

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE

CURRICULUM VITAE

September 2026

Maria Acena Nagel, MD

Professor
Cockerill-Wittmus Chair in Research
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Education

1991	BA, University of Chicago, Chicago, IL
2002	MD, University of Illinois at Urbana-Champaign, Urbana, IL
2002-2003	Internship, Internal Medicine, University of Colorado School of Medicine (SOM), Denver, CO
2003-2006	Residency, Neurology, University of Colorado SOM, Denver, CO
2006-2009	Postdoctoral Fellowship, Neurovirology, National Institutes of Health (NIH), University of Colorado SOM, Denver, CO

Academic Appointments

2006-2009	Instructor, Neurology, University of Colorado SOM, Denver, CO
2009-2015	Assistant Professor, Department of Neurology, University of Colorado SOM, Denver, CO
2015-2020	Associate Professor, Department of Neurology, University of Colorado Anschutz SOM, Aurora, CO
2017-2020	Associate Professor, Department of Ophthalmology, University of Colorado Anschutz SOM, Aurora, CO
2020-present	Professor, Department of Neurology, University of Colorado Anschutz SOM, Aurora, CO
2020-present	Professor, Department of Ophthalmology, University of Colorado Anschutz SOM, Aurora, CO
2024-present	Cockerill-Wittmus Endowed Chair in Neurology, University of Colorado Anschutz SOM, Aurora, CO

Hospital, Government or Other Professional Positions

2006-present	Clinical Neurologist, University of Colorado Hospital, University of Colorado Anschutz Medical Campus, Aurora, CO
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Honors, Special Recognitions and Awards

1987-1991	University of Chicago Scholar, Chicago, IL
1987-1991	George M. Pullman Educational Foundation Scholar, Chicago, IL

1991	Sigma Xi Award for Excellence in Science, University of Chicago, Chicago, IL
1991	Special Honors in Biological Sciences, University of Chicago, Chicago, IL
1993, 1998	Outstanding Teaching Award, Biochemistry, University of Illinois, Urbana, IL
2001	Johnson Endowment Fellowship, Medical Scholars Program, University of Illinois, Urbana, IL
2006	Award for Most Outstanding Research by a Neurology Resident, Neurology, University of Colorado SOM, Denver, CO
2006	MBA Oldstone Pioneer Lectureship Award for an Investigator in Training, International Society for Neurovirology
2011	Grateful Patient and Family Award, University of Colorado Hospital, Denver
2013	Fellow (elected), American Neurological Association
2018	Induction into the Hall of Fame, Bloom Trail High School, Chicago Heights, IL
2019-present	Recognized as an Expertscape World Expert in Herpes Zoster (Expertise in Herpes Zoster: Worldwide), http://www.expertscape.com/ex/herpes+zoster

Membership in Professional Organizations

American Academy of Neurology
American Heart Association
American Neurological Association
American Society of Microbiology
International Society for NeuroVirology
Rocky Mountain Virology Club
Royal Society of Medicine
Sigma Xi Honor Society

Major Committee and Service Responsibilities

2010-2014	Admissions Committee, Medical School, University of Colorado SOM
2010-2014	Mentor, NIH LABCOATS Program, University of Colorado SOM
2012-2014	Neurology Grand Round Committee, University of Colorado SOM
2012-2016	Mentor, Denver STARS Program, Office of Inclusion and Outreach, University of Colorado SOM
2013-2016	Co-organizer, Odyssey Elementary School Health Visit Day, Office of Inclusion and Outreach, University of Colorado SOM
2015	Founder, Young Entrepreneurs Club, Odyssey Elementary School, Denver, CO
2016-2024	Data Safety Monitoring Committee Member, Zoster in Eye Disease (ZEDS) Multi-Center Clinical Trial, National Eye Institute
2016-present	Associate Editor (2024-present), Editorial Board (2016-present), <i>Journal of Neurovirology</i>
2017-2019	Mentor, Graduate Experiences for Multicultural Students (GEMS) Program, University of Colorado SOM
2017-present	President (2021-present), Vice President (2017-2021), Colorado Alpha herpesvirus Latency Society
2018	Panel Chair, CNS Herpes Infections Panel, American Academy of Neurology, Los Angeles, CA
2018	Session Chair, Keynote & Symposium VI: Immunity & Pathogenesis, International Herpesvirus Workshop, Vancouver, British Columbia
2019-2024	Member, Board of Directors, Clean Production Action
2019	Mentor, Master's in Modern Human Anatomy Capstone Project, Department of Cell and Developmental Biology, University of Colorado SOM
2019, 2021	Reviewer, pre-K Grant Program, Colorado Clinical and Translational Sciences Institute (CCTSI), University of Colorado Denver Anschutz Medical Campus

