

# ***CURRICULUM VITAE***

**Amorette E. Barber**

Department of Biological and Environmental Sciences

Appointed Rank: Assistant Professor of Biology

Present Rank: Assistant Professor of Biology

September 2013

Appointed Fall 2011

## ***I. Educational and Employment Data***

### **A. Academic Preparation**

1. Dartmouth College, Hanover, New Hampshire. Department of Microbiology and Immunology, 2004-2009, Ph.D.
2. University of Richmond, Richmond, Virginia. Major- Biology with Honors, Minors- Chemistry and Physics, 1999-2003, B.S. *Magna cum laude*

### **B. Doctoral Dissertation**

Chimeric NKG2D receptor expressing T cells as immunotherapy for cancer

### **C. Academic Employment**

- Longwood University. Assistant Professor of Biology, *Fall 2011–present*.
- Dartmouth College. Lecturer, *Spring 2011*.
- Colby-Sawyer College. Adjunct Assistant Professor, *Spring 2010*.

### **D. Related Employment**

- Dartmouth College. Research Fellow, *2009-2011*.
- Dartmouth College. Activities Coordinator for Summer Undergraduate Research Fellows, *2009–2010*.
- Dartmouth College. Teaching Assistant, *Spring 2006*.
- University of Rochester. Laboratory Technician, *2003-2004*.
- Albany Molecular Research, Inc. Laboratory Intern, *Summer 2002*.
- University of Richmond. Undergraduate Teaching Assistant, *2001-2003*.
- University of Richmond. Laboratory Technician, *2001-2003*.
- University of Richmond. Writing Fellow, *2001-2003*.

### **E. Honors, Biographical Listings, Honorary Societies**

- Sigma Xi- Scientific Research Honor Society, *2013-present*.
- Phi Beta Kappa- Honor Society, *2003-present*.

- Gamma Sigma Epsilon- Chemistry Honor Society, *2002-present*.
- Sigma Pi Sigma- Physics Honor Society, *2002-present*.
- Pi Mu Epsilon- Mathematics Honor Society, *2001-present*.
- Beta Beta Beta- Biology Honor Society, *2001-present*.

## **F. Memberships in Learned Societies**

- American Society for Cell Biology, *2013-present*.
- Society for Leukocyte Biology, *2013-present*.
- American Association of Immunologists, *2012-present*.
- Virginia Academy of Science, *2012-present*.
- American Association for Cancer Research, *2008-present*.

## **II. Professional Growth**

### **A. Professional Responsibilities**

#### 1. Department

- Assist with BES recruitment weekend activities, *2012-present*.
- BES Recruitment Committee, *2012-2013*.
- Co-Chair of Search Committee for a community ecologist faculty member, *Fall 2012*.
- Member of Timothy Smith Jr.'s Senior Honors Research Committee, *Fall 2012*.
- Internship Advisor (BIOL324 Teaching Assistant) for two Longwood University undergraduate students, *Fall 2012*.
- Active participant in weekly Neural Net research meetings, *Spring 2012*.
- BES Social Events Committee, Longwood University, *2011-present*.
- Assist Biology Area Coordinator, Longwood University, *2011-present*.
- Undergraduate advising, *2011-present*.
- Panel member for developing a workshop series for writing grants and publications, Dartmouth College, *2010*.

#### 2. College

- Secretary/Treasurer for joint Sigma Xi Scientific Research Honor Society Chapter with Hampden-Sydney College, *2013-present*.

#### 3. University

- Co-Chair of Institutional Animal Care and Use Committee (IACUC), Longwood University, *Fall 2013-present*.
- Panel member for the First Year Reading Experience presentation during New Lancer Days, Longwood University, *Fall 2013*.

- Member of ad-hoc committee to Faculty Senate on External Grants, Longwood University, *2013*.
- Member of Office of Sponsored Projects Working Group, Longwood University, *2013–present*.
- Participate in Peer Mentor Selection Day, Longwood University, *2013*.
- Panel member for the First Year Reading Experience presentation during New Lancer Days, Longwood University, *Fall 2012*.
- Member of Think Tank Working Group, Longwood University, *2012–present*.
- Member of the University Faculty Awards committee, Longwood University, *2012–present*.
- Faculty Advisor for Rip Chicks, a student club for extreme sports, Longwood University, *2012–present*.
- Assist in forming an IACUC committee, Longwood University, *2011–present*.
- Active member of Blackwell Seminar series with attendance at all presentations, *2011–present*.
- Active member of Academic Strategic Planning meetings and discussion sessions, *2011–2012*.
- Proctor Scientific Reasoning Competency exam for first-year students, Longwood University, *Fall 2011*.
- Group Leader for USA Science and Engineering Festival in Washington, DC, Dartmouth College, *2011*.
- Outreach/Teaching Opportunities Chair, Dartmouth College Postdoctoral Association, *2009- 2010*.

