

Joseph Reda

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Experimental immunologist pairing hands-on wet-lab judgment with heavy day-to-day use of AI and computation to pursue fundamental biological questions, grounded in nearly a decade of immune-tolerance protein engineering.

POSTDOCTORAL RESEARCH

New York University, Tandon School of Engineering, Jeffrey Hubbell Lab

New York, NY

Postdoctoral Associate

March 2025 — Present

- Lead the single-cell multiome and spatial-transcriptomics arm (Aim 2) of a \$300,000 Colton Center for Autoimmunity grant analyzing human rheumatoid-arthritis samples
- Built the lab's computational and HPC infrastructure from the ground up across two campuses (NYU + NYU Langone); train code-naïve colleagues in reproducible, rigorous practice
- Operationalized and validated a released molecular-recognition foundation model on HPC (Python; inference pipeline built with Claude Code) for in-silico protein–protein-interface screening
- Developing lipid-nanoparticle mRNA gene therapies: construct/plasmid design, in vitro-transcribed mRNA production, and QC

University of Chicago, Pritzker School of Molecular Engineering, Jeffrey Hubbell Lab

Chicago, IL

Postdoctoral Scholar

March 2024 — March 2025

- Advanced the efferocytosis fusion-protein platform (antigen–GAS6) for antigen-specific immune tolerance
- Built high-dimensional analysis and visualization workflows to characterize antigen-specific immune responses (spectral flow, single-cell data)

EDUCATION

University of Chicago, Pritzker School of Molecular Engineering, Jeffrey Hubbell Lab

Chicago, IL

Doctor of Philosophy in Molecular Engineering

2018 — 2024

- **Doctoral Dissertation:** *Recombinant Fusions of Antigen with Mediators of Efferocytosis Modulate Antigen-Specific Immune Responses*

University of Miami, College of Engineering

Coral Gables, FL

Bachelor of Science in Biomedical Engineering, Summa Cum Laude

Class of 2018

- **Concentration:** Biomaterials and Tissue Engineering | **Minor:** Mathematics

GRANTS & FUNDING

Colton Center for Autoimmunity Grant

PI: Jeffrey Hubbell | \$300,000 | Responsible for Aim 2: scMultiome on human RA patient samples

2026

HONORS & AWARDS

AAI Trainee Abstract Award

American Association of Immunologists IMMUNOLOGY2024 Conference

May 2024

The Maria Lastra Graduate Student Excellence in Mentoring Award

Pritzker School of Molecular Engineering

December 2023

- Awarded “[in] recognition of their contributions as an exemplary mentor in the Pritzker School of Molecular Engineering, supporting the personal growth, professional development, and academic success of students.”

Distinguished Leadership and Service Award

University of Chicago Graduate Council

2021 — 2022

LEADERSHIP EXPERIENCE

Model United Nations, University of Miami

Coral Gables, FL

Head Delegate

2016 — 2018

- Head Delegate for world-ranked team (2016–2017 school year)

Graduate Council, University of Chicago

Chicago, IL

Vice President, Health & Wellness Initiatives

2021 — 2022

PUBLICATIONS

Google Scholar: 436 citations · h-index 9 · i10-index 9 (July 2026)

In revision:

Budina, E., Reda, J. W., Refvik, K. C., Luehr, J., Berg, B. T., Chun, H.-R., Beckman, T. N., Solanki, A., Nguyen, M., Reda, S. N., Foley, C. R., Vuong, I., Lauterbach, A. L., Hultgren, K., Gomes, S., Ishihara, J., Volpatti, L. R., & Hubbell, J. A. (in revision). Albumin-fused interleukin-10 prevents neuroinflammation by promoting immunoregulation in the secondary lymphoid organs.

