

Enrique Alvarez III, MD, PhD, MSCI

CURRICULUM VITAE

1. PERSONAL HISTORY

- Enrique Alvarez, MD, PhD, MSCI
Professor, Neuroimmunology
Vice Chair of Clinical Research
Department of Neurology, University of Colorado
Rocky Mountain Multiple Sclerosis Center at University of Colorado
1635 Aurora Court, Aurora, CO 80045
Appointment phone: 720-848-2080
University of Colorado School of Medicine
12631 E. 17th Avenue, Mail Stop B185
Aurora, CO 80045
Office: (303) 724-2187
Fax: (303) 724-0985
enrique.alvarez@cuanschutz.edu

2. EDUCATION

- 1993-1997 **Bachelor of Science with Honors** North Dakota State University, Fargo, ND
Majors in Biotechnology and Microbiology, minors in Chemistry and Zoology
- 1997-2006 **MD and PhD: Medical Scientist Training Program**
University of Colorado Health Sciences Center, Denver, Colorado
PhD conferred on December 17, 2004; Dissertation--Characterization of the Bex Gene
Family in Humans, Mice, and Rats
MD conferred in 2006
- 2006-2007 **Internship in Internal Medicine**
University of Colorado Health Sciences Center, Denver, Colorado
- 2007-2010 **Residency in Adult Neurology**
Washington University, St. Louis, MO
- 2010-2013 **Master of Science in Clinical Investigation**
Washington University, St. Louis, MO
- 2010-2013 **Neuroimmunology Fellow, Sylvia Lawry Fellow, National MS Society**
Washington University, St. Louis, MO
- 2016 **Spanish Mastery**
University of Colorado Health

3. ACADEMIC APPOINTMENTS

2013-2021	Assistant Professor of Neurology, Department of Neurology University of Colorado School of Medicine
2013-present	Denver Health Medical Center, Neurology
2016-2017	Assistant Medical Director of Outpatient Neurology University of Colorado Hospital
2017-2021	Medical Director of Outpatient Neurology University of Colorado Hospital
2021-2025	Associate Professor of Neurology, Department of Neurology University of Colorado School of Medicine
2021-present	Vice Chair of Clinical Research, Department of Neurology University of Colorado School of Medicine
2024-present	Neuroimmunology Section Head University of Colorado School of Medicine
2025-present	Professor of Neurology, Department of Neurology University of Colorado School of Medicine

4. PROFESSIONAL HISTORY

1993-1996	Undergraduate Research Aide North Dakota State University, Agricultural Research Serve, Dr. Chris A. Wozniak's laboratory: <i>"Biocontrol of the Sugar Beet Root Maggot"</i>
1995-1996	Spanish telephone tutor for the High School satellite class <i>"Hablemos Español"</i> Prairie Public Television
1997	Undergraduate Research Aid University of Minnesota, Dr. Linda Boland's laboratory: <i>"Cloning of Potassium Channels"</i>
2008-2009	Member of the Neurology Resident Recruitment Committee Washington University, St. Louis, MO
2014-2023	Neuroimmunology Block Director, Neurology Residents University of Colorado School of Medicine
2016-2017	Associate Medical Director of Outpatient Neurology
2017-2021	Medical Director of Outpatient Neurology
2021-present	Vice Chair of Clinical Research
2024-present	Medical Director of Rocky Mountain Multiple Sclerosis Center

5. HONORS, RECOGNITIONS AND AWARDS

1991	NIH Minority Apprentice Program
1992	3rd Grand Award in Microbiology at the International Science and Engineering Fair
1993	3rd Grand Award in Microbiology at the International Science and Engineering Fair
1996	University of Minnesota Summer Research Experience for Undergraduates
1997	Biochemistry Department Award at North Dakota State University

- 1999 Member of the Medical School Curriculum Committee
University of Colorado School of Medicine
- 1999 Cited for Academic Excellence for Second Year Medical School
University of Colorado School of Medicine
- 2000 Member of the Organizing Committee for the 15th Annual MD/PhD National Meeting
- 2002 Student Travel Award to the 8th International Neural Transplantation and Repair Meeting
- 2002 Minority Student Travel Award to the 17th Annual MD/PhD National Meeting
- 2009 Master MS Fellowship recipient
- 2010 The Foundation of the Consortium of MS Centers annual meeting scholarship for travel to the
CMSC meeting in San Antonio, Texas
- 2010 Sylvia Lawry fellowship recipient from the National Multiple Sclerosis Society
July, 2010 to June, 2013
- 2012 Travel award to the 11th Congress of the International Society of Neuroimmunology,
Boston, Massachusetts
- 2013 Wexler Prize for research in Multiple Sclerosis
- 2016 4th ECTRIMS Summer School – Vienna, Austria June 28-30, 2016
- 2018 Herndon Award for Outstanding IJMCS Article -- “Evaluation of a Novel Preference Assessment
Tool for Patients with Multiple Sclerosis”
- 2019 2019 AAN Abstract of Distinction for “A novel practice model incorporating extended rooming
and scribing assistance in an academic neurology practice”
- 2019 2019 ANA travel award “Cytokine Changes Induced by antiCD20 Infusions: A Comparison of
Rituximab versus Ocrelizumab”
- 2020 Member of NAIMS (North American Imaging In MS Cooperative)
- 2021 CMSC award for “Best in Patient and Family Education” for the platform presentation titled
“Real-World Findings of Usability and Usefulness of MS Progression Discussion Tool– a
Physician-Completed Digital Tool to Evaluate Early Signs of Disease Progression”
- 2024 CMSC award for “Best Platform Presentation” for the platform presentation titled “Disease
Activity in People with Multiple Sclerosis and Neuromyelitis Optica Spectrum Disorder Exposed
To Immune Checkpoint Inhibitors: A Multi-Institutional Study”

6. MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

- 1998-2006 Colorado Medical Association
- 1998-2008 American Medical Association
- 2000-2006 Rocky Mountain Regional Neuroscience Group
- 2002-2006 American Society for Neural Transplantation and Repair
- 2000-2008 Society for Neuroscience
- 2005-present American Academy of Neurology
- 2013-present Consortium of Multiple Sclerosis Centers (CMSC)
- 2013-present Colorado Society of Clinical Neurologists
- 2014-present American Neurological Association
- 2017-present American Telemedicine Association

7. MAJOR COMMITTEE AND SERVICE RESPONSIBILITY

- 2016-present Neurology faculty affairs committee
- 2016-present American Academy of Neurology (AAN)--abstract review committee
- 2019-2020 Member of the health care provider council for the Colorado/Wyoming chapter of the National MS Society
- 2020-present Member for the Mountain West Healthcare Provider Council of the National MS Society
- 2021-present Chair for the Mountain West Healthcare Provider Council and member of the National Healthcare Provider Council of the National MS Society
- 2021- 2022 America's Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) -abstract review committee
- 2022-present Lead for the mountain ECHO project from the National MS Society
- 2022-present Clinical-Translational Research Advisory Committee (CTRAC) at the School of Medicine (SOM)
- 2024-present ACTRIMS Young Investigator Committee member
- 2024-present Promotion Committee, University of Colorado School of Medicine
- 2024 -present CAR-T Prioritization Committee

8. LICENSURE AND BOARD CERTIFICATION

- Active - State of Colorado (DR.0052207; 3/13/13-present)
- Inactive – State of Missouri (2010005843; 2/19/10-1/31/14)
- Inactive – State of Missouri (training 2007012253; 7/1/07-6/30/10)
- Inactive – State of Colorado (training TL.0001921; 6/23/06-8/31/09)
- American Board of Psychiatry and Neurology - Certificate #57342 Sept. 20, 2012

9. INVENTIONS, INTELLECTUAL PROPERTY, AND PATENT HELD/PENDING

Patent # WO 2023/056387 A1. Diagnosing Multiple Sclerosis. Filed on 9/29/22. Issued on 4/6/23

10. REVIEW AND REFEREE WORK

- Neurology
- JAMA Neurology
- Multiple Sclerosis Journal
- Multiple Sclerosis Journal: Experimental, Translational and Clinical
- Annals of Clinical and Translational Neurology
- Neurology: Clinical Practice
- Neurology: Neuroimmunology & Neuroinflammation

- Journal of Neurology, Neurosurgery, and Psychiatry
- PLOS ONE
- CNS Drugs
- Journal of Neuroimmunology
- European Journal of Neurology
- Journal of the Neurological Sciences
- The Journal of Neuropsychiatry and Clinical Neurosciences
- The International Journal of Neuroscience
- Molecular Diagnosis & Therapy
- Journal Molecular Diagnosis & Therapy
- The Neurologist
- Annals of neurology

11. INVITED LECTURES AND PRESENTATIONS

LOCAL:

Aug. 2014	“Biomarkers in Multiple Sclerosis” presented with Dr. David Wagner (A Diagnostic Mechanism Involving CD40 That Indicates a Therapeutic Approach for MS) Department of Neurology Grand Rounds, University of Colorado School of Medicine
Dec. 2014	“Conversations on MS” on behalf of the Rocky Mountain MS Center Greeley, Colorado
June 2015	“Conversations on MS” on behalf of the Rocky Mountain MS Center Colorado Springs, CO
Feb. 2016	“Conversation on MS” for Rocky Mountain MS Center Colorado Springs, CO
May 2016	“Symptom Management Case Study, Rocky Mountain MS Center Education Summit, Englewood, Colorado
Aug. 2016	“Integrating Research Metrics as Standard of Care within an Academic Multiple Sclerosis Center.” Department of Neurology Grand Rounds, University of Colorado School of Medicine
Oct. 2016	“ECTRIMS Update” Rocky Mountain MS Center Education Summit Golden, Colorado
Nov. 2016	“Multiple Sclerosis” lecture given at Neuroconference for Nurses University of Colorado Hospital
Nov. 2016	“Experience of Using Rituximab at the University of Colorado” lecture given at “Genentech Day,” University of Colorado
Dec. 2016	“MS Research Updates” webinar presentation to Rocky Mountain MS Center.
Feb. 2017	“Conversation on MS” for Rocky Mountain MS Center, Colorado Springs, CO
July 2017	“Optic Neuritis: Differential Diagnosis Including MS and NMO and their Treatments” Colorado Vision Summit
Aug. 2017	“Multiple Sclerosis as a model for research” talk to Camp Neuro for high school students interested in medicine and neuroscience
Nov. 2017	“Conversation on MS” for Rocky Mountain MS Center, Pueblo, CO
Nov. 2017	“Multiple Sclerosis” lecture given to Nurses Neuroconference, University of Colorado Hospital
June 2018	“Quality Improvement in Neuroimmunology” Neurology Research Retreat. Aurora, CO