#### 4. State

- Member of the Publications Committee, Virginia Academy of Science, *2013–present*.

#### 5. National/International

- Article Reviewer. *Frontiers in Tumor Immunity*, *2013-present*.
- New England Biolabs “Insider”, *2013-present*.
- Textbook Chapter Reviewer. *Immunology*, by Kuby, 7<sup>th</sup> edition, *2012*.
- Article Reviewer. *International Immunopharmacology*, *2010-present*.
- Article Reviewer. *Cytotherapy*, *2010-present*.
- Article Reviewer. *Cancer Research*, *2008-present*.
- Article Reviewer. *Clinical Cancer Research*, *2008-present*.
- Article Reviewer. *Cancer Epidemiology, Biomarkers, and Prevention*, *2008-present*.
- Article Reviewer. *Molecular Cancer Therapeutics*, *2008-present*.

### **B. Awards and Other Commendations**

- Blackwell Scholar. Longwood University, *2011*.
- Ruth L. Kirschstein National Research Service Award Research Fellow Training Grant awarded by National Institutes of Health. Dartmouth College, *2009-2011*.

- Merck Scholar-in-Training Award awarded by American Association of Cancer Research. Dartmouth College, 2009.
- The John H. Copenhaver, Jr. and William H. Thomas, M.D. Fellowship. Dartmouth College, 2008- 2009.
- Ruth L. Kirschstein National Research Service Award Graduate Student Training Grant awarded by National Institutes of Health. Dartmouth College, 2006-2008.

### **C. Attendance at Conventions, Conferences, etc.**

- Virginia Academy of Science Annual Meeting, Blacksburg, VA, 2013. *Attendee and mentor for undergraduate student poster presenter.*
- American Association of Cancer Research Annual Meeting, Washington, D.C., 2013. *Attendee and mentor for undergraduate student poster presenters.*
- Big South Undergraduate Research Symposium, High Point, NC, 2013. *Attendee and mentor for undergraduate student poster presenters.*
- The Genome Solver Workshop, Rockville, Maryland, 2012. *Workshop participant.*
- American Association for Cancer Research Conference: Tumor Microenvironment Complexity: Emerging Roles in Cancer Therapy, Orlando, Florida, 2011. *Attendee.*
- CUR Institute: Beginning a Research Program in the Natural Sciences at a Predominantly Undergraduate Institution, Hope College, Holland, Michigan, 2011. *Workshop participant.*

## **III. Scholarly Activities**

### **A. Research**

- Research advisor to two Longwood University undergraduate students during the PRISM program, *Summer 2013.*
- Research advisor to six Longwood University undergraduate research students, *Spring 2013.*
- Research advisor to six Longwood University undergraduate research students, *Fall 2012.*
- Research advisor to six Longwood University undergraduate research students, *Spring 2012.*

#### Research Projects:

“The creation and characterization of chimeric antigen receptors targeting the PD-1 receptor”. Longwood University with Longwood undergraduate students: Sean Ober, Semone Trisvan, Krista Ellis, Byron Keck. 2012-2013.

“Activation of the NKG2D receptor on CD4<sup>+</sup> T cells initiates IL-17 secretion in Crohn’s Disease”. Longwood University with Longwood undergraduate student: Joseph Guarnieri. 2012-2013.

“Signal transduction of the NKG2D receptor in T cells”. Longwood University with Longwood undergraduate students: Taylor Bedsworth, Sean Ober, Thomas Paulsen, Jasmine Spence, Semone Trisvan, Emily Whitman. 2011-2012; Taylor Bedsworth, Sean Ober, Jasmine Spence, Emily Whitman. 2012-2013.

“NKG2D receptor regulates human effector T cell cytokine production”. Dartmouth College. 2009-2011.

“Chimeric NKG2D receptor expressing T cells as immunotherapy for cancer”. Dartmouth College. 2005-2009.

“The effect of green tea flavanols on MMP-2 activation in human glioma cells”. University of Richmond. 2001-2003.