2019	Member, VZV Vasculopathy Advisory Board, GlaxoSmithKline
2019	Member, Panel Discussion, Junior Scientist Event "Work/Life Balance", 16 th International Symposium on NeuroVirology, Atlanta, GA
2021	COVID-19 Drug Review Consultant, Global Solutions Institute/GTED2 Project
2021	Reviewer, Junior and Senior Research Projects of the Research Foundation Flanders, European Science Foundation
2021	Moderator, Workshop: "Is there a causative role for infectious agents in Alzheimer's disease?" (Session I: "Herpes simplex and Alzheimer's disease – the epidemiological perspective"), National Institute on Aging (NIA), Division of Neuroscience, NIH, Virtual Meeting
2021	Reviewer, Colorado (CO) Pilot Grant Program – Study Section, Colorado Clinical and Translational Sciences Institute (CCTSI), University of Colorado Denver Anschutz Medical Campus
2022	Member, Board of Directors, International Society for Neurovirology
2022	Moderator, Panel Discussion, Mentorship/Diversity Event-Career Explorations, 18 th International Symposium on Neurovirology, Virtual Meeting
2022	Session Chair, Special Topics in Neurovirology, 18 th International Symposium on NeuroVirology, Virtual Meeting
2022-2025	Section Editor, <i>Encyclopedia of the Neurological Sciences</i> , 3 rd Edition
2023	Co-Chair, Mini-session: "Neuro Virology, What's New in Neuro Virology & Neuro Immunology?", TED for your HEAD/Neuroscience Innovation Initiative, University of Colorado Anschutz SOM, Aurora, CO
2023-present	Member, NASA Astronaut Health Committee
2024-2025	Co-Chair, Local Organizing Committee, 20 th International Symposium on NeuroVirology, Denver, CO
2026	Panel member, "Exploring Biological Mechanisms" in seminar "Zoster Vaccine and Dementia Risk Reduction: Evidence and Mechanisms", NIH, Virtual Meeting
2026	Panel member, "The Dementia Puzzle: Mechanisms, Risk Factors, and Early Intervention in Clinical Practice", GSK-sponsored event, London, U.K.

Licensure and Board Certification

2006-present State of Colorado

Inventions, Intellectual Property and Patents Held or Pending

Treatment and Prevention of Alpha Herpes Virus Infection with Neurokinin-1 Receptor Antagonists, International patent filed 3-28-2019 (PCT/US19/24521)
 NK-1R Antagonists Block Exosome Transmission, Invention Disclosure Form Stage (patent in review)
 Inhibitors of c-Myc Block VZV Infection, Invention Disclosure Form Stage (patent in review)

Review and Referee Work

Ad hoc reviewer for journals: *Archives of Medical Research*, *BMC Infectious Diseases*, *International Journal of STD & AIDS*, *Journal of Medical Virology*, *Journal of Neuroimmunology*, *Journal of Neurosciences in Rural Practice*, *Neurology*, *PLOS ONE*, and *The Journal of Infectious Diseases*
 Ad hoc reviewer for the Medical Research Council (U.K.)
 Ad hoc reviewer for the Wellcome Trust (U.K.)
 Ad hoc reviewer for Clinical Research and Development Committee (University College of London)
 Ad hoc reviewer for the National Eye Institute
 Ad hoc reviewer for the National Institutes of Health Center for Scientific Review, Infectious Diseases and Immunology Fellowship Program, National Institutes of Health
 Ad hoc reviewer for the National Institutes of Health Center for Scientific Review, Immunology and

