Jennifer L. Hofmann

Curriculum Vitae

EDUCATION & CREDENTIALS

Stanford University

Ph.D., Chemical Engineering — June 2023

M.S., Chemical Engineering – GPA 3.8/4.0 — June 2020

Massachusetts Institute of Technology

B.S., Chemical Engineering (Minor: Literature) – GPA 4.8/5.0 — June 2018

RESEARCH EXPERIENCE

Genentech | Prescient Design | AI for Drug Discovery — May 2023 - Present

Senior Machine Learning Scientist I, II

- Led cross-departmental research team to acquire a foundational dataset for antibody developability – **order of magnitude increase in data scale & diversity**
- Developed machine learning & physics-based methods for property prediction & optimization of therapeutic antibodies. **2 ML workshop papers**, **+3 under peer review**
- Applied state-of-the-art computational methods to six large molecule portfolio projects, leading directly to **1 GLP tox, +4 successful project transitions** (up to 12 mo. accel.)

Zia Group | Stanford University — September 2018 – May 2023

Doctoral Candidate

- Developed dynamic, parallelized computational methods to model biological processes (including whole-cell models), protein-protein interactions, & antibody formulations

Fuller Lab | Stanford University — January - March 2019

Graduate Research Rotation

- Applied dynamic fluid-film interferometry and high-speed imaging to study the interfacial rheology of monoclonal antibody / surfactants solutions (collab. with GNE)

Novartis Institutes for BioMedical Research — June - August 2018

Chemical Biology & Therapeutics – Pre-Graduate Intern

- Scaled up a high-throughput biochemical assay to test therapeutic small molecules targeting microRNAs processed by the Drosha/DGCR8 microprocessor complex

Genentech | Pharmaceutical Technical Operations — June - August 2017

Global Biologics MSAT Intern.

- Developed global viral segregation procedures for biologics manufacturing facilities, aligned with regulatory guidance and FMEA
- Presented to technical council, who unanimously approved our proposed changes

Covaris, Inc. — May - August 2016

Research & Development Intern

- Spearheaded initial experimental and process design for a novel microfluidic mycobacterial drug-resistance test

Swan Group | MIT — February 2015 - May 2017

Undergraduate Researcher

- Developed computational methods to model transport properties of colloidal gels and antibody suspensions – the only such model to incorporate hydrodynamic interactions required for quantitative viscosity prediction (collab. with GNE)

National Cancer Institute | Center for Cancer Research — June 2013 - August 2014

Research Intern

- Designed, assembled, and characterized RNA-DNA nanoscaffolds for delivery of RNAi therapeutics into human cells

TEACHING & MENTORSHIP

Invited Lecturer — January 2026

School of Pharmacy, University of California San Francisco (UCSF)

- AICOMPDRUG 204 – **Computation and AI in Drug Discovery and Development**

Graduate Teaching Assistant March – June 2020, March – August 2021
Department of Chemical Engineering, Stanford University
- CHEMENG 120B - **Energy & Mass Transport**, spring 2020 & 2021 (undergrad. core)
- CHEMENG 442 – **Suspension Mechanics**, summer 2021 (graduate core)

Associate Advisor August 2017 - May 2018
Department of Chemical Engineering, Massachusetts Institute of Technology

Instructor & Mentor January 2016
Global Teaching Labs, MIT & Universität Regensburg

COMMUNITY SERVICE

Genentech gPRIDE – Leadership Team January 2024 – Present
Women of gPRIDE co-chair, Internal Outreach committee

Diversity, Equity, & Inclusion Committee March 2018 – November 2021
Society of Rheology

Managing Director, Project Mentor September 2014 - May 2018
Leadership Training Institute, Massachusetts Institute of Technology

ACADEMIC AWARDS

ARCS Scholarship – *Stanford; ARCS Foundation, Northern CA Chapter* May 2022
Justice, Equity, Diversity, & Inclusion Travel Award – *Stanford* December 2021
Shirley Chan Student Travel Award – *American Physical Society, DBIO* December 2020
Fletcher Jones Foundation NSF Graduate Fellowship – *Stanford* September 2018
Graduate Research Fellowship – *National Science Foundation* April 2018
Ellen Bowers Hofstead Scholarship – *Kappa Alpha Theta Foundation* June 2017

PUBLICATIONS

[1] Rao P, Isaacson H, **Hofmann JL**, Davidson D, Wang A, Watkins AM, Bonneau R, Izadi S, Lee JH. "SurfProp: A surface-based property prediction framework for antibody developability and screening", *ICML Generative AI and Biology Workshop* **2025**

