

VITA

Dr. Derek J. Royer
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EDUCATION:

<i>Degree Earned</i>	<i>School</i>	<i>Date Attended</i>
Ph.D. in Microbiology & Immunology	University of Oklahoma Health Sciences Center	2011 - 2016
B.S. in Biochemistry, <i>summa cum laude</i>	Oklahoma Baptist University	2007 - 2011

TEACHING EXPERIENCE:

<i>Position</i>	<i>Institution</i>	<i>Date</i>
Assistant Professor of Biology	East Texas Baptist University	2021 – Present

OTHER WORK EXPERIENCE:

<i>Position</i>	<i>Place</i>	<i>Date</i>
Postdoctoral Fellow	National Institutes of Health	2020 – 2021
Senior Research Associate	Duke University Medical Center	2018 – 2020
Postdoctoral Research Fellow	Univ. of Okla. Health Sciences Center	2016 – 2018
Graduate Research Assistant	Univ. of Okla. Health Sciences Center	2011 – 2016

PROFESSIONAL DEVELOPMENT EXPERIENCES:

American Society for Microbiology Conference for Undergraduate Educators, July 2022 (online).

Getting Started in Biology Education Research Course, American Society for Microbiology/ Society for the Advancement of Biology Education Research, May-July 2022.

Leadership, Management, and Diversity/Inclusion Training, Office of Intramural Training and Education, National Institutes of Health, 2020 – 2021.

Scientists Teaching Science Course, National Institutes of Health, Fall 2020.

Research Animal Coordinator Certification Program, Duke University, Durham, North Carolina 2018 – 2019.

Science Communication Training Fellowship, Association for Research in Vision and Ophthalmology, 2018 – 2019.

Targeted Quantitative Proteomics Workshop, IDeA National Resource for Proteomics, Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma, Summer 2017.

Advanced Immunology Course, American Association of Immunologists, Boston, Massachusetts, July 2016.

Preparing Future Faculty Program, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma, 2014 – 2015.

MACS Academy Flow Cytometry Workshop, Miltenyi Biotec, Auburn, California, July 2012.

Focus Leadership Institute, Colorado Springs, Colorado, Summer 2011.

PRESENTATIONS AND PUBLICATIONS:

Peer-Reviewed Publications:

Berube, Gmyrek, Royer, Carr. Tripartite-motif 21 (TRIM21) deficiency results in a modest loss of herpes simplex virus (HSV)-1 surveillance in the trigeminal ganglia following corneal infection. *Viruses* 2022, 12;14(3):589.

Whitehead, Thomas, Nakano, Royer, Burke, Nakano, Cook. A neutrophil/TGF- β axis limits the pathogenicity of allergen-specific CD4⁺ T cells. *JCI Insight* 2022, 22;7(4):e150251.

Filiberti, Gmyrek, Berube, Royer, Carr. An Intact Complement System Dampens Cornea Inflammation During Acute Primary HSV-1 Infection. *Scientific Reports* 2021, 11:10247.

Royer and Cook. Regulation of immune responses by lung stroma in allergic inflammation. *Journal of Immunology* 2021, 206:292-301.

Gmyrek, Filiberti, Montgomery, Chitrakar, Royer, Carr. HSV-1 Δ NLS live-attenuated vaccine protects against ocular HSV-1 infection in the absence of neutralizing antibody in HSV-1 gB T cell receptor-specific transgenic mice. *Journal of Virology* 2020, 94(24):e01000-20.

Royer,[†] Echegaray-Mendez, Lin, Gmyrek, Mathew, Saban, Perez, Carr. Complement and CD4⁺ T cells drive context-specific corneal sensory neuropathy. *eLife* 2019, 8:e48378. *Highlighted by *eLife Insight* article. [†]Corresponding author.

Royer, Hendrix, Larabee, Reagan, Sjoelund, Robertson, Carr. Vaccine-induced antibodies target sequestered viral antigens to prevent ocular HSV-1 pathogenesis, preserve vision, and preempt productive neuronal infection. *Mucosal Immunology* 2019, 12:827-839. *Featured on issue cover.