July 2018 “Comparative Effectiveness in Multiple Sclerosis Disease Modifying Therapies” with Brandi Vollmer at Neurology Grand Rounds, University of Colorado, Aurora, CO.

Sept. 2018 “Update on Multiple Sclerosis” Grand Rounds, SCL Health St. Mary’s, Grand Junction, CO

Dec. 2018 “Conversation on MS” for Rocky Mountain MS Center, Lakewood, CO

April 2019 “Biomarkers in Neurological Disease: Taking advantage of the SIMOA Platform” presented with Dr. Tim Boyd at the Department of Neurology Grand Rounds, University of Colorado School of Medicine

Oct. 2019 “Conversation on MS” for Rocky Mountain MS Center, Colorado Springs, CO

Nov. 2019 “Conversation on MS” for Rocky Mountain MS Center, Lakewood, CO

Nov. 2020 “Conversation on MS” for Rocky Mountain MS Center, Virtual

Mar. 2020 “Conversation on MS” for Rocky Mountain MS Center, Denver, CO

Aug. 2021 “Conversation on MS” for Rocky Mountain MS Center, Virtual

Dec. 2021 “Conversation on MS” for Rocky Mountain MS Center, Virtual

Feb. 2022 Update on Multiple Sclerosis. Colorado meeting of the American College of Physicians. Colorado Springs, CO

Mar. 2022 “Update on Multiple Sclerosis” at the Advances in Pharmacotherapy meeting of the Colorado Pediatric Advanced Practice Conference (virtual)

Apr. 2022 “Research Update in MS” Rocky Mountain MS Center Spring Education Summit. Aurora, CO

June 2022 Rural Engagement Forum of the Rocky Mountain MS Center, La Junta, CO

Aug. 2022 “Neuroimmune Emergencies” neurology resident didactics, Aurora, CO

Sept. 2022 “Conversation on MS” for Rocky Mountain MS Center, Steamboat Springs, CO

Oct. 2022 “Hot Topics in MS: COVID-19 Update, Epstein Barr Virus, and Biomarkers” Rocky Mountain MS Center Fall Education Summit. Aurora, CO

Nov. 2022 “Introduction to MS” and “Symptom Management” Neurology resident didactics, Aurora, CO

Feb 2023 “Diagnosis and Management of MS” Neuropsych seminar, Aurora, CO

Apr. 2023 “What are BTK inhibitors and why are they different?” Rocky Mountain MS Center Spring Education Summit. Aurora, CO

May 2023 “Conversation on MS” for Rocky Mountain MS Center, Colorado Springs, CO

June 2023 “Multiple Sclerosis” lecture to physical therapy students, Aurora, CO

April 2024 “Therapeutic Landscape in NMOSD” NMOSD Education Day by Amgen, Aurora, CO

May 2024 “The Evolution of Neuroimmunology: Neuromyelitis Optica Spectrum Disorder” University of Colorado, Rheumatology Department, Aurora CO

July 2024 “Conversation on MS” for Rocky Mountain MS Center Durango, CO

Aug. 2024 “Innovation in Neurological Treatments Bridging the Gap for Higher Prevalence Disease” Institute for Value-Based Medicine with University of CO and AJMC

Oct. 2024 “Conversation on MS” for Rocky Mountain MS Center, Colorado Springs, CO

Nov. 2024 “Research Updates from ECTRIMS” Rocky Mountain Fall Education Day Summit

Nov. 2024 “Feria de Salud Cerebral para la Comunidad Latina” Esclerosis Multiple, University of Colorado School of Medicine

Nov. 2024 “Therapeutic Landscape in NMOSD”, NMOSD Education Day by Amgen, Aurora, CO

Nov. 2024 “Therapeutic Landscape in NMOSD”, NMOSD Education Day by Amgen, Aurora, CO

Feb. 2025 “The Use of Immunotherapies in Multiple Sclerosis Patients” Senior seminar for undergraduate neuroscience majors at Regis

Apr. 2025 “Conversation on MS” for Rocky Mountain MS Center, Colorado Springs, CO

