Alec P. Pankow

alec.pankow@icahn.mssm.edu

Education

Icahn School of Medicine at Mount Sinai, New York, NY — May 2026 (expected)
PhD in Biomedical Sciences

- Thesis advisor: Brad Rosenberg, MD PhD
- Microbiology Multidisciplinary Training Area

University of Puget Sound, Tacoma, WA — May 2016
BS, Biochemistry

- *Summa Cum Laude,* Puget Sound Jazz Orchestra, Puget Sound Outdoors

Research Experience

PhD Candidate — August 2021 to present
Biomedical Sciences, Microbiology MTA
Icahn School of Medicine at Mount Sinai, New York, NY
Thesis advisor: Brad Rosenberg, MD PhD

- Technology development for cell type-resolved CRISPR functional genomics platforms in airway epithelial cultures.
- Characterization of hTERT-immortalized airway epithelial cultures by single-cell RNA sequencing.

Research Associate / Programmer Technician — August 2020 to July 2021
Department of Microbiology, Tumor and Cell Biology
Karolinska Institutet, Solna, Sweden
Supervisor: Benjamin Murrell, PhD

- Next-generation sequencing of phage display libraries from single-domain camelid antibody repertoires.
- Molecular biology in support of preclinical animal models of COVID-19 antibody therapeutics and vaccine Candidates.
- Bioinformatic analysis of viral amplicon sequencing with PacBio long-read data.

Research Scientist I — May 2017 to July 2020
Department of Microbiology
University of Washington, Seattle, WA
Supervisor: James Mullins, PhD

- Bioinformatics pipeline development for long-read sequence data generated in a large HIV prevention efficacy trial.
- Molecular characterization of HIV proviral reservoir from primary human PBMCs.

Undergraduate Research Assistant — February 2016 to August 2016
Department of Biology
University of Puget Sound, Tacoma, WA
Supervisor: Andreas Madlung, PhD

- Bulk RNA-seq analysis, weighted-gene co-expression network analysis (WGCNA) and GO enrichment analysis.

Undergraduate Research Assistant — June 2014 to August 2014
Department of Chemistry
University of Puget Sound, Tacoma, WA
Supervisor: Amy Odegard, PhD

- Recombinant protein production and characterization using a baculovirus expression system.

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Teaching

Chemistry Tutor — August 2015 to May 2016

Center for Writing Learning and Teaching
University of Puget Sound, Tacoma WA
Supervisor: Rachel Shelden, MA

Publications

Prescott, R. A.*, **Pankow, A. P.***, de Vries, M.*, Crosse, K. M., Patel, R. S., Alu, M., Loomis, C., Torres, V., Koralov, S., Ivanova, E., Dittmann, M., & Rosenberg, B. R. (2023). A comparative study of in vitro air-liquid interface culture models of the human airway epithelium evaluating cellular heterogeneity and gene expression at single cell resolution. *Respiratory Research*, *24*(1), 213. https://doi.org/10.1186/s12931-023-02514-2

Oliveira, M. F., **Pankow, A.**, Vollbrecht, T., Kumar, N. M., Cabalero, G., Ignacio, C., Zhao, M., Vitomirov, A., Gouaux, B., Nakawawa, M., Murrell, B., Ellis, R. J., & Gianella, S. (2023). Evaluation of Archival HIV DNA in Brain and Lymphoid Tissues. *Journal of Virology*, e0054323. https://doi.org/10.1128/jvi.00543-23

Hanke, L., Sheward, D. J., **Pankow, A.**, Vidakovics, L. P., Karl, V., Kim, C., Urgard, E., Smith, N. L., Astorga-Wells, J., Ekström, S., Coquet, J. M., McInerney, G. M., & Murrell, B. (2022). Multivariate mining of an alpaca immune repertoire identifies potent cross-neutralizing SARS-CoV-2 nanobodies. *Science Advances*, *8*(12), eabm0220. https://doi.org/10.1126/sciadv.abm0220

Sheward, D. J., Kim, C., Ehling, R. **A., Pankow**, A., Castro Dopico, X., Dyrdak, R., Martin, D. P., Reddy, S. T., Dillner, J., Karlsson Hedestam, G. B., Albert, J., & Murrell, B. (2022). Neutralisation sensitivity of the SARS-CoV-2 omicron (B.1.1.529) variant: a cross-sectional study. *The Lancet Infectious Diseases*. https://doi.org/10.1016/S1473-3099(22)00129-3