Royer,[†] Elliott, Le, Carr. Corneal epithelial cells exhibit myeloid characteristics and present antigen via MHC-II. *Investigative Ophthalmology & Visual Science* 2018, 59: 1512-1522. [†]Corresponding author.

Royer, Carr, Gurung, Halford, Carr. The neonatal Fc receptor and complement fixation facilitate prophylactic vaccine-mediated humoral protection against viral infection in the ocular mucosa. *Journal of Immunology* 2017, 199: 1898-1911. *Featured on issue cover.

Royer, Carr, Chucair-Elliott, Halford, Carr. Impact of type I interferon on the safety and immunogenicity of an experimental live-attenuated herpes simplex virus type 1 vaccine in mice. *Journal of Virology* 2017, 91: e02342-16.

Royer, Conrady, Carr. Herpesvirus-associated lymphadenitis distorts fibroblastic reticular cell microarchitecture and attenuates CD8 T cell responses to neurotropic infection in mice lacking the STING-IFN α/β defense pathway. *Journal of Immunology* 2016, 197: 2338-2352.

Royer, Gurung, Jinkins, Geltz, Wu, Halford, Carr. A highly efficacious HSV-1 vaccine blocks viral pathogenesis and prevents corneal immunopathology via humoral immunity. *Journal of Virology* 2016, 90:5514-5529.

Royer, Carr. A STING-dependent innate sensing pathway mediates resistance to corneal HSV-1 infection via tetherin upregulation. *Mucosal Immunology* 2016, 9:1065-1075.

Royer, Zheng, Conrady, Carr. Granulocytes in ocular HSV-1 infection: opposing roles of mast cells and neutrophils. *Investigative Ophthalmology & Visual Science* 2015, 56:3763-3775.

Royer, Cohen, Carr. The current state of vaccine development for ocular HSV-1 infection. *Expert Review of Ophthalmology* 2015, 10:113-126.

McMurtrey, Lowe, Buchli, Daga, Royer, Humphrey, Cate, Osborn, Mojsilovic, VanGundy, Bardet, Duty, Mojsilovic, Jackson, Stastny, Briggs, Zehnder, Higgins, Hildebrand. Profiling antibodies to class I HLA in transplant patient sera. *Human Immunology* 2014, 75:261-270.

Conrady, Zheng, Van Rooijen, Drevets, Royer, Alleman, Carr. Microglia and a functional type I IFN pathway are required to counter HSV-1-driven brain lateral ventricle enlargement and encephalitis. *Journal of Immunology*, 2013, 190:2807-2817.

Royer, George, Terrell. Thrombocytopenia as an adverse effect of complementary and alternative medicines, herbal remedies, nutritional supplements, foods, and beverages. *European Journal of Haematology*, 2010; 84: 421-429.

Book Chapters and Letters:

Royer, Montgomery, Carr. Ch.17: Mucosal regulatory system for balanced ocular immunity. *Mucosal Vaccines: Innovation for Preventing Infectious Diseases*. Second Edition. Elsevier/Academic Press, 2020. Editors: Hirisho Kiyono and David Pascual.

Royer, Carr. Letter to the Editor: Reply to Ghiasi, "Highly Efficacious Novel Vaccine, Humoral Immunity, and Ocular HSV-1: Reality or Myth?" *Journal of Virology*, 2017, 91: e01464-17.

Scientific Meeting Presentations:

Association for Research in Vision and Ophthalmology Annual Meeting 2020. Oral presentation: Corneal nerve damage in ocular graft-versus-host disease involves CXCR3⁺ exTh17 cells.

Association for Research in Vision and Ophthalmology Annual Meeting 2019. Oral presentation: Complement C3 and CD4 T cells coordinate corneal sensation loss in HSV-1 keratitis.

Duke University Neuroimmunology and Glia Group Retreat 2019. Oral presentation: Complement and CD4⁺ T cells drive corneal sensory nerve pathology.