- Aug. 2025 “New Diagnostic Criteria for MS” Department of Neurology Grand Rounds, University of Colorado School of Medicine, Aurora, CO
- Aug. 2025 “Conversation on MS” for Rocky Mountain MS Center, Centennial, CO
- Sept. 2025 “Conversation on EM” for Rocky Mountain MS Center, Denver, CO
- Nov. 2025 “Progress in Action – MS Research Updates” – RMMSC Education Summit, Aurora, CO

REGIONAL (US):

- 2011-2013 Research update lectures to patients sponsored by National MS Society
- May 2013 “Neurological Complications of Lupus” 4th Annual “Behind the Mask” Lupus Educational Conference. Lupus Foundation of America, Heartland Chapter
- Sept. 2014 “Choosing Wisely Brief Blast: What We Do and What’s New—Demyelinating Disease” The Neurohospitalist Society: 2nd Annual Meeting
- April 2015 “Using Rituximab in the Treatment of MS” invited Professorship, University of Texas Southwestern
- April 2017 “Multiple Sclerosis Case Studies” course co-director at 69th annual American Academy of Neurology (AAN) Meeting, Boston, MA
- April 2017 “Best Of” Session: MS and CNS Inflammatory Disease co-chair during the 2017 Annual Meeting of the American Academy of Neurology (AAN) in Boston, MA
- Oct. 2017 “Treating MS Early” Invited speaker to the Annual Banner Multiple Sclerosis Symposium. Phoenix, AZ
- April 2018 “Multiple Sclerosis Overview I: Clinical Pearls” Course co-director at 70th annual American Academy of Neurology (AAN) Meeting, Los Angeles, CA
- April 2018 Discussant presentation for session S8: “Progressive MS Therapies and Age-Dependent Factors in MS Therapy” at 70th annual American Academy of Neurology (AAN) Meeting, Los Angeles, CA
- June 2018 “The Proof is in the Pudding: Evaluating Current Pharmacokinetic Data to Make Informed Disease Modifying Therapy Treatment Selection and Changes”
- Aug. 2018 “CD20s, Biomarkers, and Neurofilament Light (NFL) in MS” Keynote presentation at the Autoinjector Bioequivalence Study for ofatumumab at the US investigator meeting (OMB157G2102). Dallas, TX
- Oct. 2018 “Current and Future Disease Modifying Therapies” Invited speaker to the 2nd Annual Banner Multiple Sclerosis Symposium. Phoenix, AZ
- May 2019 “Multiple Sclerosis Overview I: Clinical Pearls” Course co-director at 71st annual American Academy of Neurology (AAN) Meeting, Philadelphia, PA
- June 2019 “Clinical Trial Design” lecture in the “The Evolving Research Landscape: Learning How to Understand, Design and Analyze Studies in MS Clinical Trial Design” course at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), Seattle, WA
- Oct. 2019 “Diagnosis and Misdiagnosis of Multiple Sclerosis” Invited speaker to the 3rd Annual Banner Multiple Sclerosis Symposium. Phoenix, AZ
- May 2020 MS Living Well Podcast Series Invited Expert
- Sep. 2021 “Real-World Lessons into MS Care: B-cell depletion and De-escalation” Saint Louis University Neurology Grand Rounds
- Oct. 2021 “Becoming a Successful Medical Director” Invited speaker to the ANA2021 Virtual Annual Meeting
- Nov. 2021 “B-cell Depletion in MS Patient Care and De-escalation as a Treatment Approach” Washington University in St. Louis Neurology Grand Rounds

- Feb. 2022 “Blood Neurofilament Light Levels for Monitoring Treatment Effects in Multiple Sclerosis” America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL
- Apr. 2022 “Our evolving understanding of MS pathophysiology” 74th annual American Academy of Neurology (AAN) Meeting, Seattle, WA
- June 2022 “Medication Disease State Interactions” at the Pharmacology Course at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), National Harbor, MD
- Feb. 2023 “Battle of the Biomarkers: Assessing Key Factors in Prognosis, Monitoring, and Therapeutic Decision-Making for Disease Worsening in Multiple Sclerosis” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, San Diego, CA
- Apr. 2023 “Evaluation of B-cell Abnormalities in Infants of Breastfeeding Mothers on anti-CD20 Therapies for Multiple Sclerosis” at American Academy of Neurology (AAN) Meeting, Boston, MA
- May 2023 “Ublituximab Is Associated with Significant Improvement in Fatigue: Results from Ultimate I and II” at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), Denver, CO.
- May 2023 “Clinical Outcomes with Evobrutinib in Relapsing Multiple Sclerosis over 3.5 Years of Treatment: An Ongoing Phase 2 Open-Label Extension” at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), Denver, CO.
- Feb. 2024 “Evaluation of B-cell Abnormalities in Infants of Breastfeeding Mothers on anti-CD20 Therapies for Multiple Sclerosis” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Baseline Serum Neurofilament Light Chain Levels Predict Future Disease Activity Irrespective of Race/Ethnicity: Results From the Phase 3 ASCLEPIOS I/II Trials” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Factors Associated with Immunoglobulin Levels in Patients with Multiple Sclerosis Treated with Anti-CD20 Monoclonal Antibodies” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Feasibility of Detecting Paramagnetic Rim Lesions at 3T Using Vendor-Provided Susceptibility Weighted Imaging” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Immunoglobulins and Complement as Major Players for Neurodegeneration in MS” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “MS Relapse Redefined: Addressing the Radiological/Pseudoexacerbation Paradox with High Efficacy Therapy in the ULTIMATE I and II Trials” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Neuroinvasive West Nile Virus Associated with anti-CD20 Treatment for CNS Inflammatory Diseases” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.

