

Christy Niemeyer (née Beitzel), Ph.D.

Assistant Professor
Department of Neurology
University of Colorado School of Medicine
12700 E. 19th Avenue, Mail Stop B182
Aurora, Colorado 80045
telephone: 303-724-3730
fax: 303-724-4329
e-mail: christy.niemeyer@cuanschutz.edu

Education

2004-2008 Riverside Community College, Riverside, CA
2008-2012 B.S., University of California, Riverside, CA
2012-2018 Ph.D., University of Colorado School of Medicine, Anschutz Medical Campus, Aurora, CO

Professional Positions

2008-2012 Research Technician, University of California, Riverside
2013-2018 Graduate Research Associate, University of Colorado School of Medicine
2007-2017 Affiliate Faculty, Regis University
2018-2020 Visiting Assistant Faculty, Regis University
2018-2021 Postdoctoral Fellow, Department of Neurology, University of Colorado School of Medicine
2021-2022 Research Instructor, Department of Neurology, University of Colorado School of Medicine
2022-present Assistant Professor, Department of Neurology, University of Colorado School of Medicine

Honors, Special Recognitions, and Awards

2005 Americorps-Dynamic Community Service Award, University of California, Riverside
2007 Copernicus Project-Summer Internship, University of California, Riverside
2008 Undergraduate Research Mini-Grant, University of California, Riverside
2009-2011 UCLEADs Scholars' Program, University of California, Riverside
2010 2011 Deans Honors List, University of California, Riverside
2010 STEM Pathway Fellowship-HIS-CCRAA: University of California, Riverside
2010 Summer Training Academy for Research in Sciences (STARS) Fellowship, University of California, San Diego
2013-2015 NIH Neuroscience Training Grant (**T32**) trainee, University of Colorado School of Medicine
2014 Best Poster Presentation, 12th Ann. Mtg. of Front Range Neuroscience Group, Fort Collins, CO
2015 C. Werner and Kitty Hirs Research Travel Award, University of Colorado School of Medicine
2016 Ruth L. Kirschstein Individual National Research Service Award (**F31, predoctoral**), NIH
2017 Society for Neuroscience, Trainee Professional Development Award, Washington, D.C.
2017 C. Werner and Kitty Hirs Research Travel Award, University of Colorado School of Medicine
2017 Best Poster Presentation, Gordon Research Seminar: Cerebellum, Lewiston, ME
2019 Best oration award, INDOUS conference, Andaman Islands, India
2020-2021 NIH Otolaryngology Postdoctoral Training Grant (**T32**) trainee, University of Colorado School of Medicine
2023-2024 Neurology Intradepartmental Grant, University of Colorado, School of Medicine
2023-2026 Colorado Clinical and Translational Science Institute (**KL2**) Scholar, University of Colorado School of Medicine

Memberships in Professional Organizations

2008-present	Society for Neuroscience
2010-present	Society for the Advancement of Chicanos and Native Americans in Science
2017-present	Association for Women in Science (AWIS)
2019-present	International Society of NeuroVirology
2018-present	Colorado Alpha herpesvirus Latency Society
2023-present	American Society for Neurochemistry
2023-present	American Society for Virology

Major Committee and Service Responsibilities

2013-2015	Member, Admissions/Recruitment Committee, University of Colorado School of Medicine.
2013-2015	Member, Neuroscience Graduate Student Journal Club Committee, University of Colorado School of Medicine.
2013-2016	Member, Graduate Program Recruitment Committee, University of Colorado School of Medicine
2013-2016	Member, Graduate Program Student Journal Club, University of Colorado School of Medicine
2014-2016	Member, Graduate Program Admissions Committee, University of Colorado School of Medicine
2015-2018	Member, Neuroscience Program Outreach Committee, University of Colorado School of Member
2017-2018	Director of Outreach, Graduate Student Counsel, University of Colorado School of Medicine
2018-2020	Scientific Advisor, Off the Ropes 501c3, Boulder, CO

