

# David C. Miller

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## Education and Research Experience

<b>California Institute of Technology</b> Ruth L. Kirschstein NRSA Postdoctoral Fellow Adviser: Frances H. Arnold	<i>Pasadena, CA 2018-Present</i>
<b>Princeton University</b> Degree Awarded: Ph.D., Chemistry Adviser: Robert R. Knowles	<i>Princeton, NJ 2013-2018</i>
<b>Johns Hopkins University</b> Degree Awarded: B.A. with Honors, Chemistry Advisers: Thomas C. Lectka and Tyrel M. McQueen	<i>Baltimore, MD 2009-2013</i>

## Awards and Honors

<b>NIH Ruth L. Kirschstein NRSA Postdoctoral Fellowship</b> California Institute of Technology	<i>2018</i>
<b>Arthur A. Patchett '51 Graduate Fellowship in Chemistry</b> Princeton University	<i>2017</i>
<b>Bristol-Myers Squibb Graduate Research Fellowship</b> Princeton University	<i>2016</i>
<b>Chemistry Department Citation for Academic Excellence</b> Princeton University	<i>2014</i>
<b>General University Honors</b> Johns Hopkins University	<i>2012</i>
<b>Chemistry Department Honors</b> Johns Hopkins University	<i>2012</i>

## Presentations and Conferences

<b>Caltech Center for Molecular and Cellular Medicine</b> Research Presentation	<i>2021</i>
<b>Bristol-Myers Squibb Research Symposium</b> Research Presentation	<i>2016</i>
<b>Gordon Research Conference: Heterocyclic Compounds</b> Poster Presentation	<i>2016</i>

## Teaching Experience

<b>Certificate of Interest in University Teaching</b> California Institute of Technology (via Caltech CTLO)	<i>2020</i>
<b>Lab Instructor, Chem 303 &amp; Chem 304: Organic Chemistry I/II</b> Princeton University	<i>2014-2015</i>
<b>Lab Supervisor, Chem 303: Organic Chemistry I</b> Princeton University	<i>2014-2015</i>
<b>Head Teaching Assistant, AS.030.225: Organic Chemistry Laboratory</b> Johns Hopkins University	<i>2013</i>
<b>Teaching Assistant, AS.030.225: Organic Chemistry Laboratory</b> Johns Hopkins University	<i>2012</i>

## Publications

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14. **Miller, D.C.**; Lal, R.G.; Marchetti, L.A.; Arnold, F.H. Biocatalytic One-Carbon Ring Expansion of Aziridines to Azetidines via a Highly Enantioselective [1,2]-Stevens Rearrangement. *ChemRxiv*. **2022**, DOI:10.33774/chemrxiv-2021-8fq9b-v3
13. **Miller, D.C.**; Athavale, S.V.; Arnold, F.H. Combining chemistry and protein engineering for new-to-nature biocatalysis. *Nature Synthesis*, **2022**, *1*, 18.  
DOI:10.1038/s44160-021-00008-x
12. **Miller, D.C.**; Ganley, J.M.; Musacchio, A.J.; Sherwood, T.C.; Ewing, W.R.; Knowles, R.R. Anti-Markovnikov Hydroamination of Unactivated Alkenes with Primary Amines. *J. Am. Chem. Soc.* **2019**, *141*, 16590.  
DOI: 10.1021/jacs.9b08746
11. Brandenberg, O.F.; **Miller, D.C.**; Markel, U.; Chaib, A.O.; Arnold, F.H. Engineering Chemoselectivity in Hemoprotein-Catalyzed Indole Amidation. *ACS Catal.* **2019**, *9*, 8271.  
DOI: 10.1021/acscatal.9b02508
10. Biegasiewicz, K.F.; Cooper, S.J.; Emmanuel, M.A.; **Miller, D.C.**; Hyster, T.K. Catalytic promiscuity enabled by photoredox catalysis in nicotinamide-dependent oxidoreductases. *Nature Chemistry*, **2018**, *10*, 770.  
DOI: 10.1038/s41557-018-0059-y
09. Choi, G.J.; Zhu, Q.; **Miller, D.C.**; Gu, C.J.; Knowles, R.R. Proton-Coupled Electron Transfer in Organic Synthesis: Fundamentals, Applications, and Opportunities. *Nature*, **2016**, *539*, 268.  
DOI: 10.1038/nature19811
08. **Miller, D.C.**; Tarantino, K.T.; Knowles, R.R. Proton-Coupled Electron Transfer in Organic Synthesis: Fundamentals, Applications, and Opportunities. *Top Curr. Chem.* **2016**, *374*, 30.  
DOI: 10.1007/s41061-016-0030-6
07. **Miller, D.C.**; Choi, G.J.; Orbe, H.O.; Knowles, R.R. Catalytic Olefin Hydroamidation Enabled by Proton Coupled Electron Transfer. *J. Am. Chem. Soc.* **2015**, *137*, 13492.  
DOI: 10.1021/jacs.5b09671
06. Tarantino, K.T.; **Miller, D.C.**; Callon, T.A.; Knowles, R.R. Bond-Weakening Catalysis: Conjugate Aminations Enabled by the Soft Homolysis of Strong N-H Bonds. *J. Am. Chem. Soc.* **2015**, *137*, 6640.  
DOI: 10.1021/jacs.5b03428
05. Cottingham, P.; **Miller, D.C.**; Sheckelton, J.P.; Feyenson, M.; Hug, A.; McQueen, T.M. Dynamic Charge Disproportionation in the 1D Chain Material PdTeI. *J. Mater. Chem. C*, **2014**, *2*, 3238.  
DOI: 10.1039/C3TC32051K
04. Bloom, S.P., Pitts, C.R., **Miller, D.C.**, Haselton, N.; Holl, M.G., Urheim, E.; Lectka, T. A Polycomponent Metal-Catalyzed Aliphatic, Allylic, and Benzylic Fluorination. *Angew. Chem. Int. Ed.* **2012**, *51*, 10580.  
DOI: 10.1002/anie.201203642
03. Erb, J.; Strull, J.; **Miller, D.** He, J.; Lectka, T. The Diels-Alder Cyclization of Ketenimines. *Org. Lett.* **2012**, *14*, 2191.  
DOI: 10.1021/ol300742t
02. Caron J.M.; Neilson J.R.; **Miller, D.C.**; Arpino K.; Llobet, A.; McQueen T.M. Orbital Selective Magnetism in the Spin-Ladder Iron Selenides Ba<sub>1-x</sub>KFe<sub>2</sub>Se<sub>3</sub> *Phys. Rev. B*, **2012**, *85*, 180405.  
DOI: 10.1103/PhysRevB.85.180405
01. Caron, J.M.; Neilson J.R., **Miller, D.C.**; Llobet, A.; McQueen, T.M. Iron Displacements in the Antiferromagnetic Spin-Ladder Compound BaFe<sub>2</sub>Se<sub>3</sub> *Phys. Rev. B*, **2011**, *84*, 180409.  
DOI: 10.1103/PhysRevB.84.180409