## B. Publications

1. Spear P, **Barber A**, Rynda-Apple A, Sentman CL. NKG2D CAR T cell therapy inhibits the growth of NKG2D ligand heterogenous tumors. *Immunology and Cell Biology*, 91(6):435-40, 2013.
2. Spear P, **Barber A**, Sentman CL. Collaboration of chimeric antigen receptor (CAR) T cells and host T cells for optimal elimination of established ovarian tumors. *OncImmunity*, 2(4):e23564-1-12, 2013.
3. Spear P, **Barber A**, Rynda A, Sentman CL. Chimeric antigen receptor (CAR) T cells shape myeloid cell function within the tumor microenvironment through IFN-gamma and GM-CSF. *Journal of Immunology*, 188(12):6389-98, 2012.
4. **Barber A**, Sentman CL. NKG2D receptor regulates human effector T cell cytokine production. *Blood*, 117(24): 6571-81, 2011.
5. **Barber A**, Meehan KR, Sentman CL. Treatment of multiple myeloma with adoptively transferred chimeric NKG2D receptor-expressing T cells. *Gene Therapy*, 18(5):509-516, 2011.
6. **Barber A**, Rynda A, Sentman CL. Chimeric NKG2D expressing T cells eliminate immunosuppression and activate immunity within the ovarian tumor microenvironment. *The Journal of Immunology*, 183(11): 6939–6947, 2009.
7. **Barber A**, Sentman CL. Chimeric NKG2D T cells require both T cell- and host-derived cytokine secretion and perforin expression to increase tumor antigen presentation and systemic immunity. *The Journal of Immunology*, 183(4): 2365–2372, 2009.

8. Cubillos-Ruiz JR, Engle X, Scarlett UK, Martinez D, **Barber A**, Elgueta R, Wang L, Nesbeth Y, Durant Y, Gewirtz AT, Sentman CL, Kedl R, Conejo-Garcia JR. Polyethylenimine-based siRNA nanocomplexes reprogram tumor-associated dendritic cells via TLR5 to elicit therapeutic antitumor immunity. *The Journal of Clinical Investigation*, 119(8): 2231-44, 2009.
9. **Barber A**, Zhang T, Megli CJ, Wu J, Meehan KR, Sentman CL. Chimeric NKG2D receptor-expressing T cells as an immunotherapy for multiple myeloma. *Experimental Hematology*, 36(10): 1318-1328, 2008.
10. Meehan KR, Wu J, Ernstoff MS, Webber SM, **Barber A**, Szczepiorkowski ZM, Sentman CL. Development of a clinical model for *ex vivo* expansion of multiple populations of effector cells for adoptive cellular therapy. *Cytotherapy*, 10(1): 30-37, 2008.
11. **Barber A**, Zhang T, Sentman CL. Immunotherapy with chimeric NKG2D receptors leads to long-term tumor-free survival and development of host anti-tumor immunity in murine ovarian cancer. *The Journal of Immunology*, 180(1): 72-8, 2008.
12. Zhang T, **Barber A**, Sentman CL. Chimeric NKG2D-modified T cells inhibit systemic T cell lymphoma growth in a manner involving multiple cytokines and cytotoxic pathways. *Cancer Research*, 67(22): 11029-11036, 2007.
13. **Barber A**, Zhang T, DeMars LR, Conejo-Garcia J, Roby KF, Sentman CL. Chimeric NKG2D receptor-bearing T cells as immunotherapy for ovarian cancer. *Cancer Research*, 67(10): 5003-8, 2007.
14. Sentman CL, Barber MA, **Barber A**, Zhang T. NK cell receptors as tools in cancer immunotherapy. *Advances in Cancer Research*, 95: 249-92, 2006.
15. Zhang T, **Barber A**, Sentman CL. Generation of antitumor responses by genetic modification of primary human T cells with a chimeric NKG2D receptor. *Cancer Research*, 66(11): 5927- 5933, 2006.
16. Meadows SK, Eriksson M, **Barber A**, Sentman CL. Human NK cell IFN- $\gamma$  production is regulated by endogenous TGF- $\beta$ . *International Immunopharmacology*, 6: 1020-1028, 2006.

### C. Presentations

\* Longwood University undergraduate author

\_\_\_ Longwood University undergraduate student presenter at conference

- Virginia Academy of Science Annual Meeting, Blacksburg, VA, 2013. *Attendee and mentor for undergraduate student poster presenter.*

Whitman, E.\*, Bedsworth, T.\*, and Barber, A.: NKG2D receptor activation of mTOR and NFκB enhances proinflammatory cytokine secretion in anti-tumor CD8<sup>+</sup> T cells.

- American Association of Cancer Research Annual Meeting, Washington, D.C., 2013. *Attendee and mentor for undergraduate student poster presenters.*  
Bedsworth, T.\*, Ober, S.\*, Whitman, E.\*, Spence, J.\*, and Barber, A.: NKG2D receptor differentially activates mTOR and NFκB signaling pathways in CD8<sup>+</sup> T cells.
- Big South Undergraduate Research Symposium, High Point, NC, 2013. *Attendee and mentor for undergraduate student poster presenters.*  
Trisvan, S.\*, Ober, S.\*, Ellis, K.\*, and Barber, A.: Generation of Anti-tumor Immune Response using PD1-CD3 Chimeric Antigen Receptor-expressing T Cells.  
  
