
BIOGRAPHICAL SKETCH

NAME: **Rech, Andrew J.**

eRA COMMONS USER NAME: **RECHA**

POSITION TITLE: **MD/PhD student**

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Haverford College, Haverford, PA	BS	05/2009	Biology
University of Pennsylvania, Philadelphia, PA	PhD	01/2017	Cancer Biology
University of Pennsylvania, Philadelphia, PA	MD	05/2019	

A. Personal Statement

Andrew J. Rech is a Parker Scholar and MD/PhD student at the Perelman School of Medicine at the University of Pennsylvania. Dr. Rech's research encompasses basic and translational tumor immunology. He uses mechanistic mouse models of cancer, patient tissue analysis and computational approaches to understand tumor immunology and novel cancer immunotherapies. His research includes understanding the immunobiology of radiation, tumor antigenicity, as well as response and resistance to immune checkpoint blockade in melanoma and pancreatic ductal adenocarcinoma. He has studied peptide vaccination using 'universal' tumor antigens and immune pathways including CD25, CD40, PD-1, and CTLA4.

B. Positions and Honors

Positions and Employment

2010-current MD/PhD student, University of Pennsylvania, Philadelphia, PA

Honors

2007 Hurford Humanities Center Undergraduate Fellow, Haverford College, Haverford, PA
2009 Phi Beta Kappa, Zeta of Pennsylvania, Haverford College, Haverford, PA
2009 High honors in Biology, Haverford College, Haverford, PA
2009 BS, magna cum laude, Haverford College, Haverford, PA
2009 Ariel G. Loewy Research Award in Biology, Haverford College, Haverford, PA
2017 Parker Scholar postdoctoral fellowship, Parker Institute for Cancer Immunotherapy
2018 Mark L. Tykocinski, MD Award for Research, University of Pennsylvania, Philadelphia, PA

C. Contributions to Science

My research focuses on basic and translational tumor immunology using mouse models of cancer, patient tissue analysis and computational approaches.

1. T cell antigen prediction. I develop novel computational approaches to predict T cell antigens in cancer and autoimmune disease. I led the first characterization of the tumor antigen landscape of pancreatic ductal adenocarcinoma and am the PI of a project to predict personalized cancer vaccine targets.

- a) Balli D*, **Rech AJ***, Stanger BZ, Vonderheide RH *=shared first author. Immune cytolytic activity stratifies molecular subsets of human pancreatic cancer. Clin Cancer Res, 2016, pii:clincanres.2128.2016.

- b) Calcedo R, Somanathan S, Qin Q, Betts MR, **Rech AJ**, Vonderheide RH, Mueller C, Flotte TR, Wilson JM. Class I restricted T cell responses to polymorphic peptide in a gene therapy clinical trial for alpha-1-antitrypsin deficiency. Proceedings of the National Academy of Sciences, 2017, 10.1073/pnas.1617726114.
- c) **Rech AJ**, Vonderheide RH. T-Cell Transfer Therapy Targeting Mutant KRAS: letter to the editor. New England Journal of Medicine, 2017, 16;376(7):e11.
- d) **Rech AJ**, Balli D, Stanger BZ, Vonderheide RH. Tumor immunity and survival as a function of alternative neopeptides in human cancer. Cancer Immunol. Res. 2018. 10.1158/2326-6066.CIR-17-0559.
- e) Kraya AA, Maxwell KN, Wubbenhorst B, Wenz BM, Pluta JM, **Rech AJ**, Dorfman LM, Lunceford N, Barrett A, Mitra N, Morrissette JJD, Feldman M, Nayak A, Domchek SM, Vonderheide RH, Nathanson KL. Genomic signatures predict the immunogenicity of BRCA-deficient breast cancer. Clin Cancer Res, 2019, *in press*.
- f) Richman LP, Vonderheide RH*, **Rech AJ***. Antigen.garnish: ensemble epitope prediction from genetic variants. *Under review*.

2. Pancreatic cancer immunobiology. I have also worked to understand the basic immunobiology of pancreatic ductal adenocarcinoma using mouse models.

