REBECCA F. ALFORD
Carnegie Mellon University, SMC 2858, 5000 Forbes Ave, Pittsburgh, PA 15289
ralford@andrew.cmu.edu

EDUCATION

Carnegie Mellon University <div align="right">Pittsburgh, PA</div>
B.S. Chemistry, Concentration: Computational Chemistry <div align="right">Expected May 2016</div>

RESEARCH EXPERIENCE

Undergraduate Research Assistant, The Johns Hopkins University — 2013–Present
Advisor: Dr. Jeffrey J. Gray
Topic: Topic: *Computational modeling of membrane proteins*

High School Research Assistant, New York University — 2011–2013
Advisor: Dr. Richard Bonneau
Topic: Topic: *Prediction of deleterious protein variants using structure prediction*

High School Research Assistant, Stony Brook University — 2009–2010
Advisor: Dr. Maurice Kernan
Topic: Topic: *Characterization of TRPM ion channel function in Drosophila*

PUBLICATIONS

3. Baugh EH, Simmons-Elder R, Muller CL, **Alford RF**, Volovsky N, Lash A, Bonneau R (2016) "Robust classification of protein variation using structural modeling and large-scale data integration," *Nucleic Acids Research* 44(6): 2501-2513.

2. **Alford RF***, Koehler Leman J*, Weitzner BD, Duran AM, Tilley DC, Elazar A, Gray JJ (2015) "An integrated framework advancing membrane protein modeling and design," *PLoS Computational Biology* 11(9): e1004398 (*equal contribution authors).

1. Pope WH, Bowman CA, Russell DA, Jacobs-Sera D, Asai DJ, Cresawn SG, Jacobs WR, Hendrix RW, Lawrence JG, Hartfull GF, **SEA-PHAGES***, PHIRE (2015) "Whole genome comparison of a large collection of mycobacteriophages reveals a continuum of phage genetic diversity variation" *eLife*, 4, 1-65 (**Group Authorship - Full listing in manuscript*).

SELECTED HONORS AND AWARDS

Hertz Foundation Fellowship	2016
National Science Foundation Fellowship	2016
Dr. J. Paul Pugassi and Linda Monteverde Award	2016
Carnegie Mellon Women's Association Award	2016
Handlos Research Award	2016
Senior Leadership Recognition Award	2016
Ruth Welch Walker Scholarship	2012–2016
Grace Hopper Conference Scholarship	2014
Selected Student Speaker–TEDxCMU	2013
Davidson Fellowship Honorable Mention	2012
Intel International Science and Engineering Fair–Best Biochemistry Project	2012
Intel Science Talent Search Semifinalist	2012
Max Carpenter Award for Promise in Science and Engineering	2010

SCIENTIFIC TALKS

4. **Alford RF Invited Keynote:** "Decoding Biology – Using computers to understand disease" *Winter Rosetta Conference*, Burlington, VT.

3. **Alford RF**, **Baugh EH**, Gray JJ (2014) "Real-time visualization of Rosetta membrane simulations using the PyMOL viewer" *Rosetta Developer's Meeting*, Seattle, WA.

2. **Alford RF**, Koehler Leman J, Gray JJ (2014) "RosettaMP - An object-oriented framework for modeling and design of membrane proteins in Rosetta" *Rosetta Developer's Meeting*, San Francisco, CA.

1. **Alford RF** (2013) "The Dream Machine" *TEDxCMU*, Pittsburgh, PA.

SCIENTIFIC POSTERS

1. Alford RF, Fleming P, Fleming KG, Gray JJ (2015) "Toward an all-atom energy function for membrane protein modeling in bilayers of different lipid composition" *Rosetta Conference*, Leavenworth, WA.

2. Alford RF, Fleming KG, Gray JJ (2015) "Validation of the implicit membrane model in RosettaMP" *Gordon Research Conference – Membrane Protein Folding*, Waltham, MA.

3. Alford RF, Koehler Leman J, Weitzner BD, Gray JJ (2014) "An integrated framework advancing membrane protein modeling and design" *Carnegie Mellon Meeting of the Minds Symposium*, Pittsburgh, PA.

4. Alford RF, Koehler Leman J, Weitzner BD, Gray JJ (2014) "A new object-orieented framework for modeling and design of membrane proteins in Rosetta" *Grace Hopper Conference for Women in Computing*, Phoenix, AZ.

5. Alford RF, Koehler Leman J, Weitzner BD, Gray JJ (2014) "A new object-orieented framework for modeling and design of membrane proteins in Rosetta" *Rosetta Conference*, Leavenworth, WA.

6. Alford RF, Koehler Leman J, Weitzner BD, Gray JJ (2014) "Redesigning the framework for membrane protein modeling in Rosetta" *Carnegie Mellon Meeting of the Minds Symposium*, Pittsburgh, PA.

7. Alford RF, Koehler Leman J, Gray JJ (2013) "Redesigning the framework for membrane protein modeling in Rosetta" *Rosetta Conference*, Leavenworth, WA.

8. Alford RF, Simmons-Elder R, Poultney C, Halvorsen L, Bonneau R (2012) "A machine-learning based approach to predicting functional effects of mutations in membrane proteins" *Rosetta Conference*, Leavenworth, WA.

TEACHING AND MENTORING EXPERIENCE

Mentor to seven high school research students	2011–Present
Co-Instructor, Rosetta Intern Boot Camp	May 2015
Co-Instructor, Rosetta Boot Camp	June 2014
Co-Developer and Co-Instructor, ThinkTech	2014–Present

ACTIVITIES AND SCIENCE OUTREACH

Assistant Organizer, Rosetta REU Program	2015
Organizer, Rosetta Team at Grace Hopper	2014
Science Fair Judge, Plainview Old Bethpage Middle School	2014, 2015
Committee Member, Carnegie Mellon Women in Computer Science	2014–Present
Instructor and Volunteer, Carnegie Mellon Creative Technology Nights	2013–Present
Team Captain, VisionWalk	2012, 2013