Mingyu Yang, Ph.D.

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Academic Appointments

2024-Present **Assistant Teaching Professor**, Cell and Developmental Biology
School of Biological Sciences
University of California San Diego

Education

2019-2024 **Ph.D.**, Medical Engineering & Medical Physics
Harvard-MIT Health Sciences & Technology
Advisors: Krystyn Van Vliet, Aristide Gumyusenge

2015-2019 **B.S.**, Materials Science & Engineering and Cognitive Science
Johns Hopkins University
Advisors: Hai-Quan Mao, Barbara Landau

Awards

2022 **Hugh Hampton Young Fellowship**, Massachusetts Institute of Technology

2022 **Koch Institute Image Award** (w/ Anna Jagielska, Ph.D.), Massachusetts Institute of Technology

2021 **Angela Leong Fellowship**, Massachusetts Institute of Technology

2019 **Christopher J. Pinto Memorial Award**, Johns Hopkins University

2019 **Materials Science & Engineering Achievement Award**, Johns Hopkins University

2019 **Excellence in Cognitive Science Award**, Johns Hopkins University

2018 **Provost's Undergraduate Research Award**, Johns Hopkins University

Publications

Peer-Reviewed Publications (*denotes corresponding author, ⁺denotes undergraduate mentee)

2026 Hall H.⁺, **Yang M.*** Making sense of ATP hydrolysis: How students reconcile conflicting ideas from chemistry and biology. *Journal of Microbiology & Biology Education*

2025 **Yang M.***, Armpriest B.C.⁺, Wright L.K., Newman D.L. Visual representations of energy and chemical bonding in biology and chemistry textbooks: A case study of ATP hydrolysis. *Biochemistry and Molecular Biology Education.* **Cover Feature**

2025 **Yang M.**, Martin C.J.L.⁺, Kowsari K., Jagielska A., Van Vliet K.J. Myelin ensheathment and drug responses of oligodendrocytes are modulated by stiffness of artificial axons. *PLOS One*

2024 **Yang M.**, Keumurian F.J., Neufeld C., Skrip E., Duguid J., Vega-Mercado H., Rao R.P., Rolle M.W., Springs S.L., Wolfrum J.M., Barone P.W., Van Vliet K.J. Upskilling the cell therapy manufacturing workforce: design, implementation, and evaluation of a massive open online course. *Advances in Physiology Education*

2023 Jagielska A., Radzwill K., Espinosa-Hoyos D., **Yang M.**, Farley J.E., Giera S., Kowsari K., Byrne A., Sheng Q., Fang N.X., Dodge J.C., Pedraza C.E., Van Vliet K.J. Artificial axons - a biomimetic 3D myelination platform for the discovery and validation of pro-myelinating compounds. *Scientific Reports*

2022 **Yang M.**, Kowsari K., Myrie N.O., Espinosa-Hoyos D., Jagielska A., Kim S., Fang N.X., Van Vliet K.J. Additive manufacturing of high aspect-ratio structures with self-focusing photopolymerization. *Light: Advanced Manufacturing*

2020 Li X., Zhang C., Haggerty A.E., Yan J., Lan M., Seu M., **Yang M.**, Marlow M.M., Maldonado Lasunción Iné., Cho B., Zhou Z., Chen L., Martin R., Nitobe Y., Yamane K. You H. Reddy S., Quan D.P., Oudega M., Mao H.Q. The effect of a nanofiber-hydrogel composite on neural tissue repair and regeneration in the contused spinal cord. *Biomaterials*

Book Chapters, Op-Eds, and Other Publications

In Press Esparza D., Amin N.E., Frings F.G., Halmo S., Hazlett Z.S., Heim A.B., Uminski C., Von der Mehden B., Wright A.M., **Yang M.** For trainees, by trainees: Supporting discipline-based education research scholars-in-training through career transitions with inclusive, accessible professional development. Book chapter in *Understanding Membership Diversity and Supporting Equitable STEM Communities: Scientific Societies and Professional Organizational Case Studies*

2021 **Yang M.**, Farruggio C.C., Baidoo J.E., Lindemann W.R., Rosenberg E.R., Kundargi R. Kitchen Matters: Virtual materials science outreach through food and cooking. Op-ed in *Matter*

Presentations and Talks

Contributed Oral Presentations

2026 Hall H., **Yang M.** Visual representations in biology may influence problem solving in chemistry. Talk given by Hall H. at *SABER West,* Irvine, CA.

2025 Nallani A., Sujith S., Armpriest B.C., Wright L.K., Newman D.L., **Yang M.** Visual representations of ATP hydrolysis influence student explanations of chemical energetics and bonding. Talk given at *SABER West,* Irvine, CA.