Infectious Diseases A (IIDA) Review Branch & Clinical Neuroscience Review Branch (CN)
Standing member for the National Institutes of Health Center for Scientific Review, Clinical Immunology
and Brain Tumors (CNBT) Study Section

**Invited Extramural Lectures, Presentations, Visiting Professorships, and
Major Presentations to Medical and Undergraduate Students and House Officers**

- 2008 "VZV transcription in latently-infected human ganglia", International Herpes Virus Workshop, Estoril, Portugal
- 2010 "Varicella zoster virus vasculopathy: pathological and immunological analysis of virus-infected arteries", International Herpesvirus Workshop, Salt Lake City, UT
- 2010 "VZV transcription in latently-infected human ganglia", International Herpesvirus Workshop, Salt Lake City, UT
- 2010 "Varicella zoster virus vasculopathy", Grand Rounds, Neurology, National Jewish Medical Center, Denver, CO
- 2011 "Neurological complications of varicella zoster virus", Grand Rounds, Infectious Disease, National Jewish Medical Center, Denver, CO
- 2011 "Neurological complications of varicella zoster virus" and "Diagnosis of VZV vasculopathy", 100th Anniversary of the Dutch Microbiology Society, Arnhem, The Netherlands
- 2012 "VZV pain – it's all the same", Grand Rounds, Neurology, University of Colorado School of Medicine, Aurora, CO
- 2012 "VZV and ischemic optic neuropathy", Grand Rounds, Ophthalmology, University of Colorado School of Medicine, Aurora, CO
- 2012 "Purinergic signaling and matrix metalloproteases in VZV vasculopathy", Infectious Disease Research Seminar, University of Colorado School of Medicine, Aurora, CO
- 2012 "VZV Vasculopathy", International Stroke Conference, New Orleans, LA
- 2012 "Purinergic signaling in VZV vasculopathy", Colorado Alphaherpesvirus Latency Symposium, Vail CO
- 2013 "Purinergic signaling in VZV-infected brain vascular adventitial fibroblasts", International Herpesvirus Workshop, Grand Rapids, MI
- 2013 "Neurological complications of varicella zoster virus", Grand Rounds, Rose Medical Center, Denver, CO
- 2013 "Shingles and postherpetic neuralgia", Grand Rounds, Geriatrics, University of Colorado School of Medicine, Aurora, CO
- 2014 "Neurovirology", Student Interest Group in Neurology, University of Colorado School of Medicine, Aurora, CO
- 2015 "Shingles and stroke", Cafe Scientifique, Sigma Xi Society, Boulder, CO
- 2015 "VZV vasculopathy", Grand Rounds, Neurology, University of New Mexico
- 2016 "Multisystem disease caused by VZV", Grand Rounds, NASA, Houston, TX
- 2016 "Space weather and human health", Grand Rounds, NASA, Houston, TX
- 2016 "VZV – the new great pretender", Grand Rounds, Immunology and Microbiology, University of Colorado School of Medicine, Aurora, CO
- 2017 "Mechanisms of VZV vasculopathy", Grand Rounds, Neurology, University of Colorado School of Medicine, Aurora, CO
- 2017 "VZV vasculopathy", Grand Rounds, Neurology, Temple University, Philadelphia, PA
- 2017 "Varicella zoster virus vasculopathy", Neurology Research Retreat, University of Colorado School of Medicine, Aurora, CO
- 2017 "Pathophysiology of varicella zoster virus related vascular disease", Advances and Controversies in Our Understanding of Herpes Zoster, Royal Society Medicine, London
- 2017 "VZV vasculopathy: past, present and future", 42nd Annual International Herpesvirus Workshop, Ghent, Belgium
- 2018 "Clinical manifestations of varicella zoster virus", Pathfinders, Evergreen, CO