- Feb. 2024 “Transition from AntiCD-20 Therapies to Fumarates as a Treatment Strategy” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Ofatumumab Reduces Clinical and Radiological Activity in People with Recently Diagnosed Treatment-Naive Relapsing Multiple Sclerosis Irrespective of Baseline Serum Neurofilament Light Chain Levels” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Patient and Physician Perspectives on the Wearing-off Effect in Multiple Sclerosis: Results From Structured Interviews” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Prevalence of Paramagnetic Rim Lesions in the Baseline MRI of the Central Vein Sign in Multiple Sclerosis (CAVS-MS) Cohort: A North American Imaging in MS (NAIMS) Cooperative Prospective Diagnostic Biomarker Study” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Prognostic Value of Serum Neurofilament Light Chain for Disease Activity in Patients With Relapsing Multiple Sclerosis: Results From Subgroup Analysis Based on Body Mass Index and Age from the Phase 3 ASCLEPIOS I/II Trials” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2024 “Typical and Atypical Clinical Presentations for MS in a Multicenter Longitudinal Diagnostic Biomarker Study (CAVS-MS)” at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Feb. 2025 “Time for a Reset: Using Modern Tools and Frameworks to Reengineer Multiple Sclerosis Management” at Industry Supported Satellite Symposium 3 at America’s Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting, West Palm Beach, FL.
- Apr. 2025 “Patient and Physician Perspectives on the Wearing-off Effect in Multiple Sclerosis: Results from Structured Interviews” at 76th annual American Academy of Neurology (AAN) Meeting, Denver, CO.
- Apr. 2025 “Prognostic Value of Serum Neurofilament Light Chain for Disease Activity in Patients with Relapsing Multiple Sclerosis: Results from Subgroup Analysis Based on Body Mass Index and Age from the Phase 3 ASCLEPIOS I/II Trials” at 76th annual American Academy of Neurology (AAN) Meeting, Denver, CO.
- Apr. 2025 “Immunoglobulin Level Changes in Patients with Multiple Sclerosis Treated with Anti-CD20 Monoclonal Antibodies” at 76th annual American Academy of Neurology (AAN) Meeting, Denver, CO.
- Apr. 2025 “OLIKOS Study: 6-month Interim Efficacy and Safety in Patients with Relapsing Multiple Sclerosis Who Switched to Subcutaneous Ofatumumab from Intravenous Anti-CD20 Therapies” at 76th annual American Academy of Neurology (AAN) Meeting, Denver, CO.
- May 2025 “Optimizing B-Cell Therapy for MS: Practical Approaches” MS Summit, Seattle, WA
 “To switch or not?: navigating treatment conundrums in relapsing MS – featuring curbside consults” at the Independently Supported Symposium 2 at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), Phoenix, AZ.

“Remote Cognitive Monitoring in MS: A Path Toward Holistic Care with the Icometrix Platform” at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), Phoenix, AZ.

“Efficacy and Safety of Ofatumumab According to Age: A Subgroup Analysis of Data from Asclepios I/II and Alithios Extension Study” at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), Phoenix, AZ.

Sept 2025 “De-escalation from Depleting B-Cell Therapies” Biogen INFORM Session, virtual

INTERNATIONAL:

April 2016 “Multiple Sclerosis Case Studies” course co-director at 68th annual American Academy of Neurology (AAN) Meeting, Vancouver

May 2016 “Biomarcadores en Esclerosis Múltiple” at the 3rd National Congress MEXTRIMS (Comité Mexicano para el Tratamiento e Investigación en Esclerosis Múltiple). Guadalajara, Mexico

Oct. 2016 “Real World Experience Comparing dimethyl fumarate versus fingolimod” Biogen Tecfidera workshop, Zurich, SWZ

May 2017 “Terapeutica Dirigida a Inmunidad Humoral” at 4th National Congress MEXTRIMS (Comité Mexicano para el Tratamiento e Investigación en Esclerosis Múltiple). Leon, Mexico

Nov. 2017 “Biomarkers in Multiple Sclerosis and “B-Cell therapies in Multiple Sclerosis” 4th International symposium of Neurology and Neurocritical Care, Quito, Ecuador

May 2018 “Switch the terapias monoclonales” at the 5th National Congress MEXTRIMS (Comité Mexicano para el Tratamiento e Investigación en Esclerosis Múltiple). Chihuahua, Mexico

Nov. 2018 “Secuenciación como base de la estrategia terapéutica” invited speaker at the 70th Sociedad Española de Neurología (SEN) or Spanish Neurological Society, Sevilla, Spain.

