

Allie C. Obermeyer

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EDUCATION

University of California, Berkeley 2008 - 2013

Ph.D. in Chemistry, Chemical Biology Graduate Program, GPA: 4.00

Thesis: Development and Application of Oxidative Coupling Bioconjugation Reactions with *ortho*-Amino-phenols

Rice University 2005 - 2008

B.S. in Chemistry, GPA: 4.00, magna cum laude

RESEARCH APPOINTMENTS

Assistant Professor of Chemical Engineering 2017 - present

Columbia University

- Complex coacervation of globular proteins
- Photoresponsive protein-polymer conjugates

Arnold O. Beckman Postdoctoral Fellow with Prof. Bradley Olsen 2014 - 2016

Massachusetts Institute of Technology

- Self assembly of protein-polymer block copolymers
- Coacervate core micelles for sensors and enzymatic catalysis in non-aqueous solution

NSF GRFP Graduate Researcher with Prof. Matthew Francis 2008 - 2013

University of California, Berkeley

- Protein-based materials synthesis and evaluation
- Bioconjugation reaction development

Undergraduate Researcher with Prof. Seiichi Matsuda 2006 - 2008

Rice University

- Characterization of natural products of terpene cyclases

AWARDS

Travel Award, Massachusetts Institute of Technology Postdoctoral Association 2015

Arnold O. Beckman Postdoctoral Fellowship 2015 - 2016

Travel Award, Gordon Research Conference on Bioinspired Materials 2012

Poster Award Winner, RSC 10th International Materials Chemistry Conference 2011

Outstanding Graduate Student Instructor, University of California, Berkeley 2011

National Science Foundation Graduate Research Fellowship 2010 - 2013

Andrew D. Morsey Memorial Award for Teaching Excellence, University of California, Berkeley 2010

Zevi & Bertha Salsburg Award for Excellence in Chemistry, Rice University 2008

Phi Beta Kappa 2008

Trustee Distinguished Scholarship, Rice University 2005 - 2008

PUBLICATIONS

15. Dong, X.; Obermeyer, A.C.; Olsen, B.D. Three-dimensional ordered antibody arrays through self-assembly of antibody-polymer conjugates. *Angew. Chem., Int. Ed.*, **2017**, *56*, 1273-1277.
14. Mills, C.E.; Obermeyer, A.C.; Dong, X.; Kizilay, E.; Walker, J.; Olsen, B.D. Complex coacervate core micelles for the dispersion and stabilization of organophosphate hydrolyase in organic solvents. *Langmuir*, **2016**, *32*, 13367-13376.
13. Sangsuwan, R.; **Obermeyer, A.C.**; Tachachartvanich, P.; Palaniappan, K.K.; Francis, M.B. Direct detection of nitrotyrosine-containing proteins using an aniline-based oxidative coupling strategy. *Chem. Commun.*, **2016**, *52*, 10036-10039.
12. **Obermeyer, A.C.**; Mills, C.E.; Dong, X.; Flores, R. J.; Olsen, B.D. Complex coacervation of supercharged proteins with polyelectrolytes. *Soft Matter*, **2016**, *12*, 3570-3581.
11. **Obermeyer, A.C.**; Olsen, B.D. Synthesis and application of protein-containing block copolymers. *ACS Macro Letters*, **2015**, *4*, 101-110.
10. Capehart, S. L.; ElSohly, A. M.; **Obermeyer, A.C.**; Francis, M.B. Bioconjugation of Gold Nanoparticles through the Oxidative Coupling of *ortho*-Aminophenols and Anilines. *Bioconjugate Chem*, **2014**, 1888-1892.
9. El Muslemany, K.M.; Twite, A.A.; ElSohly, A.M.; **Obermeyer, A.C.**; Mathies, R.A.; Francis, M.B. Photoactivated bioconjugation between *ortho*-azidophenols and anilines: A facile approach to biomolecular photopatterning, *J. Am. Chem. Soc.*, **2014**, *136*, 12600-12606.
8. **Obermeyer, A.C.**; Capehart, S.L.; Jarman, J.B.; Francis, M.B. Multivalent Viral Capsids with Internal Cargo for Fibrin Imaging, *PLoS One*, **2014**, *9*, e100678.
7. **Obermeyer, A.C.**; Jarman, J.B.; Francis, M.B. N-terminal modification of proteins with *o*-aminophenols, *J. Am. Chem. Soc.*, **2014**, *136*, 9572-9579.
6. **Obermeyer, A.C.**; Jarman, J.B.; Netirojjanakul, C.; El Muslemany, K.; Francis, M.B. Mild Bioconjugation Through the Oxidative Coupling of *ortho*-Aminophenols and Anilines with Ferricyanide. *Angew. Chem. Int. Ed.* **2013**, *53*, 1057-1061.
5. Seim, K.L.; **Obermeyer, A.C.**; Francis, M.B. Oxidative Modifications of Native Protein Residues Using Cerium(IV) Ammonium Nitrate. *J. Am. Chem. Soc.* **2011**, *133*, 16970-16976.
4. Behrens, C.R.; Hooker, J.; **Obermeyer, A.C.**; Romanini, D.T.; Francis, M.B. Rapid Chemoselective Bioconjugation Through the Oxidative Coupling of Anilines and Aminophenols. *J. Am. Chem. Soc.* **2011**, *133*, 16398-16401.
3. Beaudette, T.T.; Bachelder, E.M.; Cohen, J.A.; **Obermeyer, A.C.**; Broaders, K.E.; Fréchet, J.M.J.; Kang, E.-S.; Mende, I.; Tseng, W.W.; Davidson, M.G.; Engleman, E.G. In Vivo Studies on the Effect of Co-Encapsulation of CpG DNA and Antigen in Acid-Degradable Microparticle Vaccines. *Mol. Pharmaceutics* **2009**, *6*, 1160-1169.

