

ALLISON C. GOFF, PH.D.

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EDUCATION

- Ph.D.** Georgetown University/National Institutes of Health (NIH) Jun 2021
Genetics
Dissertation: *The Identification of Transcriptional Signatures of Steroid Response in Human Neurons and microRNA Networks as Contributors to Reproductive Steroid Pathology*
Advisors: Dr. David Goldman, Dr. Peter Schmidt
- M.A.** New York University May 2011
Bioethics
Thesis: *Ethics of Stem Cell Research: A Focus on Germany, Singapore & International Trends*
Advisor: Dr. Matthew Liao
- B.A.** University of Wisconsin- Madison Dec 2007
Double major: Biology – Neuroscience option, Political Science
Undergraduate research advisor: Dr. Ei Terasawa

RESEARCH EXPERIENCE

National Institutes of Health — Bethesda/Rockville, MD

(NIAAA — Section on Human Neurogenetics & NIMH — Section on Behavioral Endocrinology)

Post-doctoral Fellow | May 2021 – Nov 2021

- Developed analytic pipelines in R and Python for transcriptional data cleaning, transformation, and visualization.
- Automated threshold-free dataset comparison via a custom RRHO script in R.
- Authored lab-standard Jupyter/R Markdown documentation for reproducibility.
- Mentored a Ph.D. student in experimental design, computational workflows, and statistical modeling.

Pre-doctoral Fellow | Jun 2015 – Apr 2021

- Identified key gene expression changes in response to sex hormone exposure in women with premenstrual dysphoric disorder. Publication in review at Translational Psychiatry.
- Specifically, I analyzed the effects of gene expression changes after exposure to Vehicle, and/or in response to estradiol, progesterone, or allopregnanolone in two cellular models of PMDD: lymphoblastoid cell lines (LCLs) and induced pluripotent stem cells (iPSCs).
- Applied PCA, WGCNA, and edgeR on high-performance computing clusters (Biowulf).
- Conducted integrative analyses using external databases (Enrichr, GSEA, UCSC).
- Mentored undergraduate and medical student interns in data acquisition, analysis, and presentation.
- Techniques: next generation sequencing (RNA-seq, microRNA-seq, ddRNA-seq), R (edgeR, WGCNA, data visualization), Python (Biopython), human cell culture, pathway analyses (Cytoscape, miRNet, Enrichr, GSEA).

Rockefeller University, Lab of Neurogenetics & Behavior — New York, NY

Research Assistant | Mar 2010 – Jun 2013

- Research: designed and executed experiments to assess whether mosquitos preferentially target some humans more than others, analyzed results with ANOVA/T-tests (R).
- Managed internal databases (SQL) and automated high-throughput liquid handler data.
- Performed screening and genetic validation of ZFN-edited mosquitos.
- Techniques: assay optimization, high-throughput liquid handlers, DNA extractions, bacterial transformations & bacterial culturing, data analysis, mosquito rearing.

Waisman Center, Uni. of Wisconsin – Madison — Madison, WI

Research Intern | Mar 2008 – Nov 2009

Laboratory of Developmental Neurogenetics, Neurodegenerative Diseases

- Research: designed, executed, and performed statistical analyses on an experiment using mouse models to measure efficacy of a drug candidate for Alexander’s disease (a leukodystrophy).
- Applied PCR, genotyping, and protein quantification for mouse colony management and validation studies.
- Techniques: western blots, mouse colony management/genotyping (ear notching, tail sampling).

Wisconsin National Primate Research Center, Uni. of Wisconsin – Madison — Madison, WI

Undergraduate Researcher | May 2006 – Jan 2008

Laboratory of Endocrinology

- Research: identified the location of the Kisspeptin protein in the pre-optic hypothalamus in Rhesus macaques, implicating Kisspeptin signaling in the onset of puberty.
- Techniques: immunohistochemistry, fluorescent microscopy.

HONORS AND AWARDS

Intramural Research Training Award

2015 - 2021

National Institutes of Health

Center for the Environment Student Research Grant

2014

Georgetown Research fellowship

Graduate Fellowship – NYU School of Arts and Sciences

2010

Tuition fellowship

TEACHING & MENTORING

Mass General Hospital Institute of Health Professions (MGH IHP)

Adjunct Professor | June 2024 – present

- **DA-620:** Dynamic Healthcare Data Analytics Techniques & Methods Part I (2025)
- **DA-720:** Dynamic Healthcare Data Analytics Techniques & Methods Part II (2025)
- **DA-821:** Dynamic Healthcare Data Analytics Techniques & Methods Part III (2025)
- **DA-830:** The Analytic Leader (2025)
- **DA-730:** Analyzing, Visualizing and Storytelling Data (2024)

Foundation for Advanced Education in the Sciences (FAES), NIH

- **BIOL262:** *Research Tools for Studying Diseases* — Seminar Lecturer, “Big Data and Bioinformatics” (2019)
 - Designed lectures, created and graded assignments, and developed exam questions on big data and bioinformatics.

