Benjamin J. McFarland
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Seattle Pacific University, Department of Chemistry and Biochemistry.
Hired September 1, 2003 as Assistant Professor in Biochemistry.
Promoted September 1, 2008 to Associate Professor.
Promoted September 1, 2013 to Professor.

Education and Graduate Research

Fred Hutchinson Cancer Research Center, Division of Basic Sciences.
Cancer Research Institute postdoctoral fellow, 2001-2003.
Advisor: Roland K. Strong.
Research topic: Structural analysis of innate immunity and receptor-ligand interaction kinetics.

University of Washington, Biomolecular Structure and Design Program, Department of Chemistry.
Ph.D., 1996-2001.
Thesis advisor: Craig C. Beeson.
Research topic: The role of hydrogen bonds in MHC-peptide dissociation kinetics.

University of Florida, College of Liberal Arts and Sciences and College of Journalism.
Dual B.S. degree, 1992-1996, with honors in Chemistry, with highest honors in Public Relations, specializing in Technical Communications.

Visiting biochemistry professor, April 2015, Hope Africa University, Bujumbura, Burundi, teaching Pathological Biochemistry to 175 largely French-speaking African students.

Selected Grants

Awarded: Co-wrote NSF TUES grant proposal for 2013-2016 with Derek Wood, Jennifer Tenlen, Andrew Lumpe, and other researchers titled "Collaborative Research: Authentic discovery based research in college sciences curricula: Assessing the impacts on students and faculty." ($527,746 budget).

Awarded: Received Grant for 2013-2015 titled "*The Quickening: How Chemistry Shaped Biology*" in response to BioLogos RFP "Evolution and Christian Faith." Includes collaboration with onetime SPU art professor Gala Bent. ($54,847 budget).

Awarded: Received NIH R15 AREA grant renewal for 2008-2011, titled "Redesigning NKG2D—MIC-A Interaction Kinetics" ($150,000 direct/$60,761 indirect). NIH priority score of 124 of 500 (100=best).

Awarded: Received NIH R15 AREA grant for 2004-2007, extended to 2008, titled "Redesigning NKG2D—MIC-A Interaction Thermodynamics" ($150,000 direct/$67,500 indirect). NIH priority score of 147 of 500 (100=best).

Selected Peer-Reviewed Research Publications (18 published: 6 published with 21 student co-authors, in bold)

Gavlovsky, P.J., P. Tonnerre, N. Gérard, S. Nedellec, **A.W. Daman,** *B.J. McFarland***,** and B. Charreau, 2016, "Alternative Splice Transcripts for MHC Class I-Like MICA Encode Novel NKG2D Ligands with Agonist or Antagonist Function." *Journal of Immunology*. 197 (3), 736-746.

Henager, S.H., M.A. Hale, N.J. Maurice, E.C. Dunnington, C.J. Swanson, M.J. Peterson, J.J. Ban, D.J. Culpepper, L.D. Davies, L.K. Sanders, and *B.J. McFarland*, 2012, "For the Record: Combining different design strategies for rational affinity maturation of the MICA-NKG2D interface." *Protein Science*, 21 (9), 1396-1402.

Peterson, M.J., W.K. Snyder, S. Westerman, and *B.J. McFarland,* 2011, "Preparative protein production from inclusion bodies and crystallization: A seven-week biochemistry sequence." *Journal of Chemical Education*, 88 (7), 986–989.

Culpepper, D.J., M.K. Maddox, A.B. Caldwell and *B.J. McFarland,* 2011, "Systematic mutation and thermodynamic analysis of central tyrosine pairs in polyspecific NKG2D receptor interactions." *Molecular Immunology*, 48 (4): 516-523.

Mayer, C.L., W.K. Snyder, M.A. Swietlicka, A.D. VanSchoiack, C.R. Austin and *B.J. McFarland*, 2009, "Size-exclusion chromatography can identify faster-associating protein complexes and evaluate design strategies." *BMC Res. Notes* 2: 135. (*Highly accessed paper.)

Lengyel, C.S.E., L. Willis, P. Mann, T. Kortemme, D. Baker, R.K. Strong, and *B.J. McFarland*, 2007, "Mutations designed to destabilize the receptor-bound conformation increase MICA-NKG2D association rate and affinity." *J. Biol. Chem.* 282 (42): 30658-30666.

Selected General Publications or Presentations (out of 19)

A World From Dust: How the Periodic Table Shaped Life. Popular science book published March 2016 by Oxford University Press.

"12 Colorful Rules that Shaped Our World." Lecture for art students on chemistry and pigments. January 28, 2016 at Eaton Hall, SPU.

Blogger for BioLogos, 2015-2016, with the articles "A Letter to my Son about Creation," "Replaying the Tape of Life and Finding a Chemical Sequence," "*A World from Dust*: How the Periodic Table Shaped Life," "Streams in the Martian Desert," "On Being Wrong in Science," and "Living Water: How a Remarkable Chemical Shaped the Land and Life of Earth."

"The Trees of Life." Chapter 16 in *Faith Seeking Understanding: Essays in Memory of Paul Brand and Ralph D. Winter,* edited by David Marshall. William Carey Library (Pasadena, CA), 2012.

"Built with Words: What Chemists and Poets Have in Common" *Response* magazine, 2012.

"Wordplay: Sphingolipid" *Response* magazine, 2011.

Selected Research or Public Lectures or Presentations (out of 49)

"The Genealogy of All Life: *The Tree of Life* and the Image of God." Lecture at 15th Day of Common Learning, SPU, Wednesday, October 26, 2016.

"Natural history of the periodic table of (available) elements." Presented at the symposium on Elements Old & New: Discoveries, Developments, Challenges & Environmental Implications at the 252nd national American Chemical Society Meeting in Philadelphia, PA, August 21-25, 2016.

"Dusting off old ideas: Reviving historical concepts for teaching chemical evolution in *A World from Dust*." Presented at the symposium on Elements Old & New: Discoveries, Developments, Challenges & Environmental Implications at the 252nd national American Chemical Society Meeting in Philadelphia, PA, August 21-25, 2016.

"Facilitating research in biochemistry and physical chemistry labs with GENI." Presented at the symposium on Implementing Research Experiences Into the Undergraduate Chemistry Curriculum at the 2016 Biennial Conference on Chemistry Education in Greeley, CO, July 31-August 4, 2016.

Research Poster Presentations (20)
Student Presentations (81 supervised by BJM, by 40 different students)
University Scholars Projects (13)