Grant Awards

SPARK/REACH Program, University of Colorado Anschutz Medical Campus	Repositioning Neurokin-1 Receptor (NK-1R) Antagonists as Antiviral Agents against Human Herpesviruses
	Co-Investigator (Maria Nagel, PI), 50% effort
	09-01-2020 to 08-31-2022
	\$100,000 (Total costs/2 years)
Federal NIH/NIA R01, AG079193-01A1	Virus and olfactory system interactions accelerate Alzheimer's disease,
	Co-Investigator (Diego Restrepo, PI), 25% effort
	04-01-2023 to 03-31-2028
	\$724,956 (Total direct costs/5 years)
Federal NIH/NIA, PO1, AG032958	Contributions of varicella-zoster virus exosomes to Alzheimer's disease pathology
	Administrative Supplement
	Co-Investigator (Maria Nagel, PI), 25% effort
	01-01-2022 to 12-31-2023
	\$249,975 (Total direct costs/1 year)
Department of Neurology Intradepartmental Award	Investigating the Role of VZV Reactivation in the Gut-Brain Axis: Implications for Parkinson's Disease
	Principal Investigator , 10% effort
	12-01-2023 to 11-30-2024
	\$40,000 (total direct costs/year)
Colorado Clinical and Translational Research Scholar, K12	Targeting HSV-1 Induced Alzheimer's Pathology: Potential Therapeutics to Mitigate Non-Cognitive Deficits
	Principal Investigator , 75% effort
	12-01-2023 to 11-30-2026
	\$45,175 (Total direct costs/year)

Federal NIH/NIAID, R21, AI176110

Remote cellular reprogramming by non-infectious, pathogenic varicella zoster virus exosomes

Co-Investigator (Andrew Bubak PI), 5% effort

\$125,000 (Total direct costs/year)

School of Medicine- Across the Finish Line (AFL) award

Bruce (PI)

University of Colorado, Anschutz Medical School

01/01/2024 – 12/31/2024

Role: Co-Principal Investigator

Recurrent Reactivation of HSV-1 Leads to Microglia Dysfunction and Alzheimer's Disease Pathology

Public Service, Community Outreach

2006-2007	America Corps Trainee (<i>provided educational and community services to low-income schools in the Riverside County School District</i>)
2015	Creator and Chair, University of Colorado Anschutz-Downtown Seminar (<i>developed a graduate student-run outreach seminar series to connect the undergraduate and graduate school campuses better</i>)
2016	Mentor, undergraduate students from Regis University (<i>mentored in theoretical framework and training in lab techniques for a senior student's fall project</i>)
2016	Co-director, 2016 University of Colorado AMC Brain Awareness Day (<i>designed and coordinated an interactive learning experience for all ages held at the Denver Museum of Nature and Science</i>)
2016	Published popular science article in the Guatemalan magazine <i>Contrapoder</i> entitled "Consultorio La luz azul que afecta nuestro sueño" ("How blue light effects sleep")
2017	Mentor, masters' students at C.U. Denver (<i>provided mentorship on a master student's research and helped develop research techniques novel to the lab</i>)
2018-2019	Scientific Advisor, 501c3: Off the Ropes (<i>provides scientific mentorship to the board of Off the Ropes Youth and Parkinson's Boxing Program</i>)
2023-Present	Scientific Advisor, 501c3: Neuroping (Ping Pong Connections)- <i>provide scientific mentorship on research about social/physical outreach programs for individuals with neurodegenerative diseases</i>

Teaching Experience

2016	Affiliate Faculty, NS 261: Introduction to Brain and Behavior Lab (Fall semester), Department of Psychology and Neuroscience, Regis University
2016	Co-designed and Co-taught Science Communications Course, University of Colorado School of Medicine (<i>provided graduate students focus on effective techniques for sharing scientific research</i>)
2017	Affiliate Faculty, NS 260 & 261: Introduction to Brain and Behavior (Fall semester), Department of Psychology and Neuroscience, Regis University
2017	Affiliate Faculty, NS 261: Introduction to Brain and Behavior Lab (Spring semester), Department of Psychology and Neuroscience, Regis University
2018-2020	Visiting Assistant Faculty, Department of Psychology and Neuroscience, Regis University
2016-present	Lecturer ANAT6310: Fundamental of Structure and Function in the Human Nervous System (Cerebellum Lecture), University of Colorado, School of Medicine
2022-present	Lecturer IDPT8037 Advanced Topics in Neuroscience (Neurovirology Lecture), University of Colorado, School of Medicine

Courses Taught

NS260, Regis University, Introduction to Brain and Behavior
NS261, Regis University. Introduction to Brain and Behavior lab
NS/PY423, Regis University, Research Methods and Statistics
NS/PY424, Regis University, Research Methods and Statistics Lab
NS/PY410, Regis University, Neurological Disorders

Mentees

Crystal Minjarez, Undergraduate, Regis University (Fall semester, 2018)