1. Volpatti, L. R., Norton de Matos, S., Borjas, G., Beckman, T. N., Reda, J. W., et al. (2026). LDL-binding IL-10 reduces vascular inflammation in atherosclerotic mice. *Nature Biomedical Engineering*, 1-12.
2. Gómez Medellín, J. E., Ung, T. W. M., Wang, T., Chang, K., Reda, J. W., et al. (2025). Liver-targeted allergen immunotherapy rapidly and safely induces antigen-specific tolerance to treat allergic airway disease in mice. *Science Translational Medicine*, 17(794), eadl0406.
3. Budina, E., Reda, J. W., Cao, S., Watkins, E. A., et al. (2025). Activity-attenuated serum albumin-fused interleukin-33 suppresses experimental autoimmune encephalomyelitis. *Cell Reports Medicine*, 6(7).
4. Beckman, T. N., Volpatti, L. R., Norton de Matos, S., Reda, J. W., et al. (2025). A prometabolite strategy inhibits cardiometabolic disease in an ApoE^{-/-} murine model of atherosclerosis. *JCI Insight*, 10(15), e191090.
5. Budina, E., Refvik, K. C., Kane Berg, B. T., Reda, J. W., Beckman, T. N., Solanki, A., et al. (2025). Subcutaneous Administration of Engineered Interleukin-10 Prevents Experimental Autoimmune Encephalomyelitis. *The Journal of Immunology*, 214(Supplement_1), vkaf283.2551.
6. Cao, S., Budina, E., Racz, M. M., Solanki, A., Nguyen, M., Beckman, T. N., Reda, J. W., Hultgren, K., Ang, P., Slezak, A. J., et al. (2024). A serine-conjugated butyrate prodrug with high oral bioavailability suppresses autoimmune arthritis and neuroinflammation in mice. *Nature Biomedical Engineering*, 1-17.
7. Reda, J. (2024). Recombinant Fusions of Antigen with Mediators of Efferocytosis Modulate Antigen-Specific Immune Responses (Doctoral dissertation, The University of Chicago).
8. Tremain, A. C., Wallace, R. P., Lorentz, K. M., Thornley, T. B., Antane, J. T., Racz, M. R., Reda, J. W., Alpar, A. T., Slezak, A. J., Watkins, E. A., et al. (2023). Synthetically glycosylated antigens for the antigen-specific suppression of established immune responses. *Nature Biomedical Engineering*, 7(9), 1142-1155.
9. Lauterbach, A. L., Wallace, R. P., Alpar, A. T., Refvik, K. C., Reda, J. W., Ishihara, A., et al. (2023). Topically-applied collagen-binding serum albumin-fused interleukin-4 modulates wound microenvironment in non-healing wounds. *NPJ Regenerative Medicine*, 8(1), 49.
10. Medellín, J. E. G., Ung, T. W. M., Kurtanich, T. R., Reda, J. W., Wang, T., Chang, K., et al. (2023). Prophylactic and therapeutic use of synthetically glycosylated antigens to limit allergic airway disease. *The Journal of Immunology*, 210(1_Supplement), 67.23-67.23.
11. Volpatti, L. R., Reda, J., Borjas, G., Zhou, Z., Fang, Y., & Hubbell, J. (2023). Engineered cytokines target atherosclerotic plaques and locally suppress inflammation. *The Journal of Immunology*, 210(1_Supplement), 249.08-249.08.
12. Volpatti, L. R., Wallace, R. P., Cao, S., Racz, M. M., Wang, R., Gray, L. T., Alpar, A. T., Briquez, P. S., Mitrousis, N., Marchell, T. M., et al. (2021). Polymersomes decorated with the SARS-CoV-2 spike protein receptor-binding domain elicit robust humoral and cellular immunity. *ACS Central Science*, 7(8), 1368-1380.
13. Gray, L. T., Racz, M. M., Briquez, P. S., Marchell, T. M., Alpar, A. T., Wallace, R. P., Volpatti, L. R., Sasso, M. S., Cao, S., Nguyen, M., et al. (2021). Generation of potent cellular and humoral immunity against SARS-CoV-2 antigens via conjugation to a polymeric glyco-adjuvant. *Biomaterials*, 278, 121159.
14. Maulloo, C. D., Cao, S., Watkins, E. A., Racz, M. M., Solanki, A. S., Nguyen, M., Reda, J. W., Shim, H.-N., Wilson, D. S., Swartz, M. A., et al. (2021). Lymph node-targeted synthetically glycosylated antigen leads to antigen-specific immunological tolerance. *Frontiers in Immunology*, 12, 714842.
15. Yuba, E., Budina, E., Katsumata, K., Ishihara, A., Mansurov, A., Alpar, A. T., Watkins, E. A., Hosseini, P., Reda, J. W., Lauterbach, A. L., et al. (2021). Suppression of rheumatoid arthritis by enhanced lymph node trafficking of engineered interleukin-10 in murine models. *Arthritis & Rheumatology*, 73(5), 769-778.
16. Ishihara, A., Ishihara, J., Watkins, E. A., Tremain, A. C., Nguyen, M., Solanki, A., Katsumata, K., Mansurov, A., Budina, E., Alpar, A. T., et al. (2021). Prolonged residence of an albumin-IL-4 fusion protein in secondary lymphoid organs ameliorates experimental autoimmune encephalomyelitis. *Nature Biomedical Engineering*, 5(5), 387-398.
17. Besser, R. R., Bowles, A. C., Allassaf, A., Carbonero, D., Claire, I., Jones, E., Reda, J., Wubker, L., Batchelor, W., & Ziebarth, N. (2020). Enzymatically crosslinked gelatin-laminin hydrogels for applications in neuromuscular tissue engineering. *Biomaterials Science*, 8(2), 591-606.

