PhD candidate

* Assessed the role of adenosine receptor signaling in regulating anti-tumor T cell immunity in inducible and transplant-based murine models of cancer
* Studied the role of cellular metabolism, metabolic stress, and mTOR signaling on regulating the functional profile and effector/memory potential of T cells utilizing transgenic mouse models and targeted metabolomics

**INVITED PRESENTATIONS AND SYMPOSIA**

*“Signatures of Viral Pathogenesis and Immunity”*

SUNY Upstate Medical University, Biomedical Sciences Retreat. Oral presentation

September 2021, Skaneateles, NY

*“Temporally integrated single cell RNA sequencing analysis of controlled and natural DENV-1 infections”*

American Society of Tropical Medicine and Hygiene Annual Meeting. Oral presentation

November 2020, Virtual meeting

*“Transcriptional and metabolic features of persistent dengue T cell immunity”*

American Society of Tropical Medicine and Hygiene Annual Meeting. Oral presentation

November 2019, National Harbor, MD

*“Hallmarks of Protection: Cellular and Molecular Signatures of Durable Immunity”*

American Society of Tropical Medicine and Hygiene Annual Meeting. Symposium chair and organizer

November 2019, National Harbor, MD

*“Mapping the Cellular Landscape of Immunity: Advances and Application in Single-Cell RNA Sequencing”*

Tri-Service Microbiome Conference. Oral presentation

October 2019, Wright-Patterson Air Force Base, OH

*“Mapping the Cellular Landscape of Immunity: Advances and Application in Single-Cell RNA Sequencing”*

Integrative and Collaborative Biomedical Research Workshop. Oral presentation

November 2018, Fort Detrick, MD

*“Mapping the Cellular Landscape of Immunity: Advances and Application in Single-Cell RNA Sequencing”*

Science Exchange Seminar Series, Walter Reed Army Institute of Research. Oral presentation

April 2018, Silver Spring, MD

*“Suppression of IL-7 receptor expression is a transcriptional mechanism that enhances IL-2 signaling in Foxp3+ Treg cells”*

RIKEN Center for Integrative Medical Sciences. Oral presentation

June 2016. Yokohama, Japan

*Foxp3 directly suppress IL-7R expression in CD4 + Regulatory T cells to enhance IL-2 signaling*

NIH Immunology Interest Group Retreat. Oral presentation

September 2015, Potomac, MD

*IL-7R expression inhibits IL-2 receptor signaling in trans in Foxp3+ Regulatory T cells*

Center for Cancer Research, Fellows and Young Investigators Symposium. Oral presentation

June 2015, Gaithersburg, MD

*Activated T cells secrete an alternatively spliced form of the common γ-chain cytokine receptor that inhibits cytokine signaling and exacerbates IL-17-mediated neuroinflammatory disease*

NIH Neuroimmunology symposium. Oral presentation

April 2015, Bethesda, MD

**REVIEW ARTICLES**

Park JH, **Waickman AT**, Reynolds J, Castro M, Molina-París C. *IL7 receptor signaling in T cells: A mathematical modeling perspective*. Wiley Interdiscip Rev Syst Biol Med. 2019 Sep;11(5):e1447

**Waickman AT**, Park JY, Park JH. *The common γ-chain cytokine receptor: tricks-and-treats for T cells*. Cell Mol Life Sci. 2016 Jan;73(2):253-69. doi: 10.1007/s00018-015-2062-4.

Powell JD, Heikamp EB, Pollizzi KN, **Waickman AT**. *A modified model of T-cell differentiation based on mTOR activity and metabolism*. Cold Spring Harb Symp Quant Biol. 2013;78:125-30. doi: 10.1101/sqb.2013.78.020214.

**Waickman AT**, Powell JD. *mTOR, metabolism, and the regulation of T-cell differentiation and function*. Immunol Rev. 2012 Sep;249(1):43-58. doi: 10.1111/j.1600-065X.2012.01152.x.

**Waickman AT**, Powell JD. *Mammalian target of rapamycin integrates diverse inputs to guide the outcome of antigen recognition in T cells*. J Immunol. 2012 May 15;188(10):4721-9. doi: 10.4049/jimmunol.1103143.

**PEER-REVIEWD PUBLICATIONS**

Nguyen HD, Chaudhury S, **Waickman AT**, Friberg H, Currier JR, Wallqvist A. *Stochastic Model of the Adaptive Immune Response Predicts Disease Severity and Captures Enhanced Cross-Reactivity in Natural Dengue Infections*. Front Immunol. 2021 Aug 17;12:696755.