2. Kolesnikova, M.D.; Wilson, W.K.; Lynch, D.A.; **Obermeyer, A.C.**; Matsuda, S.P.T. Arabidopsis camelliol C synthase evolved from enzymes that form pentacycles. *Org. Lett.* **2007**, *9*, 5223-5226.

1. Kolesnikova, M.D.; **Obermeyer, A.C.**; Lynch, D.A.; Xiong, Q.; Wilson, W.K.; Matsuda, S.P.T. The stereochemistry of water addition in triterpene synthesis: the structure of arabiol. *Org. Lett.* **2007**, *9*, 2183-2186.

PATENTS

1. Olsen, B.D.; Mills, C.E.; Dong, X.; **Obermeyer, A.C.** Block copolymer complex coacervate core micelles for enzymatic catalysis in organic solvent. Filed **2015**, U.S. Patent Application No.: 14/855,828.

PRESENTATIONS

Oral Presentation: **Obermeyer, A.C.**; Sureka, H.; Flores, R.; Olsen, B.D. "Biosensor Coatings from Protein-Polymer Complex Coacervates" 2016 AIChE Annual Meeting, San Francisco, CA, November 2016.

Invited Oral Presentation: **Obermeyer, A.C.**; Jarman, J.B.; Francis, M.B. "Synthetic modifications of proteins to make new biomaterials." 251st American Chemical Society National Meeting, San Diego, CA, March 2016.

Oral Presentation: **Obermeyer, A.C.**; Mills, C.E.; Dong, X.; Flores, R.; Olsen, B.D. "Effect of supercharging on coacervation between proteins and polyelectrolytes." 2015 AIChE Annual Meeting, Salt Lake City, UT, November 2015.

Poster Presentation: **Obermeyer, A.C.**; Mills, C.E.; Dong, X.; Flores, R.; Olsen, B.D. "Effect of supercharging on coacervation between proteins and polyelectrolytes." 250th American Chemical Society National Meeting, Boston, MA, August 2015.

Poster Presentation: **Obermeyer, A.C.**; Mills, C.E.; Dong, X.; Flores, R.; Olsen, B.D. "Effect of supercharging on coacervation between proteins and polyelectrolytes." Polymers Gordon Research Conference, South Hadley, MA, June 2015.