- a) **Rech AJ**, Dada H, Twyman-Saint Victor C, Vonderheide RH. Radiotherapy and CD40 activation separately augment immunity to checkpoint blockade in cancer. Cancer Research, 2018, 10.1158/0008-5472.CAN-17-3a821.
- b) Evans RA, Diamond MS, **Rech AJ**, Chao T, Richardson MW, Lin JH, Bajor DL, Byrne KT, Stanger BZ, Riley JL, Markosyan N, Winograd R, Vonderheide RH. Lack of immunoediting in murine pancreatic cancer reversed with neoantigen. JCI Insight, 2016, 1:pii:e88328.
- c) Li J, Byrne KT, Yan F, Yamazoe T, Chen Z, Baslan T, Richman LP, Lin J, Sun YH, **Rech AJ**, Balli D, Hay CA, Sela Y, Merrell AJ, Liudah SM, Gordon N, Norgard RJ, Yuan S, Yu S, Chao T, Ye S, Eisinger-Mathason TSK, Faryabi RB, Tobias JW, Lowe S, Coussens LM, Wherry EJ, Vonderheide RH, Stanger BZ. Tumor cell-intrinsic factors underlie immune heterogeneity and therapeutic response. Immunity, 2018, 10.1158/2326-6066.CIR-17-0559.

3. Novel cancer immunotherapy. I have investigated novel cancer immunotherapy including regulatory T cell depletion and combination radiotherapy / immunotherapy.

- a) **Rech AJ***, Mick R*, Martin S*, Recio A, Aqui NA, Powell DJ Jr, Colligon TA, Trosko JA, Leinbach LI, Pletcher CH, Tweed CK, DeMichele A, Fox KR, Domchek SM, Riley JL, Vonderheid RH *=shared first author. CD25 blockade depletes and selectively reprograms regulatory T-cells in concert with immunotherapy in cancer patients. Science Translational Medicine, 2012, 4:134ra62.
- b) **Rech AJ**, Vonderheide RH: Clinical use of anti-CD25 antibody daclizumab to enhance immune responses to tumor antigen vaccination by targeting regulatory T cells. Ann NY Acad Sci, 2009, 10.1111/j.1749-6632.2009.04939.x.
- c) **Rech AJ**, Vonderheide: Dynamic interplay of oncogenes and T cells induces PD-L1 in the tumor microenvironment. Cancer Discovery, 2013, 3:1330-2.
- d) Twyman-Saint Victor C*, **Rech AJ***, Maity A, Rengan R, Pauken KE, Stelekati E, Benci J, Xu B, Dada H, Odorizzi PM, Herati RS, Mansfield KD, Patsch D, Amaravadi RK, Schuchter LM, Ishwaran H, Mick R, Pryma D, Xu X, Feldman MD, Gangadhar TC, Hahn SM, Wherry EJ, Vonderheide RH, Minn AJ. *=shared first author. Radiation and dual checkpoint blockade activates non-redundant immune mechanisms in cancer. Nature, 2015, 10.1038/nature14292.

4. Basic immunobiology of cancer. I study mechanisms of immune regulation in cancer involving B cells and regulatory T cells.

- a) Carpenter EL, Mick R, **Rech AJ**, Beatty GL, Colligon TA, Rosenfeld MR, Kaplan DE, Chang KM, Domchek SM, Kanetsky PA, Fecher LA, Flaherty KT, Schuchter LM, Vonderheide RH: Collapse of the

CD27+ B cell compartment associated with systemic plasmacytosis in patients with advanced melanoma and other cancers. *Clinical Cancer Research*, 2009, 10.1158/1078-0432.CCR-09-0537.

- b) **Rech AJ**, Mick R, Kaplan DE, Chang KM, Domchek SM, Vonderheide RH: Homeostasis of peripheral FoxP3+ CD4+ regulatory T cells in patients with early and late stage breast cancer. *Cancer Immunol Immunother*, 2010, 10.1007/s00262-009-0780-x.