- 2018 "Life as a brain detective", 21st Expanding Your Horizons Workshop, American Association of University Women (Boulder Branch), Boulder, CO
- 2018 "VZV disruption of perineurial cells via IL-6", Neurology Research Retreat, University of Colorado School of Medicine, Aurora, CO
- 2018 "Nuclear neurokinin-1 receptor promotes varicella zoster virus spread in human spinal astrocytes", American Society for Neurochemistry, Riverside, CA
- 2018 "VZV-induced disruption of perineurial cells via IL-6: implications in neurotropic viral infections and peripheral nerve injury", Colorado Alphaherpesvirus Latency Symposium, Vail, CO
- 2018 "VZV-induced disruption of perineurial cells via IL-6: implications in neurotropic viral infections and peripheral nerve injury", Translational Neuroimmunology, FASEB Science Research Conference, Snowmass, CO
- 2019 "The link between varicella zoster virus infection and Alzheimer's disease", Grand Rounds, Neurology, Temple University, Philadelphia, PA
- 2019 "Life as a brain detective", 22nd Expanding Your Horizons Workshop, American Association of University Women (Boulder Branch), Boulder, CO
- 2019 "The link between varicella zoster virus infection and Alzheimer's disease", Grand Rounds, Neurology, University of Colorado School of Medicine, Aurora, CO
- 2019 "Proviral amylin and amyloidogenic viral peptides link VZV with Alzheimer's disease", Colorado Alphaherpesvirus Latency Symposium, Vail, CO
- 2019 "Zoster, amyloid and animal models", Neurology Research Retreat, University of Colorado School of Medicine, Aurora, CO
- 2019 "Proviral amylin and amyloidogenic viral peptides link VZV with Alzheimer's disease", 43rd Annual International Herpesvirus Workshop, Knoxville, TN
- 2019 "Varicella zoster virus vasculopathy", Grand Rounds, Neurology, Albert Einstein College of Medicine and Montefiore Medical Center, New York, NY
- 2019 "Proviral amylin and amyloidogenic viral peptides link VZV with Alzheimer's disease", 19th Annual Rocky Mountain Virology Meeting, Ft. Collins, CO
- 2019 "Varicella zoster virus reactivation from cranial nerves", Otolaryngology T32 Research Seminar Series, Department of Otolaryngology, University of Colorado School of Medicine, Aurora, CO
- 2019 "Varicella zoster virus and amyloid-associated diseases", 2019 Audrey Gilden Lectureship, 16th International Symposium on NeuroVirology, Atlanta, GA
- 2019 "Proviral amylin and amyloidogenic viral peptides link VZV with Alzheimer's disease", Don Gilden Memorial Lecture, INDOUS 2019 Symposium/Workshop, Port Blair, India
- 2020 "VZV and amyloid-associated diseases", Distinguished Speakers in Microbiology and Infectious Disease (seminar series), University of Florida, Gainesville, FL
- 2020 "Neurological sequelae of COVID-19", Bilateral Indo-US Webinar on COVID Biology
- 2020 "Proviral amylin and amyloidogenic viral peptides link VZV with Alzheimer's disease", Congreso (Digital) Sociedad de Microbiología de Chile
- 2021 "VZV and amyloid-associated diseases", Cell and Molecular Biology Seminar Series, Department of Biological Science, Indian Institute of Science Education and Research - Kolkata, India
- 2021 "A mystery of muscles", 2021 Colorado Alphaherpesvirus Latency Symposium, Virtual Meeting
- 2021 "Postherpetic neuralgia – a new amyloid disease?", 17th International Symposium on NeuroVirology, Virtual Meeting
- 2021 "Virus and olfactory system interactions accelerate Alzheimer's disease pathology", Workshop: Is there a causative role for infectious agents in Alzheimer's disease?, NIA, Division of Neuroscience, NIH, Virtual Meeting
- 2022 "Could viruses, olfactory 'railroad track' unlock Alzheimer's puzzle?" (with Dr. Diego Restrepo), CU Anschutz 360 Podcast, Anschutz Medical Campus;
<https://news.cuanschutz.edu/news-stories/could-viruses-olfactory-railroad-track-unlock-alzheimers-puzzle>