Mentorship

- Primary Mentor: Summer Internship Program in Biomedical Research (2017), guided computational analysis and scientific presentation.
- Secondary Mentor: Visiting medical student and undergraduate interns (2017–2018), in computational analysis.

PUBLICATIONS & PRESENTATIONS

Goff AC, Rudzinkas SA, Li HJ, Rubinow DD, Schmidt PJ, Goldman, D. MicroRNAs in Premenstrual Dysphoric Disorder and the role of Vascular Endothelial Growth Factor. 2025. *Translational Psychiatry*, in review.

Rudzinkas SA, **Goff AC**, Mazzu MA, Elder Schiller C, Meltzer-Brody S, Rubinow DR, Schmidt PJ, Goldman D. Intrinsically dysregulated cellular stress signaling genes and gene networks in postpartum depression. *Mol Psychiatry* 2023; 3023-3032.

Li HJ, **Goff A**, Rudzinskas SA, Jung Y, Dubey N, Hoffman J *et al.* Altered estradiol-dependent cellular Ca²⁺ homeostasis and endoplasmic reticulum stress response in Premenstrual Dysphoric Disorder. *Mol Psychiatry* 2021; 1–12.

Wei S, Baller E, Martinez M, **Goff AC**, Li HJ, Kohn P, Kippenhan J, Soldin S, Rubinow D, Goldman D, Schmidt P, Berman K. Subgenual Cingulate Resting Regional Cerebral Blood Flow in Premenstrual Dysphoric Disorder: Differential Regulation by Ovarian Steroids and Preliminary Evidence for an Association with Expression of ESC/E(Z) Complex Genes. *Translational Psychiatry* 2021; **11**: 1–9.

Batz, ZB, **Goff, AC**, Armbruster PA. MicroRNAs are differentially abundant during *Aedes albopictus* diapause maintenance but not diapause induction. 2017. *Insect Molecular Biology*, 26:721-733

Poelchau MF, Huang X, **Goff AC**, Reynolds JA, Armbruster, PA. An experimental and bioinformatic protocol for RNA-Seq analysis of photoperiodic diapause in the Asian tiger mosquito, *Aedes albopictus*. 2014. *Journal of Visualized Experiments*, Nov 30;(93) e51961.

In Preparation:

Chen CT, Jung Y, Haven SE, Schuebel K, Lecaj L, **Goff AC**, Wilhite B, Henao JJA, Guerri L, Bock R, Alvarez VA, Stark KD, Hibbeln JR, Goldman D. Reduction in dietary linoleic acid lowers voluntary binge consumption of ethanol. 2025. manuscript in preparation for *Nature Communication*

CONFERENCE PRESENTATIONS

Rudzinskas, S.A., **Goff, A.C.**, Mazzu, M.A., Schiller, S.E., Meltzer-Brody, S., Rubinow, D.R., Schmidt, P.J., Goldman, D. (2019, Nov). “Combined Estradiol and Progesterone Exposure and Subsequent Withdrawal Induce Differential Cellular Responses in Women with Postpartum Depression.” Poster Session – 58th Annual Meeting of the American College of Neuropsychopharmacology, Orlando, FL.

Goff, A., Li, H., Hoffman, J., Marietta, C., Martinez, P., Rubinow, D., Schmidt, P., Goldman, D. (2018, Nov). “Neuronal stem cell transcriptomic response to ovarian steroid hormones in women with Premenstrual Dysphoric Disorder: Beyond lymphoblastoid cell lines.” Poster Session – 48th Annual Meeting of Society for Neuroscience, San Diego, CA.

Goff, A., Meyers, A., Hoffman, J., Marietta, C., Martinez, P., Rubinow, D., Schmidt, P., Goldman, D. (2018, May). “The Neuronal Stem Cell Transcriptome of Premenstrual Dysphoric Disorder.” Poster Session – 73rd Annual Meeting of the Society of Biological Psychiatry, New York, NY.

Goff, A., Meyers, A., Hoffman, J., Marietta, C., Martinez, P., Rubinow, D., Schmidt, P., Goldman, D. (2017, December). “The Neuronal Stem Cell Transcriptome of Premenstrual Dysphoric Disorder.” Poster Session – 56rd Annual Meeting of the American College of Neuropsychopharmacology, Palm Springs, CA.

Goff, A., Hoffman, J., Dubey, N., Schuebel, K., Marietta, C., Yuan, Q., Martinez, P., Nieman, L., Rubinow, D., Schmidt, P., Goldman, D. (2017, May). “Lymphoblastoid Cell lines from Women with Premenstrual Dysphoric Disorder Differ in Genetic, mRNA, and Protein Expression Profiles Compared with Asymptomatic Controls.” Poster Session – 72nd Annual Meeting of the Society of Biological Psychiatry, San Diego, CA.

Bellani, L.L., **Goff, A.**, and Vosshall, L.B. (2012, June). “Isolation of Cues that Drive Mosquito Preference for Certain Human Hosts.” Poster Session - XVI International Symposium on Olfaction and Taste, Stockholm, Sweden