Spence, J.\*, Bedsworth, T.\*, Whitman, E.\*, and Barber, A.: NKG2D Receptor Activates NFκB in Murine CD8<sup>+</sup> T Cells.
- Family Weekend, Longwood University, 2012. *Invited speaker.*  
Barber, A: T Cells: New soldiers in the war against cancer.
- American Cancer Society Relay for Life, Longwood University, 2012. *Keynote speaker.*
- Chichester Colloquium Series, Longwood University, 2011.  
Barber, A: NKG2D: The key to activating potent T cells for anti-tumor immunity.
- Blackwell Seminar Series, Longwood University, 2011.  
Barber, A: Immune Cells: New soldiers in the war against cancer.
- Colloquium Series, Colby-Sawyer College, 2009.  
Barber, A: T Cells: New soldiers in the war against cancer.
- Graduate School Recruitment Weekend Symposium, Dartmouth College, 2009.  
Barber, A: Chimeric NKG2D receptor bearing T cells as an immunotherapy for ovarian cancer.
- The American Association of Cancer Research Annual Meeting, Denver, Colorado, 2009. *Poster presenter.*  
Barber, A., Rynda, A., Zhang, T., and Sentman C.L.: Anti-tumor efficacy of chimeric NKG2D receptor-expressing T cells requires the induction of host immune responses.
- The American Association of Immunologists Annual Meeting, San Diego, California, 2008. *Poster presenter.*  
Barber, A., Zhang, T., and Sentman, C.L.: Chimeric NKG2D receptor expressing T cells require host immune cells for anti-tumor efficacy.

- Keystone Symposium- Potent New Anti-Tumor Immunotherapies, Banff, Alberta, 2007. *Poster presenter.*  
Barber, A., Zhang, T., DeMars, L.R., Conejo-Garcia, J., Roby, K.F., and Sentman, C.L.: Chimeric NKG2D receptor bearing T cells as immunotherapy for ovarian cancer.
- New England Immunology Conference, Woods Hole, Massachusetts, 2006. *Poster presenter.*  
Barber, A., Zhang, T., DeMars, L.R., Roby, K.F., and Sentman, C.L.: Treatment with T cells expressing a chimeric NKG2D receptor is an effective immunotherapy for ovarian cancer.
- The American Association of Immunologists Annual Meeting, Boston, Massachusetts, 2006. *Poster presenter.*  
Barber, A., Zhang, T., and Sentman, C.L.: Generation of anti-tumor responses by genetic modification of human primary T cells with chimeric NKG2D gene.

#### **D. Grants**

- Barber, A., 2013: Transcriptome analysis of murine effector CD8<sup>+</sup> T cells activated through the NKG2D Receptor. GCAT-SEEK Network Grant for Ion Torrent Next-Generation Sequencing Project. Requested one free RNA-SEQ run (approximately \$800 value); Received two free RNA-SEQ runs (approximately \$1600 value).
- Barber, A., 2013: NKG2D Receptor Activates mTOR to Increase the Lifespan of Anti-Tumor T cells. Faculty Research Grant, Longwood University. Requested \$10,200; Received \$10,200.
- Barber, A., 2012: NKG2D Receptor Signaling Enhances Anti-Tumor Functions of T cells. Faculty Research Grant, Longwood University. Requested \$13,000; Received \$13,000.

### ***IV. Service to University Community/Local Community***

#### **A. Service to University Community**

- Judge for Longwood University Oktoberfest Battle of the Bands competition, 2013.
- Singer for Faculty and Staff video for Longwood University Recognition Banquet, 2013.
- Radio Interview with Mr. John Ogle about my research at Longwood University, WCVE public radio, Richmond, Virginia, 2011.



- Interviewed for “On Point” article about my research at Longwood University for the Why Longwood website, *2011*.
- Interviewed for an article on the Longwood University website homepage about my research at Longwood University, *2011*.
- Workshop Leader for Leadership, Equality, and Diversity Symposium, Dartmouth College, NH, *2010*.
- Facilitator for Science Café Workshop, Dartmouth Center for the Advancement of Learning, *2009*.

## **B. Service to Local Community**

- Festival and Amusements Chair for Riverside Festival in partnership with Downtown Farmville, *2013*.
- Member of High Bridge Half-Marathon planning committee, *2013*.
- Attend Piedmont Health District Cancer Survivors group meetings as research and medical liason, *2012-present*.
- Mentor for Young Women’s Biology Club at Mascoma High School, New Hampshire, *2010*.
- Discussion Leader for Space Adventure Camp, McAuliffe-Shepard Discovery Center, New Hampshire, *2010*.
- Discussion Leader for Science Cafés. Various middle schools in New Hampshire and Vermont, *2009- 2011*.