Mammadli M, Harris R, Mahmudlu S, Verma A, May A, Dhawan R, **Waickman AT**, Sen JM, August A, Karimi M. Human *Wnt/β-Catenin Regulates Alloimmune Signaling during Allogeneic Transplantation*. Cancers (Basel). 2021 Jul 28;13(15):3798.

Toth J, **Waickman A**, Jost J, Seltzer L, Vinocur JM, Auerbach DS. *Identification and successful management of near-lethal ventricular tachycardia in 2q24 deletion-associated developmental and epileptic encephalopathy*. Seizure. 2021 Oct;91:146-149.

Fang H, Wegman AD, Ripich K, Friberg H, Currier JR, Thomas SJ, Endy TP, **Waickman AT***. Persistent COVID-19 Symptoms Minimally Impact the Development of SARS-CoV-2-Specific T Cell Immunity*. Viruses. 2021 May 15;13(5):916.

McCracken MK, Kuklis CH, Kannadka CB, Barvir DA, Sanborn MA, **Waickman AT**, Siegfried HC, Victor KA, Hatch KL, De La Barrera R, Walls SD, Rutvisuttinunt W, Currier JR, Friberg H, Jarman RG, Gromowski GD. *Enhanced dengue vaccine virus replication and neutralizing antibody responses in immune primed rhesus macaques*. NPJ Vaccines. 2021 May 21;6(1):77.

Mammadli M, Huang W, Harris R, Xiong H, Weeks S, May A, Gentile T, Henty-Ridilla J, **Waickman AT**, August A, Bah A, Karimi M. *Targeting SLP76:ITK interaction separates GVHD from GVL in allo-HSCT*. iScience. 2021 Mar 11;24(4):102286

**Waickman AT**, Friberg H, Gromowski GD, Rutvisuttinunt W, Li T, Siegfried H, Victor K, McCracken MK, Fernandez S, Srikiatkhachorn A, Ellison D, Jarman RG, Thomas SJ, Rothman AL, Endy T, Currier JR. (2021). *Temporally integrated single cell RNA sequencing analysis of PBMC from experimental and natural primary human DENV-1 infections*. PLoS Pathog. 2021 Jan 29;17(1)

Lal KG, Phuang-Ngern Y, Suhkumvittaya S, Leeansyah E, Alrubayyi A, Dias J, **Waickman A**, Kim D, Kroon E, Pinyakorn S, Eller LA, Maciel M Jr, Rerknimitr R, Chomchey N, Phanuphak N, de Souza MSS, Nitayaphan S, Ake JA, Vasan S, Robb ML, Ananworanich J, Sandberg JK, Schuetz A, Eller MA, Paquin-Proulx D. (2020) *Longitudinal Analysis of Peripheral and Colonic CD161+ CD4+ T Cell Dysfunction in Acute HIV-1 Infection and Effects of Early Treatment Initiation.* Viruses. Dec 11;12(12):1426.

**Waickman AT**, Keller HR, Kim TH, Luckey MA, Tai X, Hong C, Molina-París C, Walsh STR, Park JH. The *Cytokine Receptor IL-7Rα Impairs IL-2 Receptor Signaling and Constrains the In Vitro Differentiation of Foxp3+ Treg Cells.* iScience. 2020 Aug 21;23(8):101421

Sanborn MA, Li T, Victor K, Siegfried H, Fung C, Rothman AL, Srikiatkhachorn A, Fernandez S, Ellison D, Jarman RG, Friberg H, Maljkovic Berry I, Currier JR, **Waickman AT**. *Analysis of cell-associated DENV RNA by oligo(dT) primed 5' capture scRNAseq.* Sci Rep. 2020 Jun 3;10(1):9047

**Waickman AT**, Gromowski GD, Rutvisuttinunt W, Li T, Siegfried H, Victor K, Kuklis C, Gomootsukavadee M, McCracken MK, Gabriel B, Mathew A, Grinyo I Escuer A, Fouch ME, Liang J, Fernandez S, Davidson E, Doranz BJ, Srikiatkhachorn A, Endy T, Thomas SJ, Ellison D, Rothman AL, Jarman RG, Currier JR, Friberg H. *Transcriptional and clonal characterization of B cell plasmablast diversity following primary and secondary natural DENV infection.* EBioMedicine. 2020 Apr;54:102733.