2023 **Yang M.**, Armpriest B.C., Wright L.K., Newman D.L. Conflicting representations of bond breaking and formation in biology and chemistry textbooks: A case study of ATP hydrolysis. Talk given at *SABER Annual Meeting*, Minneapolis, MN. **Travel Award**

2023 **Yang M.**, Wright K. L., Newman D.L. Conflicting representations of bond breaking and formation in chemistry and biology textbooks: A case study of ATP hydrolysis. Talk given at *X-DBER Conference*, Virtual

2019 Shelton A., Cortesa C., **Yang M.**, Landau B. Mental simulation of block construction aligns with physical construction biases. Talk given by Shelton A. at the *Psychonomic Society Annual Meeting*, Montréal, Canada

2017 Wainwright E, **Yang M.**, Vummidi S.L., Weihs T.P. Tuning the ignition threshold of ball-milled Al:Zr nanocomposite powders independent of powder size. Talk given by Wainwright E. at *Materials Research Society (MRS) Fall Meeting & Exhibit*, Boston, MA

Contributed Poster Presentations

2023 **Yang M.**, Kowsari K., Jagielska A., Van Vliet K.J. Myelin ensheathment and drug response of oligodendrocytes are modulated by stiffness of artificial axons. Poster presented at *European Glia Conference*, Berlin, Germany

2022 **Yang M.**, Jagielska A., Kowsari K., Espinosa-Hoyos D., Radzill K., Giera S., Ralvenius W., Kim S., Tsai L.H., Fang L.X., Van Vliet K.J. Artificial Axons: An *in vitro* platform for discovering the drivers of myelination and demyelination. Poster presented at *Myelin Gordon Research Conference*, Tuscany, Italy

2018 Davis E.E., Vijay A., **Yang M.**, Landau B. The intersection of perception and mental verbs in development. Poster presented by Davis E.E. at *Society for Philosophy and Psychology (SPP),* Baltimore, MD

Invited and Other Talks

2024 *Making sense of ATP: How students reconcile conflicting ideas across chemistry and biology.* Science of Teaching Symposium, University of California San Diego, San Diego, CA

2021 *Growing the cell therapy manufacturing workforce: virtual and hands-on upskilling*. Biomanufacturing @ MIT Center for Biomedical Innovation (CBI) Research Seminar Series, Cambridge, MA

Public-Facing Talks and Science Outreach

2024 **Yang M.**, Schwacke M., Dong J., Cai T. Science of marshmallow. Talk given at MIT Open Space LEAP Lab, Cambridge, MA

2023 **Yang M.**, Farruggio C.C., Schwacke M., Baidoo J. Science of marshmallow. Talk given at MIT Winter Family Day, Cambridge, MA

2023 **Yang M.**, How does language affect thought? Talk given at the *MIT Department of Materials Science & Engineering Student Seminar Series*, Cambridge, MA

2022 Jagielska A., **Yang M.**, Van Vliet K.J. Astrocyte highways: The secret garden of the central nervous system. Talk given at the *MIT Koch Institute Image Awards*, Cambridge, MA

2021 **Yang M.**, Farruggio C.C. Swell gels: Using Jell-O science to engineer cell therapies. Talk given at Cambridge Public Library, Cambridge, MA

Teaching

Teaching by course

BILD 5 Data Analysis & Design for Biologists
Spring 2025 • Winter 2026

BIPN 100 Human Physiology I
Winter 2025 • Spring 2025 • Summer 2025 • Fall 2025 • Winter 2026 • Spring 2026

BIPN 103 Human Anatomy w/ Lab
Fall 2025 • Spring 2026

Teaching by quarter

Quarter	Course		Enrollment
Spring 2026	BIPN 100	Human Physiology I	TBD
Spring 2026	BIPN 103	Human Anatomy w/ Lab (co-taught with Carlos Rojo)	TBD
Winter 2026	BIPN 100	Human Physiology I	245
Winter 2026	BILD 5	Data Analysis & Design for Biologists	344
Fall 2025	BIPN 100	Human Physiology I	213
Fall 2025	BIPN 103	Human Anatomy w/ Lab (co-taught with Carlos Rojo)	48
Summer 2025	BIPN 100	Human Physiology I	89
Spring 2025	BILD 5	Data Analysis & Design for Biologists	183
Spring 2025	BIPN 100	Human Physiology I	142
Winter 2025	BIPN 100	Human Physiology I	130

Online Course Development

Co-Instructor, Massachusetts Institute of Technology

7.03.3x Genetics: Population Genetics and Human Traits
Instructors: Gehring M., Corradin O., Wiltrout M.E., Gordon D.G., Friend C.M., **Yang M.**

7.03.2x Genetics: Analysis and Applications
Instructors: Reddien P.W., Gehring M., Wiltrout M.E., Gordon D.G., Friend C.M., **Yang M.**

7.03.1x Genetics: The Fundamentals
Instructors: Hemann M.T., Reddien P.W., Wiltrout M.E., Gordon D.G., Friend C.M., **Yang M.**

7.06.3x Cell Biology: Cell-Cell Interactions
Instructors: Lamason R.L., Lourido S., Wiltrout M.E., Gordon D.G., Friend C.M., **Yang M.**

7.06.2x Cell Biology: Cytoskeleton and Cell Cycle
Instructors: Cheeseman I.M., Wiltrout M.E., Gordon D.G., Friend C.M., **Yang M.**

7.06.1x Cell Biology: Transport and Signaling
Instructors: Cheeseman I.M., Wiltrout M.E., Gordon D.G., Friend C.M., **Yang M.**

20.373x Making a Cell Therapy: Principles and Practice of Manufacturing
Instructors: Van Vliet K.J., Barone P.W., Neufeld C., Springs S.L., Wolfrum J.M., **Yang M.**