CONFERENCE PRESENTATIONS

American Association of Immunologists Annual Meeting

Poster Presentation
Boston, MA

April 2026

Autumn Immunology Conference

Poster & Oral Presentation

November 2025

Chicago, IL

Autumn Immunology Conference

Poster & Oral Presentation

November 2024

Chicago, IL

American Association of Immunologists Annual Meeting

Poster & Oral Presentation

May 2024

Chicago, IL

- Recipient, AAI Trainee Abstract Award

Autumn Immunology Conference

Poster & Oral Presentation

November 2023

Chicago, IL

TEACHING & MENTORSHIP EXPERIENCE

University of Chicago Pritzker School of Molecular Engineering | Nanomedicine

Guest Lecturer

February 2024

Delivered lecture: "Introduction to Immunoengineering"

City Colleges of Chicago Summer Immersion Program | Immunoengineering Module

Section Lead

August 2021, August 2022

Led 4-day immunoengineering curriculum combining lecture instruction with hands-on laboratory activities

University of Chicago Biological Sciences Division | Molecular Immunology

Teaching Assistant

Spring 2021

- Designed and delivered virtual pre-lecture and facilitated live discussion re: Cytokine Receptor Signaling

Chicago Center for Teaching and Learning | College Teaching Certificate

Certificate Completed

Spring 2026

Chicago Center for Teaching and Learning | Fundamentals of Teaching: The Science Teacher's Toolkit

Workshop Completed

Winter 2021

- Developed skills and contextual knowledge that empowers me to deliver effective lesson plans

University of Chicago Pritzker School of Molecular Engineering | Mentor Training Series

Winter 2020

University of Chicago Pritzker School of Molecular Engineering | Nanomaterials

Teaching Assistant

Winter 2020

- Delivered one live lecture re: antigen-specific immunological tolerance

University of Chicago Pritzker School of Molecular Engineering | Biological Materials

Teaching Assistant

Autumn 2019

- Delivered two (2) live lectures re: Glycosaminoglycans and Composites

University of Miami | IMPACT Leadership Retreat

Facilitator and Coordinator

Spring 2015 — Fall 2016

Illinois Mathematics and Science Academy | Consideration in Ethics Facilitator

2013 — 2014

- Facilitated monthly ethics discussions exploring utilitarianism, Kantianism, Confucianism, and other ethical frameworks
- Led debates probing the limits of ethical systems for decision-making, including applications to STEM research

LANGUAGES, SKILLS & INTERESTS

Languages: Conversational proficiency in Spanish & Portuguese; Basic Italian**Skills:** Assay Design, Protein Engineering and Purification, In Vivo Experimentation, Experimental Design, Single-cell RNA-seq (Seurat), High-dimensional Flow Cytometry (25-color spectral), Bioinformatics, Data Visualization, R/Bioconductor, Python, HPC (Slurm), Claude Code & agentic AI workflows, Foundation-model

application, Surface Plasmon Resonance, Rheological Analysis, Polymer Synthesis, Computer-Aided Design, Adobe Creative Suite, Additive Manufacturing, Science Communication

Interests: AI & Machine Learning, International Relations, Languages, Knowledge Systems, Horticulture, Running, Photography, Graphic Design, Music, Mental Health, Mindfulness