**Waickman AT**, Victor K, Li T, Hatch K, Rutvisuttinunt W, Medin C, Gabriel B, Jarman RG, Friberg H, Currier JR.*Dissecting the heterogeneity of DENV vaccine-elicited cellular immunity using single-cell RNA sequencing and metabolic profiling.* Nat Commun. 2019 Aug 14;10(1):3666. doi: 10.1038/s41467-019-11634-7.

**Waickman AT**, Friberg H, Gargulak M, Kong A, Polhemus M, Endy T, Thomas SJ, Jarman RG, Currier JR.

*Assessing the Diversity and Stability of Cellular Immunity Generated in Response to the Candidate Live-Attenuated Dengue Virus Vaccine TAK-003.* Front Immunol. 2019 Jul 31;10:1778.

Ligons DL, Hwang S, **Waickman AT**, Park JY, Luckey MA, Park JH. *RORγt limits the amount of the cytokine receptor γc through the prosurvival factor Bcl-xL in developing thymocytes*. Sci Signal. 2018 Aug 28;11(545).

**Waickman AT**, Ligons DL, Hwang S, Park JY, Lazarevic V, Sato N, Hong C, Park JH. *CD4 effector T cell differentiation is controlled by IL-15 that is expressed and presented in trans*. Cytokine. 2017 Nov;99:266-274

Kim HK, **Waickman AT**, Castro E, Flomerfelt FA, Hawk NV, Kapoor V, Telford WG, Gress RE. *Distinct IL-7 signaling in recent thymic emigrants versus mature naïve T cells controls T-cell homeostasis*. Eur J Immunol. 2016 Jul;46(7):1669-80.

Pollizzi KN, Patel CH, Sun IH, Oh MH, **Waickman AT**, Wen J, Delgoffe GM, Powell JD. *mTORC1 and mTORC2 selectively regulate CD8⁺ T cell differentiation*. J Clin Invest. 2015 May;125(5):2090-108

Pollizzi KN, **Waickman AT**, Patel CH, Sun IH, Powell JD. *Cellular size as a means of tracking mTOR activity and cell fate of CD4+ T cells upon antigen recognition*. PLoS One. 2015 Apr 7;10(4):e0121710.

Hong C, Luckey MA, Ligons DL, **Waickman AT**, Park JY, Kim GY, Keller HR, Etzensperger R, Tai X, Lazarevic V, Feigenbaum L, Catalfamo M, Walsh ST, Park JH. *Activated T cells secrete an alternatively spliced form of common γ-chain that inhibits cytokine signaling and exacerbates inflammation.* Immunity. 2014 Jun 19;40(6):910-23

Luckey MA, Kimura MY, **Waickman AT**, Feigenbaum L, Singer A, Park JH. *The transcription factor ThPOK suppresses Runx3 and imposes CD4+lineage fate by inducing the SOCS suppressors of cytokine signaling.* Nat Immunol. 2014 Jul;15(7):638-45

Heikamp EB, Patel CH, Collins S, **Waickman A**, Oh MH, Sun IH, Illei P, Sharma A, Naray-Fejes-Toth A, Fejes-Toth G, Misra-Sen J, Horton MR, Powell JD. T*he AGC kinase SGK1 regulates TH1 and TH2 differentiation downstream of the mTORC2 complex*. Nat Immunol. 2014 May;15(5):457-64.

Chiang MJ, Holbert MA, Kalin JH, Ahn YH, Giddens J, Amin MN, Taylor MS, Collins SL, Chan-Li Y, **Waickman A**, Hsiao PY, Bolduc D, Leahy DJ, Horton MR, Wang LX, Powell JD, Cole PA. *An Fc domain protein-small molecule conjugate as an enhanced immunomodulator*. J Am Chem Soc. 2014 Mar 5;136(9):3370-3.

Falahati S, Breu M, **Waickman AT**, Phillips AW, Arauz EJ, Snyder S, Porambo M, Goeral K, Comi AM, Wilson MA, Johnston MV, Fatemi A. *Ischemia-induced neuroinflammation is associated with disrupted development of oligodendrocyte progenitors in a model of periventricular leukomalacia*. Dev Neurosci. 2013;35(2-3):182-96.

Aggarwal NR, D'Alessio FR, Eto Y, Chau E, Avalos C, **Waickman AT**, Garibaldi BT, Mock JR, Files DC, Sidhaye V, Polotsky VY, Powell J, Horton M, King LS. *Macrophage A2A adenosinergic receptor modulates oxygen-induced augmentation of murine lung injury*. Am J Respir Cell Mol Biol. 2013 May;48(5):635-46

Collins S, **Waickman A**, Basson A, Kupfer A, Licht JD, Horton MR, Powell JD. *Regulation of CD4⁺ and CD8⁺ effector responses by Sprouty-1*. PLoS One. 2012;7(11):e49801

Bynoe MS, **Waickman AT**, Mahamed DA, Mueller C, Mills JH, Czopik A. *CD73 is critical for the resolution of murine colonic inflammation*. J Biomed Biotechnol. 2012;2012:260983.

