

Curriculum Vitae
Katharina Richard, PhD
Postdoctoral Fellow, Department of Microbiology and Immunology
University of Maryland School of Medicine

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Contact Information

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Foreign Languages: English, German (native speaker), French (working knowledge)

Education

2000 - 2004 B.A., Biology and Mathematics, St. Mary's College of Maryland (Cum Laude)
2005 - 2011 Ph.D., Cell Biology, University of Maryland, College Park
Thesis Advisor – Dr. Wenxia Song
Dissertation: “The activation of memory B cells to generate high affinity antibody responses *in vitro* and *in vivo*”

Post Graduate Education and Training

2004 - 2005 Postbaccalaureate Intramural Research Trainee, National Institute of Arthritis, Musculoskeletal and Skin Diseases (NIAMS), Mentor: Dr. Daniel Kastner
2006 - 2011 Graduate Partnership, National Institute of Allergy and Infectious Diseases (NIAID), Mentor: Dr. Susan Pierce
2011 – 2012 Research Fellow, Dept. Microbiology and Immunology, University of Maryland School of Medicine, Mentor: Dr. Stefanie N. Vogel
2012 – present Postdoctoral Fellow, Dept. Microbiology and Immunology, University of Maryland School of Medicine, Mentor: Dr. Stefanie N. Vogel

Certifications

2004 Certificate of Proficiency in French, St. Mary's College of Maryland
2012 - present Fully trained, FBI-approved, and CDC-enrolled for Biosafety Level 3 (BSL-3) work, University of Maryland School of Medicine, certification pending

Medical Licensures

N/A

Employment History

- 2001 (summer) Laboratory Assistant, Dept. Biology, University of Pennsylvania, Mentor: Dr. Cecilia Lo
2002 (summer) Summer Intern, Laboratory of Developmental Biology, National Heart, Lung and Blood Institute (NHLBI), Mentor: Dr. Cecilia Lo
2003-2004 Undergraduate Research Assistant, Dept. Dermatology and Cutaneous Biology, Thomas Jefferson University and Dept. Biology, St. Mary's College of Maryland, Mentors: Dr. Gabriele Richard (TJU), Dr. Linda Coughlin (SMCM)

Professional Society Membership

- 2011-2014 Mid-Atlantic Regional Center of Excellence
2011-present American Society for Microbiology
2011-present International Endotoxin and Innate Immunity Society
2013-present American Association of Immunologists

Honors And Awards

- 2005 Student of the Year Award, National Institute of Arthritis, Musculoskeletal and Skin Diseases, NIH
2012 SPII T32 Postdoc Trainee, University of Maryland Baltimore
2013 SPII T32 Postdoc Trainee, University of Maryland Baltimore
2014 Postdoctoral Travel Award, University of Maryland Baltimore

Clinical Activities

N/A

Administrative Service

Institutional Service

- 2012-present Organizer of trainee group meetings for the "Signaling Pathways in Innate Immunity" T32 grant
2015-present Member of the UMB Postdoctoral Advisory Committee

Local and National Service

National Service

- 2015 Volunteer and Event Photographer, National Postdoc Association Annual Conference

Local Service

- 2001-present Volunteer, annual Chesapeake Bay watershed cleanups
2005-2010 Medical/Science Reader, Recording for the Blind and Dyslexic of Metropolitan Washington

Teaching Service

Undergraduate Student Teaching

- 2002 Undergraduate Laboratory Teaching Assistant,
Genetics 211-L, Dept. of Biology, St. Mary's College of Maryland
- 2005-2006 Graduate Teaching Assistant,
General Microbiology, Dept. of Cell Biology and Molecular Genetics, University of Maryland

Medical Student Teaching

- 2017 Judge and provide feedback on poster presentations for University of Maryland's
Medical Student Research Day (2 poster sessions)

Resident and Fellow Teaching

N/A

Post-Graduate Teaching

- 2009-2011 Trained new graduate student in the lab
1, 1st to 2nd year graduate student, 5-20 hours/week
- 2012-present Lecturer, Advanced Immunology (GPLS-769), Course Coordinator: Dr. Martin Flajnik, Dept.
of Microbiology and Immunology, University of Maryland School of Medicine
Includes: Lectures, literature discussion with the students, and serving as reviewer for
"grant-let" proposals
5-10, 2nd and 3rd year graduate students, 10-12 hours/year
- 2013-present Judge and provide feedback for oral presentations at University of Maryland Program in
Molecular Microbiology and Immunology Annual Graduate Student Symposium, University
of Maryland CrossTalks Symposium, and University of Maryland Graduate Research Day
(5-10 hours/year)

Grant Support

Active Grants:

N/A

Completed Grants:

N/A

Publications

Patents

1. DeShong PR, Stocker L, Stein DC, Vogel SN, **Richard K.** Compositions and Vaccines Comprising Vesicles and Method of Using the Same. Nonprovisional application. Pub No US-2014-0356415. Dec 4th, 2014.