Oral Presentation: **Obermeyer, A.C.**; Mills, C.E.; Dong, X.; Olsen, B.D. "Block copolymer coacervate core micelles for organophosphate decontamination." Chemical and Biological Defence Program Review, Falls Church, VA, September 2014.

Oral Presentation: **Obermeyer, A.C.**; Francis, M.B. "Investigation of an oxidative coupling bioconjugation reaction with small molecules." ACS Division of Organic Chemistry Graduate Research Symposium, Boulder, CO, July 2012.

Poster Presentation: **Obermeyer, A.C.**; Jarman, J.B.; Francis, M.B. "Viral capsid based targeted imaging agents: atherosclerosis detection using chemically modified proteins." Bioinspired Materials Gordon Research Conference, Davidson, NC, June 2012.

Poster Presentation: **Obermeyer, A.C.**; Francis, M.B. "New materials from chemically modified proteins: viral capsid based targeted imaging agents for atherosclerosis detection." Royal Society of Chemistry 10th International Materials Chemistry Conference, Manchester, England, July 2011.

Poster Presentation: **Obermeyer, A.C.**; Kolesnikova, M.D.; Zhou, C.R.; Wilson, W.K.; Matsuda, S.P.T. "Use of chimeric oxidosqualene cyclases to illuminate the mechanism of triterpene biosynthesis." 234th American

Chemical Society National Meeting, Boston, MA, August 2007.

Poster Presentation: Obermeyer, A.C.; Lynch, D.A.; Kolesnikova, M.D.; Xiong, Q.; Wilson, W.K.; Matsuda, S.P.T. "Cloning and characterization of an Arabidopsis oxidosqualene cyclase." 62nd Southwest Regional American Chemical Society Meeting, Houston, TX, October 2006.

TEACHING EXPERIENCE

Columbia University

- Instructor, Biochemical Engineering (CHEN E4660) Spring 2017

Massachusetts Institute of Technology

- Guest Lecturer, Department of Chemical Engineering, Graduate Synthesis of Polymers Spring 2015

University of California, Berkeley

- Graduate Student Instructor, Graduate Chemistry Fundamentals/Reaction Mechanisms Fall 2010
- Head Graduate Student Instructor, Undergraduate Organic Chemistry Spring 2010
- Graduate Student Instructor, Undergraduate Organic Chemistry Fall 2008

Rice University

- Undergraduate Teaching Assistant, Organic Chemistry Lab Spring 2008
- Head Discussion Section Leader, Introductory Organic Chemistry Fall 2007, Spring 2008
- Discussion Section Leader, Introductory Organic Chemistry Fall 2006, Spring 2007

MENTORING

Graduate Research Supervisor (Columbia)

2017- present

- Justin Horn, joined Fall 2016
- Rachel Kapelner, joined Fall 2016

Postdoctoral Scholar Supervisor (Columbia)

2017- present

- Chad Cummings, joined 2017

Undergraduate Research Supervisor (Berkeley, MIT, Columbia)

2011 - 2016

- Bryce Jarman, Sara (Cheli) Arussy, Noelle Colant, Romeo Flores, Sevahn Vorperian (advisor)

LEADERSHIP & SERVICE

Volunteer

2014 - 2016

Cambridge Science Festival Nano Observatory

- Taught general public about optical microscopy as part of a broader demonstration on visualizing samples with techniques ranging from scanning electron microscopy to standard light microscopy

Team Leader

2009 - 2013

Bay Area Scientists in Schools (BASIS), Community Resources for Science

- Created hands-on lesson plans to get elementary school students excited about science

Student Organizer

2013

Science Leadership and Management (SLAM)

- Co-developed course on leading and managing a scientific research group
- Recruited speakers and organized campus-wide advertising

Service

- Reviewer for Department of Defense National Defense Science and Engineering Graduate (NDSEG) Fellowships, *ACS Macro Letters*, *Journal of Physical Chemistry*, *Advances in Colloid and Interface Science*, *Biochemical Engineering Journal*, *Analytical Biochemistry*
- Session chair/co-chair at the AIChE annual meeting (2017) and the ACS annual meetings (2015-2017)