Dec. 2018 “Comparative Effectiveness and Safety as Factors in Treatment Decision-Making” and the workshop “Treatment initiation and sequencing” at the Merging Transatlantic Perspectives educational meeting. Budapest, Hungary

Feb. 2019 “Experiencia con Ocrelizumab en la Vida Real” Programa de Educación Médica Continua en Panamá, Panamá

May 2019 “Conceptos de Tratamiento en Esclerosis Múltiple” at 6th National Congress MEXTRIMS (Comité Mexicano para el Tratamiento e Investigación en Esclerosis Múltiple). Mexico City, Mexico

May 2019 “Uso de Terapias “off-label” en EM” at 6th National Congress MEXTRIMS (Comité Mexicano para el Tratamiento e Investigación en Esclerosis Múltiple). Mexico City, Mexico

Sept. 2019 “Higher efficacy therapies appear to have a disproportionately larger effect in younger patients” *Brandi Vollmer MPH, Kavita V Nair PhD, Stefan H Sillau PhD, John Corboy MD, Timothy Vollmer MD, Enrique Alvarez MD/PhD* at ECTRIMS 2019 in Stockholm, Sweden

Oct. 2019 “Experiencia con Ocrevus en la Vida Real” Continuing Medical Education Program at the Departamento de Neurología del Hospital San Juan de Dios, San José, Costa Rica

Dec. 2021 “The Next Generation in B-Cell Targeted Therapies” at MENACTRIMS 2021, Dubai, United Arab Emirates

Mar. 2022	“Kesimpta Real World Experience” Kesimpta Launch in Argentina Meeting. Argentina (virtual)
Mar. 2022	“ASCLEPIOS Studies and Patients Profile” Kesimpta y Mayzent Costa Rica Launch. Costa Rica (virtual)
May 2022	“Complete MS Control: Breaking news en seguridad y eficacia de Kesimpta” Mexico (virtual)
May 2022	Grand Rounds Presentation, “High Efficacy Treatment – Why? When? How?” University of Coimbra, Coimbra, Portugal (virtual)
June 2022	“High Efficacy Treatment – Why? When? How?” Novartis Education Day for Neurologists from Mexico and Argentina. Aurora, CO
Aug. 2022	“Blood neurofilament light levels for Monitoring Treatment effects in Multiple Sclerosis” at the Stop MS: Every Minute is Freedom meeting. Santo Domingo, Dominican Republic
Aug. 2022	“COVID-19 Outcomes and Vaccination in People with Relapsing Multiple Sclerosis Treated with Ofatumumab” at the Stop MS: Every Minute is Freedom meeting. Santo Domingo, Dominican Republic
Sept. 2022	“¿Cuándo iniciar oportunamente un tratamiento de alta eficacia? Terapia individualizada” MSpecialist: Desafiando la Esclerosis Multiple Meeting. Cancun, Mexico
Sept. 2022	“¿Cómo los pacientes con EM adquieren discapacidad?” MSpecialist: Desafiando la Esclerosis Multiple Meeting. Cancun, Mexico
Oct. 2022	“Re-evaluating treatment decisions in the longer term” European Committee for Treatment & Research in Multiple Sclerosis (ECTRIMS) Congress. Amsterdam, The Netherlands.
Oct. 2022	“Balancing Risk Benefit in MS Treatment” at the Highly efficient individualized treatment in multiple sclerosis: perspectives and approaches event. European Committee for Treatment & Research in Multiple Sclerosis (ECTRIMS) Congress. Amsterdam, The Netherlands.
Dec. 2022	“Evolution of DMTs Towards NO Compromise” MS Expo. Cairo, Egypt (virtual)
Dec. 2022	“Early Use of HET in RRMS Patients” MS Expo. Cairo, Egypt (virtual)
Mar. 2023	“B-Cell Depletion And Comparison Between These Drugs” and “De-Escalation as a Treatment Strategy – Taking Advantage of Using HET in Younger Patients” at the 5 th MS Summit MAGNIMS. Cairo, Egypt.
Mar. 2023	“De-escalating and Discontinuation of DMTs - When and How To Do It” at the 6 th Portuguese Multiple Sclerosis Study Group Meeting. Ílhavo, Portugal
Oct. 2023	“Biomarcadores en Esclerosis Múltiple” and “Experiencia mundial de Kesimpta a 5 años” at the Neurology and Neurosurgery Dominican Republic Congress (Congreso de la Sociedad Dominicana de Neurología y Neurocirugía) in Punta Cana, Dominican Republic
Nov. 2023	“Data a largo plazo de Kesimpta” at the Latin American Committee for Treatment and Research in Multiple Sclerosis (LACTRIMS), in Quito, Ecuador.
Feb. 2024	“B-cell Depletion and De-escalation as an MS Treatment Approach” Swedish Neurology Grand Rounds. (virtual)
Apr. 2024	Warsaw, Poland – Novartis
Sept. 2024	Copenhagen – ECTRIMS
Sept. 2025	ECTRIMS, Barcelona, Spain