Association for Research in Vision and Ophthalmology Annual Meeting 2018. Oral presentation: The HSV-1 Δ NLS vaccine functionally preserves visual axis integrity following corneal HSV-1 challenge in mice.

University of Oklahoma Health Sciences Center Vision Workshop 2017. Oral presentation: The neonatal Fc receptor and complement mediate prophylactic humoral protection against HSV-1 keratitis.

Association for Research in Vision and Ophthalmology Annual Meeting 2017. Poster: Epithelial cells exhibit myeloid antigens during acute HSV-1 keratitis.

University of Oklahoma Health Sciences Center GREAT Symposium 2017. Oral presentation: Antibody mediates protection against viral keratitis via complement fixation and neonatal Fc receptor trafficking.

University of Oklahoma Health Sciences Center Vision Workshop 2016. Oral presentation: Epithelial cell metaplasia in acute herpes simplex keratitis.

Association for Research in Vision and Ophthalmology Annual Meeting 2016. Oral presentation: Humoral immunity is requisite for vaccine-mediate protection against ocular HSV-1 infection.

University of Oklahoma Health Sciences Center Vision Workshop 2015. Oral presentation: A STING-dependent innate sensing pathway mediates resistance to acute corneal HSV-1 infection via upregulation of the antiviral effector tetherin.

Association for Research in Vision and Ophthalmology Annual Meeting 2015. Oral presentation: A STING-dependent innate sensing pathway mediates resistance to corneal HSV-1 infection.

Keystone Symposia: Viral Immunity 2015. Poster: Immunologic correlates of protection against HSV-1 infection, latency, and ocular pathology conferred by prophylactic vaccination in mice.

University of Oklahoma Health Sciences Center Vision Workshop 2014. Oral presentation: An efficacious live-attenuated HSV vaccine elicits protection against ocular pathology following infection by HSV-1 via a type I interferon-independent, antibody-dependent mechanism.

Association for Research in Vision and Ophthalmology Annual Meeting 2014. Oral presentation: Mast cells contribute to the innate defense against corneal HSV-1 infection.

University of Oklahoma Health Sciences Center Graduate Research Education and Technology Symposium 2014. Oral presentation: Granulocytes in Ocular HSV-1 Infection: Sentinel Mast Cells Function as Gatekeepers to Deter Trojan Horse Neutrophils.

International Cytokine and Interferon Society Meeting 2013. Poster: Mechanisms of Lytic HSV-1 Clearance During Primary Infection of the Trigeminal Ganglia.

University of Oklahoma Health Sciences Center Vision Workshop 2013. Oral presentation: Mast Cells Contribute to the Innate Immune Response to Corneal HSV-1 Infection.

University of Oklahoma Health Sciences Center Graduate Research Education and Technology Symposium 2013. Poster: Mast Cells in Ocular HSV-1 Infection.

University of Oklahoma Health Sciences Center Vision Workshop 2012, Oral presentation: An Efficacious Live-Attenuated HSV Vaccine Elicits Protection Against Overwhelming HSV-1 Viral Challenge in a Type-I IFN-Independent but CXCL10-dependent Manner.

Invited Presentations:

National Institutes of Health Career Symposium, Undergraduate education panelist. May 2023.

National Institutes of Health Career Symposium, Undergraduate education panelist. May 2022.

Association for Research in Vision and Ophthalmology, Science Communication Training Fellowship Webinar, “Tips for a successful outreach event.” June 17, 2019.

Liberty University College of Osteopathic Medicine, Seminar Series, Complement C3 drives corneal sensation loss in herpetic keratitis and ocular GVHD. December 4, 2018.

Association for Research in Vision and Ophthalmology Annual Meeting 2018, Special Interest Group Panelist: Phagocytic Mechanisms in Ocular Tissues, “Non-professional phagocytes in the cornea.” May 2018.

Duke University School of Medicine Department of Ophthalmology, “Complement(ing) immunity in corneal HSV-1 infection: from epithelial cells to innervation.” December 8, 2017.