D'Alessio FR, Tsushima K, Aggarwal NR, Mock JR, Eto Y, Garibaldi BT, Files DC, Avalos CR, Rodriguez JV, **Waickman AT**, Reddy SP, Pearse DB, Sidhaye VK, Hassoun PM, Crow MT, King LS. *Resolution of experimental lung injury by monocyte-derived inducible nitric oxide synthase.* J Immunol. 2012 Sep 1;189(5):2234-45.

**Waickman AT**, Alme A, Senaldi L, Zarek PE, Horton M, Powell JD. *Enhancement of tumor immunotherapy by deletion of the A2A adenosine receptor*. Cancer Immunol Immunother. 2012 Jun;61(6):917-2

Delgoffe GM, Pollizzi KN, **Waickman AT**, Heikamp E, Meyers DJ, Horton MR, Xiao B, Worley PF, Powell JD. *The kinase mTOR regulates the differentiation of helper T cells through the selective activation of signaling by mTORC1 and mTORC2.* Nat Immunol. 2011 Apr;12(4):295-30

Mills JH, Thompson LF, Mueller C, **Waickman AT**, Jalkanen S, Niemela J, Airas L, Bynoe MS. *CD73 is required for efficient entry of lymphocytes into the central nervous system during experimental autoimmune encephalomyelitis*. Proc Natl Acad Sci U S A. 2008 Jul 8;105(27):9325-30.

**SELECT ABSTRACT/POSTERS**

**Waickman AT**, Ehrenberg P, Geretz A, Izumi T, Paquin-Proulx D, Eller M, Creegan M, Tovanabutra S, Chomont N, Michael N, Ananworanich J, Currier JR, Thomas R. *Single cell RNA-seq identifies host genes that correlate with HIV-1 reservoir size*. Ninth International Workshop on HIV Persistence during Therapy. December 2019

**Waickman AT**, Rutvisuttinunt W, Gromowski GD, Victor K, Siegfried H, Li T, Srikanth A, Gabriel B, Srikiatkhachorn A, Fernandez S, Rothman A, Jarman RG, Currier JR, Friberg H. “*Mapping the clonal and functional diversity of DENV-elicited humoral immunity using high throughput single cell RNA sequencing”*. American Society of Tropical Medicine and Hygiene Annual Meeting. November 2019.

Victor K, Siegfried H, Li T, Rutvisuttinunt W, Ellison DW, Jarman RG, Currier JR, Friberg H, **Waickman AT**.

*“An assessment of the impact of sample type variation on single cell RNA sequencing data quality: implications for infectious disease research”*. American Society of Tropical Medicine and Hygiene Annual Meeting. November 2019.

Siegfried H, Victor K, Kuklis C, Rutvisuttinunt W, Ellison DW, Jarman RG, Currier JR, Friberg H, Gromowski GD, **Waickman AT**. *“Determination of antigen receptor specificity derived from single cell RNA sequencing analysis of circulating plasmablasts”.* American Society of Tropical Medicine and Hygiene Annual Meeting. November 2019.

**Waickman AT**, Friberg H, Jarman RG, Currier JR. “*Metabolic activity as a surrogate marker of immune cell activation following vaccination”*. American Society of Tropical Medicine and Hygiene Annual Meeting. October 2018.

**Waickman AT**, Friberg H, Jarman RG, Currier JR. “*Metabolic activity as a surrogate marker of immune cell activation following vaccination”*. American Association of Immunologists, Annual Meeting. October 2018.

**PATENTS**

**Title**: IgA Monoclonal Antibodies for Treating Flavivirus Infection

**Serial No:** 63/235,325

**Filed**: August 20, 2021

**Assignee**: SUNY Upstate Medical University

**Inventors**: Adam Waickman, Adam Wegman, Jeff Currier, Heather Friberg, Gregory Gromowski, Michael McCracken

**Title**: Methods for Increasing Insulin Sensitivity and Treating Diabetes

**Application number**: 20140205578

**Filed**: June 15, 2012

**Issued**: July 24, 2014

**Assignee**: The Johns Hopkins University

**Inventors**: Jonathan Powell, Bo Xia, Paul Worley, Greg Delgoffe, **Adam Waickman**