12. TEACHING RECORD

1995-1996	Telephone tutor, <i>"Hablemos Español"</i> Prairie Public Television and North Dakota Department of Instruction
2002	Lab teaching assistant, Neuroanatomy, winter quarter University of Colorado Health Sciences Center
2010	Neuroimmunology lecture to PGY2 residents as part of Summer Stock Series Washington University, St. Louis, MO
2010-2013	Multiple Sclerosis lecture to PT/OT students, Neuroscience Block Washington University, St. Louis, MO
March 2012	"Are You Afraid of The Big Bad Wolf (A Case of CNS Lupus)? Department of Rheumatology, Washington University, St. Louis, MO
March 2012	"32-Year-Old Man Presenting with Progressive Tingling and Tremor in Hands and Burning Sensation in Abdomen" Resident CPC discussant, Department of Neurology Grand Rounds, Washington University, St. Louis, MO
Sept. 2013	"Updates in the Treatment of Multiple Sclerosis" Grant Rounds, Department of Neurology, University of Colorado School of Medicine
2014	"Multiple Sclerosis" lecture to Physical Medicine and Rehabilitation Residents, University of Colorado School of Medicine
2014	"Introduction to MS" lecture to Neurology Residents, University of Colorado School of Medicine
Aug. 2014	"Biomarkers in Multiple Sclerosis" presented with Dr. David Wagner (A Diagnostic Mechanism Involving CD40 That Indicates a Therapeutic Approach for MS) Department of Neurology Grand Rounds University of Colorado School of Medicine
Sept. 2014	"Choosing Wisely Brief Blast: What We Do and What's New – Demyelinating Disease" The Neurohospitalist Society: 2nd Annual Meeting
June 2015	"Multiple Sclerosis" lecture to Rehabilitation Residents, University of Colorado School of Medicine
July 2015	"Using Rituximab in the Treatment of MS" Grand Rounds, Department Of Neurology, University of Colorado School of Medicine
July 2015	"Autoimmune and Inflammatory Disease" Lecture to Camp Neuro University of Colorado School of Medicine
Aug. 2015	"Neuroimmune Emergencies" Lecture to Neurology Residents, University of Colorado School of Medicine
Sept. 2015	"Updates in MS" Internal Medicine Grand Rounds University of Colorado School of Medicine
Jan. 2016	Intrathecal Baclofen Pumps at UCH presentation to Neuro Study Group University of Colorado School of Medicine
Feb. 2016	"Introduction to Multiple Sclerosis" talk to Neurology Residents
Mar. 2016	"Symptom Management" talk to Neurology Residents
July 2016	"Multiple Sclerosis" lecture to Physical Therapy students University of Colorado School of Medicine
Aug. 2016	"Integrating Research Metrics as Standard of Care within an Academic Multiple Sclerosis Center." Department of Neurology Grand Rounds

Sept. 2016 University of Colorado School of Medicine
 Pathology of MS lecture to physical Therapy students
 University of Colorado School of Medicine
 Dec. 2017 “The role of B and T cells in Multiple Sclerosis” in the Molecules to Medicine course for
 -Dec 2020 the Medical Scientist Training Program.
 Dec. 2017- “Symptom Management” talks to Neurology Residents
 Dec 2022
 Dec. 2017 “Introduction to Multiple Sclerosis” talks to Neurology Residents
 -present
 July 2017 “Multiple Sclerosis” lecture to Neuropsychology Group
 -present University of Colorado School of Medicine
 July 2017 “Multiple Sclerosis” lecture to Physical Therapy students
 -July 2020 University of Colorado School of Medicine
 July 2023
 2014-2023 Neuroimmunology Block Director for Neurology Residents
 University of Colorado School of Medicine
 2022-2024 ECHO hub director for the mountain National MS Society ECHO project
 July 2024 “Multiple Sclerosis” lecture to Physical Therapy students
 -present

13. MENTORING

2010-present Resident and medical students during their clinical rotations
 Washington University, St. Louis, MO and University of Colorado School of Medicine
 2011 Mentor with Dr. Anne H. Cross for undergraduate student, Wilnelia Medina, during her
 summer research as part of the BioMedRAP program at Washington University in St.
 Louis. Subsequently attended San Juan Bautista School of Medicine in Puerto Rico
 2012 Mentor with Dr. Anne H. Cross for medical student Divya Gupta during her summer
 research as part of the Foundation of the Consortium of MS Centers Medical student
 Research Scholarship at Washington University St. Louis, MO. Subsequently attended
 Northeast Ohio Medical University (NEOMED)
 2013-2014 Mentor for Melissa R. Mahoney for Master of Science program at Regis University
 “Research should be conducted to establish clinical biomarkers for MS medication
 cessation” Graduated May, 2014. Subsequently attended Western University College of
 Osteopathic Medicine of the Pacific
 2013-2017 Advisor to Joann Mueller in her medical school capstone project through 2017. Joann
 focused on the outcomes in MS patients who discontinue medications
 2013-present Mentoring neurology, internal medicine, and psychiatry residents in Multiple
 Sclerosis/Neuroimmunology clinic at Denver Health twice month. Also worked with
 residents doing Neuroimmunology electives at the University of Colorado
 2014-2015 Mentor for Julie Seibert, MD, for Neuroimmunology fellowship at the University of
 Colorado, Denver. Graduated April, 2015