Peer-reviewed journal articles

1. Chae JJ, Wood G, Masters SL, **Richard K**, Park G, Smith BJ, Kastner DL. The B30.2 domain of pyrin, the familial Mediterranean fever protein, interacts directly with caspase-1 to modulate IL-1 β production. *Proc Natl Acad Sci U S A*. 2006 Jun 27;103(26):9982-7. *(performed experiments)*
2. Chatterjee B, **Richard K**, Bucan M, Lo C. *Nt* mutation causing laterality defects associated with deletion of *rotatin*. *Mamm Genome*. 2007 May;18(5):310-5. *(performed experiments)*
3. **Richard K**, Pierce SK, Song W. The agonists of TLR4 and 9 are sufficient to activate memory B cells to differentiate into plasma cells *in vitro* but not *in vivo*. *J Immunol*. 2008 Aug 1; 181(3):1746-52.
4. Chae JJ, Wood G, **Richard K**, Jaffe H, Colburn NT, Masters SL, Gumucio DL, Shoham NG, Kastner DL. The familial Mediterranean fever protein, pyrin, is cleaved by caspase-1 and activates NF- κ B through its N-terminal fragment. *Blood*. 2008. Sep 1;112(5):1794-803. *(performed experiments)*
5. Cole LE, Mann BJ, Shirey KA, **Richard K**, Yang Y, Gearhart PJ, Chesko KL, Viscardi RM, Vogel SN. Role of TLR signaling in *Francisella tularensis*-LPS-induced, antibody-mediated protection against *Francisella tularensis* challenge. *J Leuk Biol*. 2011. Oct; 90(4):787-97. *(performed experiments)*
6. Fuchs-Talem D, Sarig O, van Steensel MAM, Isakov O, Israeli S, Nousbeck J, **Richard K**, Winnepeninckx V, Vernooij M, Shomron N, Uitto J, Fleckman P, Richard G, Sprecher E. Familial pityriasis rubra pilaris is caused by mutations in CARD14. *Am J Hum Gen*. 2012. Jul 13;91(1): 163-70. *(performed experiments)*
7. **Richard K**, Mann BJ, Stocker L, Barry EM, Qin A, Cole LE, Hurley MT, Ernst RK, Michalek SM, Stein DC, DeShong P, Vogel SN. Novel cationic surfactant vesicle vaccines protect mice against *Francisella tularensis* LVS and confer significant partial protection against *F. tularensis* Schu S4. *Clin Vaccine Immunol*. 2014. Feb; 21(2):212-26.
8. Wang X, Shaw D, Sakhon O, Snyder G, Sundberg E, Santambrogio L, Sutterwala F, Dumler JS, Shirey KA, Perkins D, **Richard K**, Chagas A, Calvo E, Kopecky J, Kotsyfakis M, Pedra J. The Tick Protein Sialostatin L2 Binds to Annexin A2 and Inhibits NLRC4-Mediated Inflammasome Activation. *Infect Immun*. 2016. May;84(6):1796-805. *(performed experiments)*
9. Liu C, **Richard K**, Wiggins M, Zhu X, Conrad D, Song W. CD23 can negatively regulate B-cell receptor signaling. *Sci Rep*. 2016. May; 6:25629. *(performed experiments)*
10. **Richard K**, Vogel SN, Perkins DJ. Type I Interferon enhances early innate recognition and signaling of *Francisella tularensis* in a TLR2-dependent fashion. *Innate Immun*. 2016. Jul; 22(5):363-72.
11. **Richard K**, Mann BJ, Qin A, Barry E, Ernst RK, Vogel SN. Monophosphoryl Lipid A enhances efficacy of a *Francisella tularensis* LVS-Cationic nanoparticle subunit vaccine against *F. tularensis* Schu S4 challenge by augmenting both humoral and cellular immunity. *Clin. Vacc. Immunol*. 2017 Mar 6;24(3).

Submitted or In-Revision Peer-reviewed journal articles

1. Perkins DJ, **Richard K**, Hansen AM, Lai W, Nallar S, Koller B, Vogel SN. Autocrine Prostaglandin E₂ Signaling through EP4 Restricts TLR4-induced TRIF Signaling. *Nature Immunology*. 2018 (Submitted).