Project: Anatomical Organization of Cholinergic Inputs to the Cerebellum: Analysis of the Allen Brain Atlas-Mouse Connectivity

Briar Fine, Undergraduate, Regis University (Fall semester, 2019)

Project: Examining the Effect of Environmental Pathogens on Neurological Disorders

Wyatt Colloty, Master Capstone Project, Modern Human Anatomy Masters' Program, University of Colorado Anschutz Medical School (2019-2020)

Project: Distribution of Herpes Simplex Virus Type 1 Infection in Wild Type Mice Following Intranasal Inoculation

Rocio Griggs, Master Capstone Project, Modern Human Anatomy Masters' Program, University of Colorado Anschutz Medical School (2019-2020)

Project: Evaluating Adrenal Glands During Varicella Virus Infection

Ken Bui, Undergraduate Trainee at Regis University (2021-2022)

Project title: Distribution and abundance of HSV-1 viral antigen in 5xFAD mouse model of Alzheimer's disease

Katherine Colon-Reyes, Masters Student, Modern Human Anatomy Masters' Program Anschutz Medical School (2021-2023)

Project title: Shifts in Microglia Dynamics during HSV-1 Infection and Latency

Michael Corigliano, Masters Student, Modern Human Anatomy Masters' Program, Anschutz Medical School (2021-2023)

Project title: Metabolic Disruption of Astrocytes during Varicella Zoster Virus Infection

Mary Goldschmidt, Undergraduate Trainee at Regis University (2023)

Project title: Alterations in Tyrosine Hydroxylase in the Locus Coeruleus following HSV-1 infection

Frances Gibson, Undergraduate Trainee at Regis University (2023)

Project title: Viral Infection of the Gut and Vagus Nerves in Non-Human Primates

Jocelyn Contreras, Master Student, Biomedical Sciences and Biotechnology Anschutz Medical School (2023-present)

Project title: Herpes Simplex Virus, Type 1 (HSV-1) Mediated Changes in Olfactory Dysfunction

Dillon Donaghy, Master's student, Microbiology, Anschutz Medical School (2023-2024)

Project title: Altered Host Metabolism during Viral Infection in the Gut and Olfactory Epithelium

Quynh Pham, Undergraduate Trainee at Regis University (2024)

Project title: Gut Pathology in Alzheimer's Disease

Kaylee Stouder, Undergraduate Trainee at Regis University (2024)

Project title: Viral infection of the Olfactory Epithelium

Allison Canada, Master's Student, Modern Human Anatomy Masters' Program, Anschutz Medical School (2025-current)

Project title: Astrocytic Responses to HSV-1 Infection Across APOE Isoforms: Linking Genetic Risk to Alzheimer's Disease Mechanisms

Allison McGuire, Master's Student, Modern Human Anatomy Masters' Program, Anschutz Medical School (2024-current)

Project title: Viral Disruption of Neuromodulatory Signaling: HSV-1-Induced Changes in Norepinephrine and BDNF in Alzheimer's Disease

Invited Lectures, Presentations, and Research-Based Oral Presentations

- 2017 "The rubrocerebellar feedback pathway and cerebellar nuclear output",
Gordon Research Symposium: Cerebellum, Lewiston, ME
- 2019 "The role of TRPV1 during VZV infection in non-neuronal cell types", *44th Annual International Herpesvirus Workshop*, Knoxville, TN
- 2019 "The role of TRPV1 channels in varicella zoster virus (VZV) infection in trigeminal ganglia pain signaling", Mini Symposium for Headache, University of Colorado, School of Medicine, Aurora, CO
- 2021 "Varicella zoster and simian varicella virus infection of adrenal glands and adrenal cortical cells." Presented at the *45th annual International Herpes Workshop*; Virtual
- 2021 "The contribution of viral infection to neurodegenerative diseases" Presented at *the Modern Human Anatomy Masters Seminar Series*, University of Colorado, School of Medicine; Aurora, Colorado
- 2022 "Varicella zoster virus infection of human olfactory epithelium induces intracellular amyloid deposition in the absence of cytokine upregulation" Presented at the *46th annual International Herpes Workshop*; Virtual
- 2022 "Varicella zoster virus infection of human olfactory epithelium induces intracellular amyloid deposition in the absence of cytokine upregulation" Presented at the 17th annual International Society for NeuroVirology; Virtual
- 2024 "Herpes Simplex Virus type-1 (HSV-1) Viral Entry and Epigenetic Alterations in the CNS" Presented at the 43rd annual American Society of Virology, Columbus Ohio
- 2025 "Regional and Epigenetic Microglial Responses to HSV-1 infection: Implications for Neurodegeneration" Presented at the *20th annual International Society of NeuroVirology*, Denver, Colorado
- 2025 "Viral-Epigenetic Interplay in Microglia: Regional Responses to HSV-1 and Their Role in Neurodegenerative Disease" Presented at the *49th annual International Herpes Workshop*, Berlin, Germany
- 2025 "Epigenetic Reprogramming of Microglia by HSV-1 Drives Region-Specific Neuroinflammatory Signatures" Presented at the annual Department of Neurology Retreat, Denver Colorado