- 2022 "Herpesviruses and neuropathogenesis", Molecular Virology & Pathogenesis course (MICB 7701), Department of Immunology & Microbiology, University of Colorado School of Medicine, Aurora, CO
- 2022 "A macro view of latency", 2022 Colorado Alphaherpesvirus Latency Symposium, Virtual Meeting
- 2022 "The rare disorder that paralyzed half of Justin Bieber's face", CU Anschutz Today, June 14, 2022; <https://news.cuanschutz.edu/medicine/the-rare-disorder-that-paralyzed-half-of-justin-biebers-face>
- 2022 "Zoster-associated prothrombotic exosomes and increased stroke risk", 22nd Annual Rocky Mountain Virology Meeting, Ft. Collins, CO
- 2022 "Zoster-associated prothrombotic exosomes and increased stroke risk", 18th International Symposium on NeuroVirology, Virtual Meeting
- 2022 "Neurological complications of VZV and HSV", IDweek 2022, Infectious Diseases Society of America, Washington, DC
- 2022 "VZV vasculopathy", Grand Rounds (virtual), University of Washington, Seattle, WA
- 2022 "Regional transcriptomics identifies gaining biomarkers in fixed brains of caloric-restricted versus ad libitum aged mice", US Food and Drug Administration, Little Rock, AR
- 2023 "Herpesviruses and neuropathogenesis", Molecular Virology & Pathogenesis course (MICB 7701), Department of Immunology & Microbiology, University of Colorado School of Medicine, Aurora, CO
- 2024 "Herpesviruses and neuropathogenesis", Molecular Virology & Pathogenesis course (MICB 7701), Department of Immunology & Microbiology, University of Colorado School of Medicine, Aurora, CO
- 2024 "Mechanisms by which varicella zoster virus (VZV) contributes to Alzheimer's disease pathogenesis", Medical Scientific Workshop on Herpes Zoster Comorbidity and Internal Lecture (virtual), GlaxoSmithKline, Tokyo, Japan
- 2024 "Relationship between viruses, vaccines, and dementia", Alzheimer's Association of Colorado, Webinar, December 12, 2024.
- 2025 "Herpes zoster and dementia", GLAXOSMITHKLINE Training Webinar. May 15-16, 2025.

Students and Postdoctoral Fellows Trained

Since 2006, I have served as a career advisor and research mentor to 20 mentees, including 6 postdoctoral fellows, 3 neurology residents, 4 medical students, 4 post-baccalaureate students, 13 undergraduates and 8 high school students. This mentoring has been research oriented in the neurovirology laboratories in the Department of Neurology. My mentees have multiple peer-reviewed publications in journals such as *Neurology*, *Journal of Neurological Sciences*, *Journal of Infectious Diseases*, *Archives of Neurology* and *Journal of Virology*; and they have given presentations at local and regional scientific meetings hosted by the International Society of Neurovirology, American Society of Microbiology, Colorado Alphaherpesvirus Latency Society and Rocky Mountain Virology Club; have received 7 awards; and have obtained 5 grants, including an Undergraduate Research Opportunities Grant from both University of Colorado Denver and Metropolitan State College of Denver, salary support for students from the Office of Inclusion and Outreach, and 3 funded research supplements from the NIA to promote diversity.

Trainees (most recent)

Andrew Bubak, PhD, 2017-2019, Postdoctoral Fellow

Current Position: Associate Research Professor, Department of Neurology, University of Colorado Anschutz SOM, Aurora, CO

Christy Niemeyer, PhD, 2018-2021, Postdoctoral Fellow

Current Position: Assistant Research Professor, Department of Neurology, University of Colorado Anschutz SOM, Aurora, CO

James E. Hassell, Jr., PhD, 2019-2021, Postdoctoral Fellow

Current Position: Postdoctoral Fellow, Psychological and Brain Sciences, Texas A&M, College Station, TX

April Rempel, 2010-2014, Postbaccalaureate NIH Fellow to Support Diversity in the Health Sciences; Undergraduate Research Intern

Current Position: Medical Student, University of Oklahoma, Oklahoma City, OK

Ann Wyborny, DO, 2011-2013, Research Fellow; 2016-2018, Undergraduate Research Intern

Current Position: Neurologist, Intermountain Health Good Samaritan Hospital, Iowa City, IA

Stephanie James, PhD, 2011-2014, Postdoctoral Fellow

Current Position: Associate Professor, Pharmaceutical Sciences, Rueckert-Hartman College of Health Professions, Regis University, Denver, CO

