Jonathan Ashby

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Education/Research Experience:

Ford Foundation Postdoctoral Fellow – 09/2015-08/2016, University of California, Davis, CA

NIH T32 Postdoctoral Fellow – 09/2014-08/2015, University of California, Davis, CA

Advisor: Dr. Sheila David

Research focused on the isolation and quantitation of various isoforms of NEIL1, a DNA glycosylase involved in repair of damaged DNA lesions, from healthy and cancerous cell lines. In addition, research is focused on improved isolation of DNA repair proteins using non-cleavable DNA lesions and analogs of transition states within the DNA repair pathway.

Doctorate in Chemistry (Analytical) - 06/2014, University of California, Riverside, CA

Dissertation title: Development of high throughput methods for probing biomacromolecular interactions

Advisor: Dr. Wenwan Zhong

Research was conducted on identifying and quantifying the composition of the nanoparticle-protein corona around various particles based on the physical parameters of the nanomaterials. Research was also conducted on fractionation, identification and quantitation of protein carriers of microRNA, for cancer detection. Both projects utilized flow-field flow fractionation (F4) as well as protein analysis via LC-MS.

Bachelor of Science in Chemistry (Honors in Chemistry) - 06/2009, Trinity College, Hartford, CT

Research Advisor: Dr. Janet Morrison

Research focused on the supercritical fluid extraction of the organic pesticide, rotenone, from human hair.

Professional Work Experience:

Mount Holyoke Fellow and Lecturer, Mount Holyoke College, South Hadley, MA, 08/2016 – current

Instructor of record for general chemistry (CHEM 101) and quantitative analysis (CHEM 223). While at Mount Holyoke College, developed a one-semester course surveying both quantitative analysis and modern instrumentation, as well as a laboratory focusing on interdisciplinary applications of classical and modern chemical analysis.

Teaching Assistant, University of California, Riverside, CA, 09/2009-06/2011, 09/2012-12/2012

As a teaching assistant, taught laboratory courses in general chemistry (CHEM 1A), introductory organic chemistry (CHEM 112A, 112C), and instrumental analysis (CHEM 125). Designed two experiments, introducing high-throughput analysis methods to the instrumental analysis course. In addition, guest lectured on basic separation science for CHEM 125.

Summer Research Intern, Merck & Co., 6/2008-8/2008, 6/2009-8/2009

A high-throughput screen was developed for predicting and identifying pharmaceutical cocrystals. In addition, potential cocrystal leads found using this screen were characterized using XRPD, DSC, NMR, TGA, and IR/Raman spectroscopy.

Supplemental Instruction Leader, Trinity College, 9/2007-12/2008
Utilized group-based learning to enhance student knowledge of material covered in lecture. Wrote mock exams and designed interactive review sessions to engage the students.

Honors and Awards:

2016 – UC President's Postdoctoral Fellowship (Award offered, declined due to prior commitments)
2016-2018 – Consortium for Faculty Diversity Fellowship, Mount Holyoke College
2015-2016 – National Research Council Ford Foundation Postdoctoral Fellowship
2014-2015 – T32 Postdoctoral Training Fellowship (UC Davis, Oncogenic Sig. & Chromosome Bio.)
2014 – Alternate, UC President's Postdoctoral Fellowship
2014 – Runner-up, AAAS Pacific Division Awards of Excellence, Chemistry/Biochemistry Division
2011-2014 – NSF Graduate Research Fellowship recipient
2011 – University of California, Riverside Outstanding Teaching Assistant Award
2009 – Lisa P. Nestor Award for Excellence in Student Teaching in Chem., Trinity College
2007 – ACS Scholars scholarship recipient

Professional Affiliations:

2014-2015 – Sigma Xi, Student Member
2012-current – National Organization for the Advancement of Black Chemists and Chemical Engineers (NOBCChE)
2009-current – American Chemical Society (ACS)
2008-current – UNCF/Merck Fellows

Professional Service:

2015-2016 – UC Davis Graduate Council
2015-2016 – UC Davis Diversity & Inclusion Planning Committee
Graduate Students, Professional Students and Postdocs Working Group
2014-2016 – UC Davis Postdoctoral Scholars Association
Chair (2015-2016)
Secretary (2014-2015)
2014-current –NOBCChE National Meeting Planning Committee
Student Programs subcommittee chair (2015-current)
Student Programs subcommittee member (2014)
2014 – ConneXions Poster Session Co-chair, NOBCChE Annual Meeting 41
2012-2013 – Chemistry Merit Badge Counselor, San Gabriel Boy Scouts of America
2011-2014 – Student Mentor, St. Catherine of Alexandria School, Riverside, CA

Professional Development:

03/2017 – Introduction to Process-Oriented Guided-Inquiry Learning (POGIL). Springfield Technical Community College. Springfield, MA.
07/2016 – Junior Faculty and Postdoctoral Fellows Career Development Workshop. Minority Affairs Committee, American Society for Cell Biology. Chapel Hill, NC.
01/2016 – Expanding Potential Workshop. Synberc Diversity and Inclusion. Berkeley, CA.
11/2015 – Postdoctoral Scholars Retreat. Society for the Advancement of Chicanos and Native Americans in Science (SACNAS). Washington, DC.
08/2015 – SciPhD Bootcamp: Core Professional Skills – Excelling in Team-based Organization. SciPhD. Berkeley, CA.

Publications (*Co-first author, *Italics indicates undergraduate researcher*):

Anderson, Brittany; Yeo, Jongchan; **Ashby, Jonathan**; Rogers, JohnPatrick; David, Sheila. Investigation into the wide substrate specificity of the human DNA glycosylase hNEIL1. Manuscript in preparation.