Non-peer reviewed journal articles

N/A

Book Chapters

N/A

Major Invited Speeches (number entire section continuously, through each subsection)

Local

1. **Richard, K.**, Toll-like receptors 4 and 9 are sufficient for activation of murine memory B cells in vitro, Works in Progress Seminar, Twinbrook campus, NIH, 2007.
2. **Richard, K.**, The role of TLR4 and TLR9 agonists in immune memory responses, NIH Graduate Student Research Symposium, Rocky Gap, MD, 2008.
3. **Richard, K.**, The role of TLR4 and TLR9 agonists in memory B cell activation, University of Maryland, CBMG Research in Progress Seminar, College Park, MD, 2009.
4. **Richard, K.**, The role of TLR4 and TLR9 agonists in immune memory responses, NIH Graduate Student Research Symposium, Rocky Gap, MD, 2010.
5. **Richard, K.**, The role of Toll-like receptor stimulation in humoral immune responses, University of Maryland, College Park, MD Dissertation Colloquium, Oral Presentation, 2011.
6. **Richard, K.**, Mann, B. J., Stocker, L., Barry, E. M., Qin, A., Cole, L. E., Hurley, M. T., Ernst, R. K., Michalek, S. M., Stein, D. C., DeShong, P., Vogel, S. N. Novel cationic surfactant vesicle vaccines protect against *Francisella tularensis* LVS and confer significant partial protection against *F. tularensis* Schu S4 strain. University of Maryland CrossTalks Symposium, Shady Grove, MD, 2014.
7. **Richard, K.** New approaches to Vaccines against *Francisella tularensis*. Immune-Regulation Group Meeting. University of Maryland School of Medicine, Baltimore, MD. 2014.

National

8. **Richard, K.**, Mann, B. J., Stocker, L., Barry, E. M., Qin, A., Cole, L. E., Hurley, M. T., Ernst, R. K., Michalek, S. M., Stein, D. C., DeShong, P., Vogel, S. N. Novel cationic surfactant vesicle vaccines protect mice against *Francisella tularensis* LVS and confer significant partial protection against *F. tularensis* Schu S4. Close-out meeting of the Mid-Atlantic Regional Center of Excellence, Ellicott City, MD, 2013.

International

N/A

Proffered Communications

National and International

1. **Richard, K.** Pierce, S. K. and Song, W., The Role of TLRs in Memory B Cell Activation, Keystone Symposium – Immunological Memory, Santa Fe, NM, Poster Presentation, 2007.
2. **Richard, K.**, Mann, B. J., Stocker, L., Barry, E. M., Stein, D., DeShong, P., and Vogel, S. N., A novel multivalent Francisella vesicle vaccine protects mice and induces isotype switching in B cells. 7th International Conference on Tularemia, Breckenridge, CO, Poster Presentation, 2012.
3. **Richard, K.**, Mann, B. J., Stocker, L., Barry, E. M., Qin, A., Cole, L. E., Hurley, M. T., Ernst, R. K., Michalek, S. M., Stein, D. C., DeShong, P., Vogel, S. N. Novel vaccination strategy: *Francisella tularensis* vaccine based on functionalized cationic vesicles. American Society of Microbiologists Biodefense and Emerging Infectious Diseases Meeting, Washington, DC, Poster Presentation, 2014.

4. **Richard, K.**, Mann, B. J., Stocker, L., Barry, E. M., Qin, A., Cole, L. E., Hurley, M. T., Ernst, R. K., Michalek, S. M., Stein, D. C., DeShong, P., Vogel, S. N. Novel vaccination strategy: *Francisella tularensis* vaccine based on functionalized cationic vesicles. American Association of Immunologists General Meeting, Pittsburgh, PA, Poster Presentation, 2014.
5. **Richard, K.**, Scott, A. Barry, E. M., Ernst, R. K., Stein, D. C., DeShong, P., Vogel, S. N. Characterization of the immune response to a novel *Francisella tularensis* subunit vaccine utilizing cationic surfactant vesicles as a vaccine carrier. American Society of Microbiologists Biodefense and Emerging Infectious Diseases Meeting, Washington, DC, Poster Presentation, 2015.
6. **Richard, K.**, Mann, B. J., Qin, A., Barry, E. M., DePascalis, R., Elkins, K., Stein, D. C., DeShong, P., Vogel, S. N. MPL enhances the immune response to cationic surfactant vesicles functionalized with *Francisella tularensis* LVS lysates to confer partial protection against *F. tularensis* Schu S4. Annual Conference on Vaccine Research, Baltimore, MD, Poster Presentation, 2016.

Explanation of Time Gaps on CV

N/A