Emily Forbes, MD, 2013-2017, Neurology Resident

Current Position: Assistant Professor, Department of Neurology, University of Colorado Anschutz Medical Campus, School of Medicine

Hussain Badani, PhD, 2014-2016, Postdoctoral Fellow

Current Position: Senior Scientific Director, PRI Healthcare Solutions, New York City, NY

Anna (Blackmon) Burnet, 2014-2019, Postbaccalaureate NIH Fellow to Support Diversity in the Health Sciences; Senior Professional Research Assistant

Current Position: Graduate Student at the University of Colorado Anschutz Medical Campus, Microbiology Program

Dallas Jones, PhD, 2016-2019, Postdoctoral Fellow

Current Position: Research Associate, Department of Pediatrics, Section of Hematology/Genops, University of Colorado Anschutz Medical Campus, School of Medicine

Grant Awards and Additional Support

Active/Current Funding

1. Federal NIH/NIA R01 AG079193
Virus and Olfactory System Interactions Accelerate Alzheimer's Disease Pathology
Co-Principal Investigator (Diego Restrepo, PI), 20% effort
05/01/2023 to 01/31/2028
\$1,037,518 (total direct and indirect costs per 1 year)
2. Pharmaceutical-sponsored research (NDA)
PI
9-25-2025 to 9-24-2027
\$743,470 (total direct and indirect costs)
3. Pharmaceutical-sponsored research (NDA)
PI
12-23-2025 to 12-22-2027

\$685, 212 (total direct and indirect costs)

Inactive/Prior Funding

1. CCTSI/CNS Junior Faculty Pilot Award
The Role of Purinergic Signaling in VZV Vasculopathy
PI
01-1-2012 to 12-31-2012
\$30,000
2. University of Colorado Department of Neurology AEF Research Support
Purinergic Signaling in VZV Vasculopathy
01-01-2012.1 12-31-2012
PI
\$30,000
3. Federal NIH/NINDS K08 NS067070
Mechanisms by which VZV IE Proteins Interact with Cell Antiviral Proteins
PI
09-30-2009 to 08-31-2014
\$866,700 (total direct and indirect costs)
4. NASA, Department of Microbiology Intramural Support
Development of a Multiplex PCR Assay for Human Herpesviruses
PI
10-30-2015 to 01-31-2017
\$40,000 (total direct costs/year)
5. University of Colorado Department of Neurology Intramural Grant for Assistant Professors
The Role of Alpha herpesvirus Infection in Head and Face Pain
Mentor for PI Marius Birlea
07-1-2016 to 06-30-2017
\$40,000 (direct costs/1 year)
6. Research to Prevent Blindness, Challenge Grant (pilot grant), University of Colorado Department of Ophthalmology
Varicella Zoster Virus Infection of the Cornea
Co-PI (Niklaus Mueller, PI)
02-22-2017 to 10-31-2017
\$10,000 (direct costs/1 year)
7. Colorado Clinical and Translational Sciences Institute (CCTSI)
Novel Method Development (NMD) Grant, NIH-NCATS CTSA
Induced Pluripotent Stem Cell-derived Human Motor Neurons for Modeling and Treatment of Amyotrophic Lateral Sclerosis and Other Human Motor Neuron Diseases
Co-PI (Holger Russ, PI)
05-01-2018 to 04-30-2019
\$20,000 (total direct costs/1 year)
8. Contrafect Corporation Industry Grant
Characterization of Human Pulmonary Arterial Adventitial and Aortic Adventitial Fibroblasts
Response of CF-301 Treatment *In Vitro*
PI and Project Manager, CVP Research Lab (Kurt Stenmark, PI)
05-6-2016 to 05-31-2019

\$139,283 (total direct and indirect costs/1 year)

