William F. Li

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Education

Harvard Medical School — Boston, MA
M.D. — 2024 – 2032 (expected)
Harvard/MIT MD-PhD Program

Massachusetts Institute of Technology — Cambridge, MA
B.S. Physics and Computer Science & Engineering — 2020 – 2024
GPA: 5.00/5.00, Phi Beta Kappa, minor in Biology

Research

Harvard Department of Chemistry and Chemical Biology — 2024 – present
Research Assistant

- PI: Xiaowei Zhaung
- Research topic:
  - Imaging technologies for spatial biology

Broad Institute of MIT and Harvard — 2022 – 2024
Undergraduate Researcher

- PI: Manolis Kellis (Computational Biology Group)
- Research topics:
  - Genetic basis of Alzheimer's disease heterogeneity
  - Methods for enhancing polygenic score prediction

MIT Research Laboratory of Electronics — 2020 – 2022
Undergraduate Researcher

- PIs: Marin Soljačić (Photonics and Modern Electro-Magnetics Group), Steven Johnson (Nanostructures and Computation Group)
- Research topics:
  - X-ray imaging and detection with nanophotonic scintillators
  - Computational imaging with compressed sensing and end-to-end inverse design

Publications

2. Arya G, **Li WF**, Roques-Carmes C, Soljačić M, Johnson SG, Lin Z. End-to-end optimization of metasurfaces for imaging with compressed sensing. *ACS Photonics*. 2024;11(5):2077–2087. doi:10.1021/acsphotonics.4c00259.

1. **Li WF**, Arya G, Roques-Carmes C, Lin Z, Johnson SG, Soljačić M. Transcending shift-invariance in the paraxial regime via end-to-end inverse design of freeform nanophotonics. *Optics Express.* 2023;31(15):24260-24272. doi:10.1364/OE.492553. Editors' Pick.

Patents

1. Roques-Carmes C, Rivera N, Lin Z, **Li WF**, Soljačić M, inventors; Massachusetts Institute of Technology, assignee. Nanophotonic Scintillators for High-Energy Particles Detection, Imaging, and Spectroscopy. U.S. Provisional Application 63/257,611. October 2021.

Presentations

3. **Li WF**, Roques-Carmes C, Lin Z, Johnson SG, Soljačić M. X-ray spectroscopy with end-to-end optimized nanophotonic scintillators. Extended abstract presented at: Conference of Lasers and Electro-Optics; May 10, 2023; San Jose, CA

2. **Li WF**, Tanigawa Y, Kellis M. Polygenic dissection of phenotypic heterogeneity in Alzheimer's disease. Poster presented at: Broad Institute Scientific Retreat; December 13, 2022; Boston, MA.

1. **Li WF**, Arya G, Roques-Carmes C, Lin Z, Johnson SG, Soljačić M. Angular and Spectral Sparse Sensing With End-to-End Optimized Nanophotonics. Extended abstract presented at: Conference of Lasers and Electro-Optics; May 18, 2022; San Jose, CA.

Awards

- Phi Beta Kappa 2024
- Sigma Pi Sigma 2024
- Gates Cambridge Scholarship Finalist 2024
- Optics Express Editors' Pick 2023
- MIT SuperUROP Outstanding Research Award 2023
- Eric and Wendy Schmidt Center funded Research and Innovation Scholar 2022 – 2023
- USA Astronomy and Astrophysics Team 2020
- 2-time USA Mathematical Olympiad (USAMO) Qualifier 2019, 2020
- U.S. Physics Team 2019
- Sunshine State Scholar 2019

Service

Massachusetts General Hospital 2022 – 2024
Volunteer in Patient Transport and Emergency Department

MIT Department of Physics 2021 – 2024
Scribe, Tutor

UPchieve 2022 – 2023
Volunteer Tutor

MIT Students for Open and Universal Learning 2022 – 2023
Biology and Chemistry Lead

Leadership and Activities

- Undergraduate: Genomics Journal Club (founder, president), MIT Premedical Society (collegiate relations co-chair), Sigma Pi Sigma, Phi Beta Kappa
- High School: Florida Student Association of Mathematics (state co-president), Mu Alpha Theta (president), Science National Honor Society (president), Orchestra (all-county principal cello), Swim (varsity team)