

# MICHAEL A. KIENZLER

## CONTACT

**Office:** 261 ESRB and 177 Aubert Hall  
University of Maine  
Orono, ME 04469-5706

**Phone:** 207-581-1177

**E-mail:** [michael.kienzler@maine.edu](mailto:michael.kienzler@maine.edu)

## CURRENT POSITION

**Assistant Professor of Chemistry**, University of Maine, Orono  
Graduate Faculty, Graduate School of Biomedical Sciences and Engineering

*Aug. 2016 – present*  
*2016 – present*

## EDUCATION

**Ph.D. Chemistry**, University of California, Berkeley

*Aug. 2005 – May 2010*

Advisor: Dirk Trauner, Ph.D.

Dissertation: “I. Total Synthesis of Smenochromene B and Halenaquinone and II. Studies on the Photochemical and Biological Properties of Azobenzene Photoswitches”

**B.S. Chemistry**, *Magna Cum Laude*, Rensselaer Polytechnic Institute

*Aug. 2001 – May 2005*

Research Advisor: Brian Benicewicz, Ph.D.

## RESEARCH EXPERIENCE

**Post-Doctoral Research**, University of California, Berkeley

*June 2011 – July 2016*

Mentor: Ehud Isacoff, Ph.D.

**Neurobiology Course**, Marine Biological Laboratory, Woods Hole, MA

*Summer 2014*

**Startup Industrial Research**, Photoswitch Biosciences

*Aug. 2010 – June 2011*

**Doctoral Research**, University of California, Berkeley

*Aug. 2005 – Aug. 2008*

*Continued*, Ludwig-Maximilians-Universität (new appointment for Dirk Trauner)

*Aug. 2008 – May 2010*

**Undergraduate Research**, Rensselaer Polytechnic Institute

*Aug. 2002 – May 2005*

## BIBLIOGRAPHY

- Tochitsky, I.\*; [Kienzler, M. A.\\*](#); Isacoff, E.; Kramer, R. H. “Restoring Vision to the Blind with Chemical Photoswitches.” *Chem. Rev.* **2018**, doi: 10.1021/acs.chemrev.7b00723. [Epub ahead of print] \*Equal contributions.
- [Kienzler, M. A.\\*](#); Isacoff, E. Y.\* “Precise modulation of neuronal activity with synthetic photoswitchable ligands” *Curr. Opin. Neurobiol.* **2017**, *45*, 202. \*corresponding authors.
- Mourot, A.; Herold, C.; [Kienzler, M. A.](#); Kramer, R. “Understanding and improving photo-control of ion channels in nociceptors with azobenzene photoswitches.” *Br. J. Pharmacol.* **2018**, *175*, 2296.]
- Berlin, S.; Szobota, S.; Reiner, A.; Carroll, E.C.; [Kienzler, M. A.](#); Guyon, A.; Xiao, T.; Trauner, D.; Isacoff, E.Y. “A Family of Photoswitchable NMDA Receptors.” *eLife* **2016**, *5*, E12040.
- Morita, T.; McClain, S. P.; Batia, L. M.; Pellegrino, M.; Wilson, S. R.; [Kienzler, M. A.](#); Lyman, K.; Olsen, A. S.; Wong, J. F.; Stucky, C. L.; Brem, B. L.; Bautista, D. M. “HTR7 Mediates Serotonergic Acute and Chronic Itch.” *Neuron* **2015**, *87*, 124.
- Carroll, E. C.; Berlin, S.; Levitz, J.; [Kienzler, M. A.](#); Yuan, Z.; Madsen, D.; Larsen, D. S.; Isacoff, E. Y. “Two-photon brightness of azobenzene photoswitches designed for glutamate receptor optogenetics.” *Proc. Natl. Acad. Sci. USA* **2015**, *112*, E776.
- Gaub, B. M.; Berry, M. H.; Holt, A. E.; Reiner, A.; [Kienzler, M. A.](#); Dolgova, N.; Nikonov, S.; Aguirre, G. D.; Beltran, W. A.; Flannery, J. G.; Isacoff, E. Y. “Restoration of visual function by expression of a light-gated mammalian ion channel in retinal ganglion cells or ON-bipolar cells.” *Proc. Natl. Acad. Sci. USA* **2014**, *111*, E5574.