9. University of Colorado, Department of Ophthalmology
Research to Prevent Blindness, Challenge Grant (pilot grant)
Varicella Zoster Virus Infection in Age-Related Macular Degeneration
Principal Investigator, 1% effort
01-23-2019 01-22-2020
\$5,000 (total direct costs/1year)
10. Federal NIH/NIDCD R01 DC014253
Olfactory Receptors for Semiochemical Detection in the Main Olfactory Epithelium, Administrative Supplement
Co-Investigator (Diego Restrepo, PI), 5% effort
08-01-2019 to 07-31-2020
\$358,225 (total direct and indirect costs/1 year)
11. Federal NIH/NINDS R01 NS094758
Purinergic Signaling in Varicella Zoster Virus Vasculopathy
Principal Investigator, 37.5% effort
09-1-2015 to 08-31-2020
\$1,360,624 (total direct and indirect costs/4 years)
12. Skaggs School of Pharmacy and Pharmaceutical Sciences Therapeutic Innovation Grant
Nucleic Acid-based Therapies for Blood-Borne Viruses
Co-Principal Investigator (Thomas Anchordoquy, PI), 5% effort
02-01-2017 to 01-31-2021
\$750,000 (total costs/3 years)
13. Federal NIH/NIDCD R01 DC00566
Complex Odor Recognition of the Main Olfactory Bulb
Administrative Supplement
Co-Investigator (Diego Restrepo, PI), 10% effort
05-01-2020 to 04-30-2021
\$170,612 (total direct costs/1 year)
14. Federal NIH/NINDS R01 NS093716
Neurobiology of Varicella Zoster Virus
Co-Investigator (Randall Cohrs, PI), 10% effort
07-01-2015 to 06-30-2021
\$2,228,285 (total direct and indirect costs/5 years)
15. Federal NIH/NIDCD R01 DC014253
Olfactory Receptors for Semiochemical Detection in the Main Olfactory Epithelium, Administrative Supplement
Co-Investigator (Diego Restrepo, PI), 5% effort
08-01-2020 to 07-30-2021
\$194,375 (total direct costs/1 year)
16. NASA/Lyndon B Johnson Space Center, NSPIRES 17-OMNI_2-0018
VZV Shedding after Antiviral Drug (Valacyclovir) Treatment in Antarctic Expeditioners
Consultant (Satish Mehta, PI)
10-01-2019 to 09-30-2022
\$99,915 (total direct and indirect costs/1 year)

17. SPARK/REACH Program, University of Colorado Anschutz Medical Campus
Repositioning Neurokin-1 Receptor (NK-1R) Antagonists as Antiviral Agents against Human Herpesviruses
Principal Investigator, 10% effort
09-01-2020 to 08-31-2022
\$105,480 (total costs/2 years)
18. IUSSTF, Indo-UC Science and Technology Forum, New Delhi
Indo-U.S. Virtual Network for COVID-19
Leveraging Reverse Genetics Strategies to Study Structure-Function Interplay of Virus Host Attachment Spike Protein to Design Therapies for COVID-19
Co-Principal Investigator/Consultant (Jayasri Das Sarma, PI)
10-26-2020 to 10-25-2022
\$64,500 (total costs/18 months)
19. SPARK/REACH Program, University of Colorado Anschutz Medical Campus
Novel Anti-viral Treatment for Herpes Simplex Virus Type 1 (HSV-1)
Principal Investigator, 10% effort
06-01-2022 to 05-31-2025
\$100,000 (total costs)
20. Federal NIH/NIA P01 AG032958
A Major Contributor of Serious Multisystem Disease in the Elderly: Varicella Zoster Virus-induced Inflammation
Project 1: Characterizing the VZV-induced Inflammatory Response in Temporal Arteries from Patients with Giant Cell Arteritis
Program Director, 15% effort (Administrative and Scientific Cores)
Project Leader, Project 1, 30% effort
03-01-2009 to 12-31-2025
\$11,750,912 (total direct and indirect costs/5 years)
\$2,182,418, Project 1 (total direct and indirect costs/5 years)

Bibliography (Peer Reviewed Publications)