[2] Wang A, Sang Z, Stanton SD, **Hofmann JL**, Izadi S, Park E, Ludwiczak J, Kirchmeyer M, Davidson D, Maier A, Pritsky T, Frey NC, Watkins AM, Seeger F. "A Guided Design Framework for the Optimization of Therapeutic-like Antibodies" *ICLR Workshop on Generative and Experimental Perspectives for Biomolecular Design* **2025**

[3] Frey NC*, Hotzel I*, Stanton SD*, Kelly RL*, Alberstein RG*, …, **Hofmann JL**, …, Marioni J, Regev A, Wu Y, Cho K, Bonneau R, Gligorijevic V. "Lab-in-the-loop therapeutic antibody design with deep learning", *bioRxiv* **2025**

[4] Lin JY*, **Hofmann JH*,** …, Frey NC, "DyAb: sequence-based antibody design and property prediction in a low-data regime," *bioRxiv* **2025** DOI: 2025.01.28.635353

[5] Valverde-Mendez D*, Sunol AM*, Bratton BP, Delarue M, **Hofmann JL**, …, Shaevitz JW, Zia RN. "Macromolecular interactions and geometrical confinement determine the 3D diffusion of ribosome-sized particles in live *Escherichia coli* cells," *PNAS* **2025** 122 (4)

[6] **Hofmann JH**, Yang TS, Sunol AM, Zia RN, "Ribosomal L12 stalks recruit elongation factors to speed protein synthesis in *Escherichia coli,*" *Communications Biology* **2025** 940 (8)

[7] Varga Z, **Hofmann JL**, Swan JW. "Modelling a hydrodynamic instability in freely settling colloidal gels," *Journal of Fluid Mechanics* [cover] **2018** 856, pp. 1014-1044.

[8] Wang,G, Varga Z, **Hofmann JL**, Zarraga IE, Swan JW. "Structure and relaxation in solutions of monoclonal antibodies," *Journal of Physical Chemistry B* **2018** 122 (11).

[9] Afonin KA, Viard M, Kagiampakis I, Case CL, Dobrovolskaia M, **Hofmann JL**, Vrzak A, Kireeva M, Kasprzak WK, KewalRamani VN, Shapiro BA. "Triggering of RNA interference with RNA-RNA, RNA-DNA, and DNA-RNA nanoparticles" *ACS Nano* **2015** (9) 1.

PRESENTATIONS

[1] **Hofmann JL**, "DyAb: sequence-based antibody design and property prediction in a low-data regime" at PEGS Europe, November **2025** (invited)

[2] **Hofmann JL**, "A foundational dataset for high concentration antibody property modeling" at Genentech Computational Sciences Offsite, April **2025**

[3] Sunol AM*, Valverde-Mendez D*, **Hofmann JL**, … Shaevitz JW, Zia RN. "Size- and Charge-Dependent Microrheology in Live Escherichia coli: Impact of Confinement and Macromolecular

Interactions on Particle Dynamics and Localization"

[3a] In *American Institute of Chemical Engineers Annual Meeting,* November **2025**.

[3b] In *Society of Rheology 97th Annual Meeting,* October **2025**.

[2] Zhang Y, Sinha I, **Hofmann JH**, Yang Y. "Unraveling host cell protein – antibody interactions with cross-linking mass spectrometry techniques" at BioProcess International, September **2024**

[3] **Hofmann JL** "An outlook on antibody high-concentration property prediction: from coarse-grained MD to machine learning"

[3a] at 2nd Annual Prescient Design Workshop, September **2023**.

[3b] at Roche Developability Workshop, September **2023**.

[4] **Hofmann JL**, Zia RN. "The roles of stoichiometric crowding and protein-protein interactions in accelerating translation elongation rates in *E. coli*," In *American Physical Society's Annual Meeting*, March **2022**.

[5] Sunol AM, Ryu BK, **Hofmann JL**, Zia RN. "Colloidal hydrodynamics of the bacterial nucleoid and its impact on diffusion and spatial organization in the cytoplasm," In *American Physical Society's Annual March Meeting*, March **2022**.

[6] **Hofmann JL**, Zia RN. "The roles of patchy attractions and Brownian motion in fundamental biological processes in a model cell"

[6a] In *American Physical Society's Annual March Meeting,* March **2021**.

[6b] In *Society of Rheology 91st Annual Meeting Poster Session,* October **2019**.

[7] **Hofmann JL,** "Development of a Network-Aligned Viral Segregation Strategy for the Roche Biologics Manufacturing Network," In *Genentech Summer Poster Day*, **2017**.

[8] **Hofmann JL**, "Triggering of RNA Interference with RNA-RNA, RNA-DNA, and DNA-RNA Nanoparticles,"

[8a] In *NIH Summer Poster Day*, **2014**.

[8b] In *National Interagency Confed. Bio. Research Spring Research Festival*, **2014**.