Hanke, L., Das, H., Sheward, D. J., Perez Vidakovics, L., Urgard, E., Moliner-Morro, A., Kim, C., Karl, V., **Pankow, A.**, Smith, N. L., Porebski, B., Fernandez-Capetillo, O., Sezgin, E., Pedersen, G. K., Coquet, J. M., Hällberg, B. M., Murrell, B., & McInerney, G. M. (2022). A bispecific monomeric nanobody induces spike trimer dimers and neutralizes SARS-CoV-2 in vivo. *Nature Communications*, *13*(1), 155. https://doi.org/10.1038/s41467-021-27610-z

Sheward, D. J., Mandolesi, M., Urgard, E., Kim, C., Hanke, L., Perez Vidakovics, L., **Pankow, A.**, Smith, N. L., Castro Dopico, X., McInerney, G. M., Coquet, J. M., Karlsson Hedestam, G. B., & Murrell, B. (2021). Beta RBD boost broadens antibody-mediated protection against SARS-CoV-2 variants in animal models. *Cell Reports. Medicine*, *2*(11), 100450. https://doi.org/10.1016/j.xcrm.2021.100450

Santiago, J. C., Goldman, J. D., Zhao, H., **Pankow, A. P.**, Okuku, F., Schmitt, M. W., Chen, L. H., Hill, C. A., Casper, C., Phipps, W. T., & Mullins, J. I. (2021). Intra-host changes in Kaposi sarcoma-associated herpesvirus genomes in Ugandan adults with Kaposi sarcoma. *PLoS Pathogens*, *17*(1), e1008594. https://doi.org/10.1371/journal.ppat.1008594

Rowe, P. M., Cordero, R. R., Warren, S. G., Stewart, E., Doherty, S. J., **Pankow, A.**, Schrempf, M., Casassa, G., Carrasco, J., Pizarro, J., MacDonell, S., Damiani, A., Lambert, F., Rondanelli, R., Huneeus, N., Fernandoy, F., & Neshyba, S. (2019). Black carbon and other light-absorbing impurities in snow in the Chilean Andes. *Scientific Reports*, *9*(1), 4008. https://doi.org/10.1038/s41598-019-39312-0

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Preprints / Submitted Manuscripts

Prescott, R. A., **Pankow, A. P.**, de Vries, M., Crosse, K., Patel, R. S., Alu, M., Loomis, C., Torres, V., Koralov, S., Ivanova, E., Dittmann, M., & Rosenberg, B. R. (2023). A comparative study of in vitro air-liquid interface culture models of the human airway epithelium evaluating cellular heterogeneity and gene expression at single cell resolution. *bioRxiv,* https://doi.org/10.1101/2023.02.27.530299., *In revision*

Juraska, Michal, Bai, H., deCamp, A. ... **Pankow, A. P.** et al. 2023. "Prevention efficacy of the broadly neutralizing antibody VRC01 depends on HIV-1 envelope sequence features." *In revision*

Westfall, D. H., Deng, W., **Pankow, A.**, Murrell, H., & Chen, L. (2023). Optimized SMRT-UMI protocol produces highly accurate sequence datasets from diverse populations–application to HIV-1 quasispecies. *bioRxiv*. https://www.biorxiv.org/content/10.1101/2023.02.23.529831.abstract., *In revision*

Pankow, A., Christian, M., Smith, N., Sheward, D., & Murrell, B. (2020). Estimating the timing of HIV infection from unmutated sequences. *bioRxiv*, https://doi.org/10.1101/2020.11.28.402271., *Preprint*

Presentations

Prescott, R. A., **Pankow, A. P.**, de Vries, M., Crosse, K., Patel, R. S., Alu, M., Loomis, C., Torres, V., Koralov, S., Ivanova, E., Dittmann, M., & Rosenberg, B. R. (2023). A comparative study of in vitro air-liquid interface culture models of the human airway epithelium evaluating cellular heterogeneity and gene expression at single cell resolution. *Cold Spring Harbor Systems Immunology Meeting, April 2023 [Poster presentation]*

Prescott, R. A., **Pankow, A. P.**, de Vries, M., Crosse, K., Patel, R. S., Alu, M., Loomis, C., Torres, V., Koralov, S., Ivanova, E., Dittmann, M., & Rosenberg, B. R. (2023). Comparison of primary and immortalized well-differentiated human airway epithelium cultures at air-liquid interface by single cell RNA-Sequencing. *38th Symposium on Virus-Host Interactions, September 2023 [Poster presentation]*

Skills

Experimental

- Mammalian cell culture
- (RT)-qPCR and primer design
- Next-generation sequencing library preparation
- CRISPR/Cas genome editing

Computational

- Languages: R, Julia
- Version control with git
- Workflow management tools
- Familiarity with common command-line bioinformatics tools

Honors and Awards

Phi Beta Kappa; Phi Kappa Phi; Organic Chemistry Student of the Year, 2013/14; University of Puget Sound Matelich Scholar, Class of '16