Mayo Clinic Department of Pathology & Laboratory Medicine, “Outside-in: a novel paradigm for humoral immune defense against HSV-1.” November 16, 2017.

University of Oklahoma Health Sciences Center Vision Club Seminar Series, “Vaccine breakthrough for ocular HSV-1 infection.” January 26, 2017.

National Institutes of Health, National Institute of Allergy and Infectious Diseases, Rocky Mountain Laboratories, “Evaluation of a novel HSV-1 vaccine: exceptional efficacy through unconventional means.” December 7, 2016.

Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health—Health Effects Laboratory Division Seminar, “Evaluation of a novel HSV-1 vaccine: exceptional efficacy through unconventional means.” November 14, 2016.

University of Florida Department of Ophthalmology, Center for Vision Research Seminar Series. “Innate countermeasures to ocular HSV-1 infection.” November 7, 2016.

Oklahoma Christian University, College of Natural and Health Sciences, Freshman/Senior Seminar Series. “Preclinical Vaccine Research.” October 2, 2015.

OTHER RELEVANT INFORMATION:

ETBU Responsibilities:

Biology Department Chair 2021 – present

ETBU Faculty Director, Texas Joint Admission Medical Program 2023 – present

Courses Taught at ETBU:

BIOL2421: Fundamentals of Microbiology (with lab)

BIOL3452: Microbiology (with lab)

BIOL4301: Cell Biology

BIOL4403: Genetics (with lab)

CHAP1001: Thrive

CHEM4167: Biochemistry Techniques (lab)

Professional Memberships:

Association for Research in Vision and Ophthalmology, 2013 – 2020

American Association of Immunologists, 2016 – 2020

Sigma Xi, 2018 – 2021

American Society for Microbiology, 2016, 2022 – present

Texas Association of Advisors for the Health Professions, 2023 – present

Honors & Awards:

2021 Graduate of the Last Decade (GOLD) Award, Oklahoma Baptist University Alumni Association, October 2021.

Focus On Complement: Early Career Cover Image Award, International Complement Society, March 2020.

Best Presentation Award, Duke University Neuroimmunology and Glia Group Retreat, 2019.

Robert E. Anderson Best Presentation Award, University of Oklahoma Health Sciences Center Vision Workshop, 2017.

Office of Research Administration Postdoctoral Research Award, GREAT Symposium, University of Oklahoma Health Sciences Center, 2017.

Ruth L. Kirschstein National Research Service Award, Postdoctoral Appointment – National Eye Institute – Institutional T32 Vision Science Training Grant, University of Oklahoma Health Sciences Center, 2016-2017.

Joseph J. Ferretti Outstanding Publication Award, University of Oklahoma Health Sciences Center, Department of Microbiology & Immunology, 2016.

Dr. Raniyah Ramadan Foundation Young Investigator Award in Microbiology, Association for Research in Vision and Ophthalmology Annual Meeting, 2016.

Streilein Foundation for Ocular Immunology Cora Verhagen Prize, Association for Research in Vision and Ophthalmology Annual Meeting, 2016.

Ruth L. Kirschstein National Research Service Award, Predoctoral Recipient – National Eye Institute – Institutional T32 Vision Science Training Grant, University of Oklahoma Health Sciences Center, 2014-2015 & 2015-2016 (*competitive renewal*).

Wei Cao Award for Innovation in Research, University of Oklahoma Health Sciences Center Vision Workshop, 2015.

Joseph J. Ferretti Student Travel Award, University of Oklahoma Health Sciences Center, Department of Microbiology & Immunology, 2015.

National Eye Institute Travel Award, Association for Research in Vision and Ophthalmology Annual Meeting, 2014.

Robert E. Anderson Best Presentation Award, University of Oklahoma Health Sciences Center Vision Workshop, 2013.

W. P. Blake Award (University's highest student honor for leadership, scholarship, concern for others, and Christian commitment), Oklahoma Baptist University, 2011.