Yuen, Phillip; *Green, Sydnee*; **Ashby, Jonathan**; David, Sheila. Efficient Synthesis of Transition State Analogs via Click Chemistry for Tight-Binding Inhibitors of Base Excision Repair Glycosylases. Manuscript in preparation.

Cao, Sheng; Rogers, JohnPatrick; Yeo, Jongchan; Anderson, Brittany. **Ashby, Jonathan**; David, Sheila. Synthesis of 2'-fluorinated hydantoins as probes of DNA repair enzymes. Manuscript in preparation.

Fong, Miranda; Zhou, Weiying; Liu, Liang; Alonaga, Aileen; Chandra, Manasa; **Ashby, Jonathan**; Chow, Amy; O'Connor, Sean; Li, Sasha; Chin, Andrew; Somlo, George; Palomares, Melanie; Li, Zhuo; Tremblay, Jacob; Tsuyada, Akihiro; Sun, Guoqiang; Reid, Michael; Wu, Xiwei; Swiderski, Piotr; Ren, Xiubao; Shi, Yanhong; Kong, Mei; Zhong, Wenwan; Chen, Yuan; Wang, Shizen Emily. *Nat. Cell Bio.***2015,** *17*, 183-194

Ashby, Jonathan; *Ligans, Erik; Tamsi, Michael*; Zhong, Wenwan. High-throughput profiling of nanoparticle-protein interactions by fluorescence labeling. *Anal. Chem.* **2015,** *87*, 2213-2219.

Ashby, Jonathan*; Flack, Kenneth*; Jimenez, Luis; Duan, Yaokai; *Kareem-Khatib, Abdel*; Somlo, George; Wang, Shizen Emily; Cui, Xinping; Zhong, Wenwan. Distribution profiling of circulating microRNAs in serum. *Anal. Chem.*, **2014**, *86*, 9343–9349.

Ashby, Jonathan; Pan, Songquin; Zhong, Wenwan. Size and surface functionalization of iron oxide nanoparticles influence the composition and dynamic nature of their protein corona. *ACS Appl. Mater. Interfaces,* **2014**, *6*, 15412–15419.

Ashby, Jonathan*; Schachermeyer, Samantha*; Duan, Yaokai; Jimenez, Luis; Zhong, Wenwan. Probing and quantifying DNA-protein interactions with asymmetrical flow field-flow fractionation. *J. Chrom. A.* **2014,** *1358*, 217-224.

Ashby, Jonathan; Schachermeyer, Samantha; Pan, Songquin; Zhong, Wenwan. Dissociation-based screening of nanoparticle-protein interactions via flow-field flow fractionation. *Anal. Chem.* **2013,** *85*, 7494-7501.

Young, Michael; *Liew, Erika*; **Ashby, Jonathan**; McCoy, Kelsi; Hooley, Richard. Spin state modulation of iron spin crossover complexes via hydrogen-bonding self-assembly. *Chem. Commun*, **2013**, *49*, 6331-6333.

Schachermeyer, Samantha; **Ashby, Jonathan**; Zhong, Wenwan. Aptamer-protein binding detected by asymmetric flow field flow fractionation. *J. Chrom. A.* **2013**, *1295*, 107-13.

Schachermeyer, Samantha; **Ashby, Jonathan**; *Kwon, MinJung;* Zhong, Wenwan. Impact of carrier fluid composition on recovery of nanoparticles and proteins in flow field flow fractionation. *J. Chrom. A.* **2012,** *1264*, 72-79.

Schachermeyer, Samantha*; **Ashby, Jonathan***; Zhong, Wenwan. Advancements in field flow fractionation for the analysis of biomolecules: instrument design, miniaturization, and hyphenation. *Anal. Bioanal. Chem.*, **2012**, *404*, 1151-1158.

Selected Presentations:

Ashby, Jonathan; Cao, Sheng; Yeo, Jongchan; Conklin, Jonathan; David, Sheila. Affinity purification-mass spectrometry of NEIL1's isoforms from breast cancer cells. Conference of Ford Fellows. September 2015. Washington, DC. Poster.

Ashby, Jonathan; David, Sheila. Affinity purification-mass spectrometry of DNA glycosylases. T32 OSCB Spring Retreat, May 2015. Davis, CA. Talk.

Ashby, Jonathan; David, Sheila. Affinity purification-mass spectrometry of DNA glycosylases. UC Davis Postdoctoral Symposium, May 2015. Davis, CA. Talk

Ashby, Jonathan; David, Sheila. Affinity purification of NEIL1 isoforms in breast cancer cell lines. Pittsburgh Conference. March 2015. New Orleans, LA. Talk.

Ashby, Jonathan; Zhong, Wenwan. Fluorescamine-based screening of nanoparticle-protein interactions for determining variability in nanoparticle physical parameters. NOBCChE AM41, September 2014. New Orleans, LA. Talk

Zhong, Wenwan; **Ashby, Jonathan (presenter);** Zeng, Shang. Using analytical tools to assess binding between nanomaterials and proteins. ACS 248th National Meeting, August 2014. San Francisco, CA. Talk.

Ashby, Jonathan; Ligans, Erik; Zhong, Wenwan. Fluorescamine-based screening of nanoparticle-protein interactions. 95th Annual AAAS Pacific Division Meeting, June 2014. Riverside, CA. Poster

Ashby, Jonathan; Ligans, Erik; Zhong, Wenwan. Fluorescamine-based screening of nanoparticle-protein interactions. 2014 Pittburgh Conference, March 2014. Chicago, IL. Poster.

Ashby, Jonathan; Flack, Kenneth; Jimenez, Luis; Zhong, Wenwan. Asymmetrical Flow-Field Flow Fractionation-based isolation of microRNA carriers for cancer detection. NOBCChE West Regional Meeting, March 2014. La Jolla, CA. Poster.