Bibliography

1. Bernard, P.B., Castano, A.M., **Beitzel, C.S.**, Carlson, V.B., Benke, T.A.: Behavioral changes following a single episode of early-life seizures support the latent development of an autistic phenotype. *Epilepsy Behav.* 44:78-85, 2015.
2. **Beitzel, C.S.**, Houck, B.D., Lewis, S.M., Person, A.L.: Rubrocerebellar feedback loop isolates the interposed nucleus as an independent processor of corollary discharge information. *J. Neurosci.* 37:10085-10096, 2017.
3. Bubak, A.N., Como, C.N., Coughlan, C.M., Johnson, N.R., Hassell, J.E. Jr., Mescher, T., **Niemeyer, C.S.**, Mahalingam, R., Cohrs, R.J., Boyd, T.D., Potter, H., Russ, H.A., Nagel, M.A.: Varicella-zoster virus infection of primary human spinal astrocytes produces intracellular amylin, amyloid- β , and an amyloidogenic extracellular environment. *J. Infect. Dis.* 221:1088-1097, 2020.
4. Nagel, M.A., **Niemeyer, C.S.**, Bubak, A.N.: Central nervous system infections produced by varicella zoster virus. *Curr. Opin. Infect. Dis.* 33:273-278, 2020.
5. Hudish, L., Bubak, A.N., Triolo, T., **Niemeyer, C.S.**, Sussel, L., Nagel, M.A., Taliaferro, M.J., Russ, H.A.: Modeling hypoxia induced neuropathies using a fast and scalable human motor neuron differentiation system. *Stem Cell Reports* 14:1033-1043, 2020.
6. Baxter, B.D., Larson, E.D., Feinstein, P., Polese, A.G., Bubak, A.N., **Niemeyer, C.S.**, Hassell, J. Jr., Merle, L., Shepherd, D., Ramakrishnan, V.R., Nagel, M.A., Restrepo, D.: Transcriptional profiling reveals TRPM5-expressing cells involved in viral infections in the olfactory epithelium. *bioRxiv* doi: 10.1101/2020.05.14.096016, 2020.