8. Comoglio Y.; Levitz J.; Kienzler, M. A.; Lesage F.; Isacoff, E. Y.; Sandoz, G. "Phospholipase D2 specifically regulates TREK potassium channels via direct interaction and local production of phosphatidic acid." *Proc. Natl. Acad. Sci. USA* **2014**, *111*, 13547.
9. Kienzler, M. A.\*; Reiner, A.\*; Trautman, E.; Yoo, S.; Trauner, D.; Isacoff, E. "A Red-Shifted, Fast-Relaxing Azobenzene Photoswitch for Visible Light Control of an Ionotropic Glutamate Receptor." *J. Am. Chem. Soc.* **2013**, *135*, 17683. \*Equal contributions.
10. Fehrentz, T.; Kuttruff, C.; Huber, F.; Kienzler, M. A.; Mayer, P.; Trauner, D. "Exploring the Pharmacology and Action Spectra of Photochromic Open-Channel Blockers." *Chem. Biochem.* **2012**, *13*, 1746.
11. Mourot, A.\*; Kienzler, M. A.\*; Banghart, M.; Fehrentz, T.; Huber, F.; Stein, M.; Kramer, R.; Trauner, D. "Tuning Photochromic Ion Channel Blockers." *ACS Chem. Neurosci.* **2011**, *2*, 536. \*Equal contributions.
12. Kienzler, M. A.; Suseno, S.; Trauner, D. "Vinyl Quinones as Diels-Alder Dienes: Concise Synthesis of (-)-Halenaquinone." *J. Am. Chem. Soc.* **2008**, *130*, 8604.
13. Rosa, C. P.; Kienzler, M.; Olson, B. S.; Liang, G.; Trauner, D. "Total synthesis of smenochromene B through ring contraction." *Tetrahedron* **2007**, *63*, 6529.

### SCIENTIFIC PRESENTATIONS

1. "Probing the biology of serotonin receptor subtypes using photoswitchable ligands." Poster, Howard Hughes Medical Institute Janelia Conference: Chemical Tools for Complex Biological Systems, *Ashburn, Va, April 2017*.
2. "Chemical Optogenetics: Using Light to Control the Channels and Receptors of the Brain." Seminar, The Jackson Laboratory, *Bar Harbor, ME January 2017*.
3. "Expanding the Visible Light Photoswitch Library: A Red-Shifted, Fast-Relaxing Azobenzene Photoswitch for Reversible Activation of Metabotropic Glutamate Receptors." Poster, Biophysical Society Meeting, *San Francisco, CA February 2014*.
4. "Synthesis and testing of a red-shifted, fast-relaxing, photoswitchable tethered ligand designed for use with modified glutamate receptors." Poster, ACS national meeting, *New Orleans, LA April 2013*.
5. "Synthesis and Characterization of a Red-Shifted, Fast Relaxing, Photo-switchable Tethered Ligand for use in Modified Glutamate Receptors." Poster, Biophysical Society Meeting, *Philadelphia, PA February 2013*.
6. "Total synthesis of smenochromene B." Poster, ACS national meeting, *San Francisco, CA September 2006*.
7. "Synthesis and evaluation of poly(2,5-benzoxazole) as a proton exchange membrane fuel cell candidate." Poster, ACS national meeting, *San Diego, CA March 2005*.

### AWARDS AND AFFILIATIONS

NIH postdoctoral fellowship, grant number F32 EY022840-02	<i>May 2013 – April 2016</i>
Roemer-Stiftung (Award), Ludwig-Maximilians Universität	<i>2008</i>
Phi Lambda Upsilon Honorary Chemical Society	<i>2005</i>
Dean's list at Rensselaer Polytechnic Institute	<i>2001 – 2005</i>
Arthur G. Schultz Award for Undergraduate Research in Organic Chemistry	<i>2004</i>
American Chemical Society member	<i>2005 – present</i>
Biophysical Society member	<i>2013 – 2016</i>
Society for Neuroscience member	<i>2015</i>