1. Singh S, Ross SR, **Acena M**, Rowley DA, Schreiber H. Stroma is critical for preventing or permitting immunological destruction of antigenic cancer cells. *J Exp Med.* 175:139-146, 1992.
2. Koeppen H, **Acena M**, Drolet A, Rowley DA, Schreiber H. Tumors with reduced expression of a cytotoxic T lymphocyte recognized antigen lack immunogenicity but retain sensitivity to lysis by cytotoxic T lymphocytes. *Eur J Immunol.* 23:2770-2776, 1993. doi:10.1002/eji.1830231108
3. Dodson RE, **Acena MR**, Shapiro DJ. Tissue distribution, hormone regulation and evidence for a human homologue of the estrogen-inducible *Xenopus laevis* vitellogenin mRNA binding protein. *J Steroid Biochem Mol Biol.* 52:505-515, 1995. doi:10.1016/0960-0760(95)00018-u
4. Cunningham KS, Dodson RE, **Nagel MA**, Shapiro DJ, Schoenberg DR. Vigilin binding selectively inhibits cleavage of the vitellogenin mRNA 3'-untranslated region by the mRNA endonuclease polysomal ribonuclease 1. *Proc Natl Acad Sci USA.* 97:12498-12502, 2000. doi:10.1073/pnas.220425497
5. Dodson RE, Goolsby KM, **Acena-Nagel M**, Mao C, Shapiro DJ. RNA gel shift assays for analysis of hormone control of mRNA stability. *Methods Enzymol.* 364:350-361, 2003. doi:10.1016/S0076-6879(03)64020-6
6. Moses H, **Nagel MA**, Gilden DH: Acute cerebellar ataxia in a 41-year-old woman. *Lancet Neurol.* 5:984-988, 2006. doi:10.1016/S1474-4422(06)70601-9

7. **Nagel MA**, Forghani B, Mahalingam R, Wellish MC, Cohrs RJ, Russman AN, Katzan I, Lin R, Gardner CJ, Gilden DH: The value of detecting anti-VZV IgG antibody in CSF to diagnose VZV vasculopathy. *Neurology*. 68:1069-1073, 2007. doi:10.1212/01.wnl.0000258549.13334.16
8. **Nagel MA**, Gilden DH: The protean neurologic manifestations of varicella zoster virus infection. *Cleve Clin J Med*. 74:489-494, 496, 498-499 passim, 2007. doi:10.3949/ccjm.74.7.489
9. Orme HT, Smith G, **Nagel MA**, Bert RJ, Mickelson TS, Gilden DH: VZV spinal cord infarction identified by diffusion-weighted MRI (DWI). *Neurology*. 69:398-400, 2007.
10. **Nagel MA**, Cohrs RJ, Mahalingam R, Wellish MC, Forghani F, Schiller A, Safdieh JE, Kamenkovich E, Ostrow LW, Levy M, Greenberg B, Russman AN, Katzan I, Gardner CJ, Häusler M, Nau R, Saraya T, Wada H, Goto H, de Martino M, Ueno M, Brown WD, Terborg C, Gilden DH: The varicella zoster virus vasculopathies: clinical, CSF, imaging and virological features. *Neurology* 70:853-860, 2008.
11. Mueller NH, Gilden DH, Cohrs RJ, Mahalingam R, **Nagel MA**: VZV infection: clinical features, molecular pathogenesis of disease and latency. *Neurol Clin*. 26:675-697, 2008.
12. Gilden D, **Nagel MA**, Ransohoff RM, Cohrs RJ, Mahalingam R, Tanabe JL: Recurrent varicella zoster virus myelopathy. *J Neurol Sci*. 276:196-198, 2009.
13. Gilden D, **Nagel MA**, Mahalingam R, Mueller NH, Brazeau EA, Pugazhenth S, Cohrs RJ: Clinical and molecular aspects of VZV infection. *Future Neurol*. 4:103-117, 2009.
14. **Nagel MA**, Gilden D, Shade T, Gao B, Cohrs RJ: Rapid and sensitive detection of 68 unique VZV gene transcripts in five multiplex reverse transcription-polymerase chain reactions. *J Virol Methods*. 157:62-68, 2009.
15. Gilden D, Cohrs RJ, Mahalingam R, **Nagel MA**: VZV vasculopathies: diverse clinical manifestations, laboratory features, pathogenesis and treatment. *Lancet Neurol*. 8:731-740, 2009.
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