7. Baxter, B.D., Larson, E.D., Merle, L., Feinstein, P., Polese, A.G., Bubak, A.N., **Niemeyer, C.S.**, Hassell, J. Jr., Shepherd, D., Ramakrishnan, V.R., Nagel, M.A., Restrepo, D.: Transcriptional profiling reveals potential involvement of microvillous TRPM₅-expressing cells in viral infection of the olfactory epithelium. *BMC Genomics* 22:224, 2021.
8. **Niemeyer, C.S.**, Mescher, T., Griggs, R., Orlicky, D.J., Wilkerson, G.K., Bubak, A.N., Hassell, J.E. Jr., Feia, B., Mahalingam, R., Traina-Dorge, V., Nagel, M.A.: Histopathological analysis of adrenal glands after simian varicella virus infection. *Viruses* 13:1245; doi: 10.3390/v13071245, 2021.
9. Bubak, A.N., Mescher, T., Mariani, M., Fietze, S.E., Hassell, J.E. Jr., **Niemeyer, C.S.**, Como, C.N., Burnet, A.M., Subramnian, P.S., Cohrs, R.J., Mahalingam, R., Nagel, M.A.: Targeted RNA sequencing of formalin-fixed, paraffin-embedded temporal arteries from giant cell arteritis cases reveals viral signatures. *Neurol. Neuroimmunol. Neuroinflamm.* 8:e1078; doi: 10.1212/NXI.0000000000001078, 2021.
10. Bubak, A.N., Como, C.N., Hassell, J.E. Jr., Mescher, T., Fietze, S.E., **Niemeyer, C.S.**, Cohrs, R.J., Nagel, M.A.: Targeted RNA sequencing of VZV-infected brain vascular adventitial fibroblasts indicates that amyloid may be involved in VZV vasculopathy. *Neurol. Neuroimmunol. Neuroinflamm.* 9:e1103; doi: 10.1212/NXI.0000000000001103, 2022.
11. **Niemeyer, C.S.**, Mescher, T., Bubak, A.N., Medina, E.M., Hassell, J.E. Jr., Nagel, M.A.: VZV infection of primary human adrenal cortical cells produces a proinflammatory environment without cell death. *Viruses* 14:674; doi: 10.3390/v14040674, 2022.
12. Mahalingam, R., Feia, B., Coleman, C., Anupindi, K., Saravanan, P., Luthens, A., Bustillos, A., Das, A., de Haro, E., Doyle-Meyers, L., Looper, J., Bubak, A.N., **Niemeyer, C.S.**, Palmer, B., Nagel, M.A., Traina-Dorge, V.: Simian varicella virus pathogenesis in skin during varicella and zoster. *Viruses* 14:1167; doi: 10.3390/v14061167, 2022.
13. Bubak, A.N., Coughlan, C., Posey, J., Saviola, A.J., **Niemeyer, C.S.**, Lewis, S.W.R., Bustos Lopez, S., Solano, A., Tying, S.K., Delaney, C., Neeves, K.B., Mahalingam, R., Hansen, K.C., Nagel, M.A.: Zoster-associated prothrombotic plasma exosomes and increased stroke risk. *J. Infect. Dis.* jiac405; doi: 10.1093/infdis/jiac405, 2022.
14. Bubak, A.N., Merle, L., **Niemeyer, C.S.**, Baxter, B.D., Polese, A.G., Ramakrishnan, V., Gomez, J., Madrigal, L., Villegas-Lanau, A., Lopera, F., Macklin, W., Fietze, S., Nagel, M.A., Restrepo, D.: Signatures for viral infection and inflammation in the proximal olfactory system in familial Alzheimer's disease. *Neurobiol. Aging* 123:75-82, 2022.
15. Bubak AN, Coughlan C, Posey J, Saviola AJ, **Niemeyer CS**, Lewis SWR, Lopez SB, Solano A, Tying SK, Delaney C, Neeves KB, Mahalingam R, Hansen KC, Nagel MA. Zoster-Associated Prothrombotic Plasma Exosomes and Increased Stroke Risk. *J Infect Dis.* 2023 Apr 18;227(8):993-1001. doi: 10.1093/infdis/jiac405.
16. **Niemeyer CS**, Traina-Dorge V, Doyle-Meyers L, Das A, Looper J, Mescher T, Feia B, Medina E, Nagel MA, Mahalingam R, Bubak AN. Simian varicella virus infection and reactivation in rhesus macaques trigger cytokine and A β 40/42 alterations in serum and cerebrospinal fluid. *J Neurovirol.* 2024 Feb;30(1):86-99. doi: 10.1007/s13365-024-01196-w.
17. **Niemeyer CS**, Harlander-Locke M, Bubak AN, Rzasa-Lynn R, Birlea M. Trigeminal Postherpetic Neuralgia: From Pathophysiology to Treatment. *Curr Pain Headache Rep.* 2024 Apr;28(4):295-306. doi: 10.1007/s11916-023-01209-z. Epub 2024 Jan 23. PMID: 38261232; PMCID: PMC10940365.
18. Cleland NR, Potter GJ, Buck C, Quang D, Oldham D, Neal M, Saviola A, **Niemeyer CS**, Dobrinskikh E, Bruce KD. Altered metabolism and DAM-signatures in female brains and microglia with aging. *Brain Research.* 2024 Apr 15;1829:148772.

19. **Niemeyer CS**, Fietze S, Coughlan C, Lewis SWR, Bustos Lopez S, Saviola AJ, Hansen KC, Medina, EM, Hassell JE Jr, Kogut S, Traina-Dorge V, Nagel MA, Bruce KD, Restrepo D, Mahalingam R, Bubak AN, Suppression of the host antiviral response by non-infectious varicella zoster virus extracellular vesicles. J Virol. 2024 Jul 25:e0084824.PMID: 39051773
19. **Niemeyer CS**, Merle L, Bubak AN, Dnate' Baxter, Gentile Polese A, Colon-Reyes K, Vang S, Hassell Jr.JE, Nagel MA, Restrepo D. Olfactory and Trigeminal Routes of HSV-1 CNS infection with Regional Microglial Heterogeneity. J Virol. 2024 PMID: 39475273 ***corresponding author**