

# Gino Occhialini

POSTDOCTORAL SCHOLAR · CALIFORNIA INSTITUTE OF TECHNOLOGY

✉ gino@caltech.edu | 🎓 Gino Occhialini

## Education

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### Massachusetts Institute of Technology (MIT)

Ph.D. Chemistry (GPA: 5.00/5.00)

Advisor: Alison Wendlandt

NSF Graduate Research Fellow

Cambridge, MA

Aug. 2018 - Sept. 2024

### University of Texas at Dallas (UTD)

B.S. Chemistry (GPA: 4.00/4.00)

Graduation Honors: Major Honors with Distinction, Summa Cum Laude

Richardson, TX

Aug. 2014 - May 2018

## Research Experience

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### Postdoctoral Scholar

Reisman Lab, Division of Chemistry and Chemical Engineering, Caltech

Development of new synthetic methods for the construction of complex molecules

Pasadena, CA

Jan. 2025 - Present

### Research Assistant

Wendlandt Lab, Department of Chemistry, MIT

Development of light-driven stereo- and positional editing tools

- Internal to terminal positional olefins isomerization
- Pyranoside stereoediting methodology + mechanistic studies
- Terminal-selective, acceptorless dehydrogenation
- Whole-reaction kinetic modeling, network dynamics + complex reaction profiles (with Dr. Eugene Kwan, Merck)
- Time-resolved spectroscopy of decatungstate-catalyzed reactions (with Prof. Gabriela Schlau-Cohen, MIT)

Heterocycle-specific C—H functionalization of pyridazines (with Bristol Myers Squibb)

Cambridge, MA

Aug. 2018 - Sept. 2024

### Undergraduate Research Assistant

Smaldone Lab, Department of Chemistry, UT Dallas

Synthesis and characterization of novel covalent organic frameworks

- Understanding the role of monomer electronics and planarity on COF formation
- Novel COF topologies to enhance gas adsorption properties

Richardson, TX

July 2015 - Aug. 2018

### Summer Undergraduate Research Fellow

Sieglwart Lab, Simmons Cancer Center, UT Southwestern

Synthesis and characterization of turn-on fluorescent probes for cancer diagnosis and imaging.

Dallas, TX

Summer 2016

## Teaching Experience

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### Massachusetts Institute of Technology

Teaching Assistant - Organic Chemistry I (5.12)

Head teaching assistant (Spring 2019) for team of 9 graduate student TAs

Outstanding Teaching Award (2019)

Cambridge, MA

Aug. 2018 - May 2019

### University of Texas at Dallas

Teaching Assistant - Honors Organic Chemistry I & II (CHEM2327, CHEM2328)

Outstanding Undergraduate TA Award (2018)

Richardson, TX

Aug. 2015 - May. 2018

Teaching Assistant - Anatomy & Physiology I (BIOL3455)

Jan. 2016 - Dec. 2016

Teaching Assistant - Biochemistry I (BIOL3361)

Aug. 2015 - May. 2016

## Peer-Reviewed Publications

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† indicates equal contribution

Zhang, S.; **Occhialini, G.**; Carder, H. M.; de Kleijne, F. F. J.; Wendlandt, A. E. Steady state tuning under kinetic network control: selective epimerization of GlcNAc to GalNAc. *Under Evaluation—Nature Chem.*

Carder, H. M.†; **Occhialini, G.†**; Bistoni, G.; Riplinger, C.; Kwan, E. E.; Wendlandt, A. E. The sugar cube: Network control and emergence in stereoediting reactions. *Science* **2024**, 385, 456–463.

Gu, X.†; Zhang, Y.-A.†; Wang, L.; Ye, X.; **Occhialini, G.**; Barbour, J.; Pentelute, B. L.; Wendlandt, A. E. Synthesis of Non-Canonical Amino Acids through Dehydrogenative Tailoring. *Nature* **2024**, 634, 456–463.

**Occhialini, G.**; Palani, V.; Wendlandt, A. E. Catalytic, contra-thermodynamic positional alkene isomerization. *J. Am. Chem. Soc.* **2022**, 144, 145–152.

Thompson, C. M. †; **Occhialini, G.†**; McCandless, G. T.; Alahakoon, S. B.; Cameron, V.; Nielsen, S. O.; Smaldone, R. A. Computational and Experimental Studies on the Effects of Monomer Planarity on Covalent Organic Framework Formation. *J. Am. Chem. Soc.* **2017**, 139, 10506–10513.

Alahakoon, S. B.†; **Occhialini, G.†**; McCandless, G. T.; Karunathilake, A. A. K.; Nielsen, S. O.; Smaldone, R. A. Experimental and theoretical insight into the effect of fluorine substituents on the properties of azine linked covalent organic frameworks. *CrystEngComm* **2017**, 19, 4882–4885.

Xiong, H.; Zuo, H.; Yan, Y.; **Occhialini, G.**; Zhou, K.; Wan, Y.; Siegwart, D. J. High-contrast fluorescence detection of metastatic breast cancer including bone and liver micrometastases via size-controlled pH-activatable water-soluble probes. *Adv. Mat.* **2017**, 29, 1700131.

Alahakoon, S. B.; Thompson, C. M.; **Occhialini, G.**; Smaldone, R. A. Design principles for covalent organic frameworks in energy storage applications. *ChemSusChem* **2017**, 10, 2116–2129

Alahakoon, S. B.; Thompson, C. M.; Nguyen, A. X.; **Occhialini, G.**; McCandless, G. T.; Smaldone, R. A. An azine-linked hexaphenylbenzene based covalent organic framework. *Chem. Comm.* **2016**, 52, 2843–2845

## Honors & Fellowships

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- 2024 **Leadership Award**, MIT Chemistry
- 2024 **Chemistry Fellowship**, MIT Chemistry
- 2020 **National Science Foundation Graduate Research Fellow**, NSF
- 2020 **Strem Family Fellowship**, MIT Chemistry
- 2019 **Outstanding Teaching Award**, MIT Chemistry
- 2019 **Kenneth M. Gordon Fellowship**, MIT Chemistry
- 2018 **John P. Ferraris Research Excellence Award**, UT Dallas Chemistry
- 2018 **Hertz Fellowship Semifinalist**, Hertz Foundation
- 2018 **Patty Henry Pinch Scholarship**, UT Dallas
- 2018 **Outstanding Undergraduate TA**, UT Dallas School of Natural Sciences and Mathematics
- 2017 **Goldwater Scholarship**, Goldwater Foundation
- 2017 **Outstanding Undergraduate Student**, ACS, DFW Chapter
- 2017 **Cyrus Cantrell III Grant**, UT Dallas Phi Kappa Phi
- 2016 **Undergraduate Research Scholar Award**, UT Dallas
- 2014 **Academic Excellence Scholarship**, UT Dallas
- 2014 **Collegium V Honors Program**, UT Dallas

## Skills

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<b>Safety</b>	safe handling of pyrophoric, reactive, and toxic reagents
<b>Synthesis</b>	organic and organometallic synthesis, moisture and air sensitive reactions
<b>Mechanism</b>	chemical kinetics, calorimetry, reactIR, isotope effects, linear free energy studies
<b>Purification</b>	normal and reverse phase purification (column and preparative HPLC)
<b>Spectroscopy</b>	NMR, MassSpec, FTIR, HPLC, transient absorption, UV-Vis, polarimetry, X-ray crystallography
<b>Computation</b>	density functional theory, transition state theory, molecular dynamics
<b>Programming</b>	python, julia, bash, linux operating system, high-performance computing, web design