2014-2015 Mentored Halie Willbanks for her capstone project focusing on MS in Modern Human Anatomy. Her work involved creating 3D reconstructions of MS brains

2014-2015 Mentor for Lorraina J. Robinson for her Master of Science program at Regis University “Biomarkers in Multiple Sclerosis” Graduated in May 2015

2014-2018 Member of doctoral committee for Mark Manago, thesis advisor – Jeffrey Hebert Graduate program: Physical Therapy. University of Colorado, Denver

2015-2016 Mentored graduate student Maria Mulligan-Buckmiller, Regis University in her Master studies. Maria examined clinical outcomes for MS patients on Natalizumab. Subsequently attended New York Medical College

2015-2016 Mentor to Neuroimmunology/Neuro ID fellow, Daniel Smith, in clinic and developed research project on Neurosarcoid experience at UCD Graduate program. University of Colorado, Denver

2015-2018 Academic Clinical Mentor for Thomas Vogler, MSTP student

2015-2018 Academic Clinical Mentor for John Soltys, MSTP student

2016 Mentor to Ian Shelton during summer research work as part of the Rocky Mountain MS Center Summer Scholarship Program. His work focused on CD40+ cells in MS CSF/blood

2016-2017 Mentor for Siamac Esfandi, MD, for Neuroimmunology fellowship at the University of Colorado Denver—graduated June 2017. He is not a neuroimmunologist in Denver.

2016-2017 Mentor to Jia Lin, MD/MPH during research year. Jia presented a poster at AAN on the NueroQuant analysis of MRIs of MS patients and subsequently attended Wayne State University for Neurology Residency, USC for neuroimmunology fellowship, and is now a neuroimmunology faculty member at the University of Texas in Houston

2016-2019 Mentor to Markus Hannan through Clinical Coaching Program

2017-2019 Mentor to Neuroimmunology Fellow, Lindsay Horton

2018-2019 Mentor to Neuroimmunology Fellow, Krystof Romanowski

2018-2019 Mentor to Isaiah Kletenik, Neurology resident for his senior project. “Subjective Cognitive Impairment and Focal Brain Volume Atrophy in Multiple Sclerosis “Selected as the best presentation at the neurology research retreat in June, 2018. Now as a neurobehavioral fellow leading to a publication.

2019 Mentor to Sam Gendelman during summer research work as part of the Rocky Mountain MS Center Summer Scholarship Program. His work focused on Neurofilament light chain levels in patients with multiple sclerosis treated with anti-CD20 medications

2019 Mentor to Nassim Zanganeh during summer research work as part of the Multiple Sclerosis Mentorship Program for Medical Students through the National Multiple Sclerosis Society. Her work focused on cytokine changes after rituximab and ocrelizumab infusions in patients with multiple sclerosis to understand differences between these medications and infusion related reactions.

2019-2020 Mentor to Neuroimmunology Fellow, Anna Shah

2020-2021 Mentor to Neuroimmunology Fellow, Baber Kahn and Ryan Kammeyer

2021-2025 Mentor to Katie Marker for her Doctoral Dissertation in the Human Medical Genetics and Genomics Graduate Program

2022-2023 Mentor to Neuroimmunology Fellows, Anthony Declusin and Andrew Wolf

2024-2025 Mentor to Neuroimmunology Fellow, Elle Wade and Matt Doerfler

- 2024-present Thesis Committee Member for Suraju Sadeeq “Understanding Immune Regulation in Multiple Sclerosis Through NK Cells and Genetic Factors:
Exploring the co-evolution of HLA molecules and KIR receptors to uncover their role in MS” – Doctoral Candidate in the Human Medical Genetics and Genomics Graduate Program
- 2025-present Mentor to Neuroimmunology Fellow, Margaret Upchurch and Amy Young

14. GRANT SUPPORT – CURRENT – AS PRIMARY INVESTIGATOR

- Prospective Evaluation of De-Escalation from antiCD-20 Therapies to Ozanimod
Role: PI
Funding Source: Bristol Myers Squibb
Grant Number: IRB 23-1686
Dates: 12/6/2023 – 12/5/2027
Direct Costs: \$ 1,429,402
Total Costs: \$ 1,483,385
- Reducing fatigue in people with MS by treatment with transcutaneous electrical nerve stimulation
Role: Sub PI
Funding Source: CU Boulder
Grant Number: 1563763
Dates: 04/01/2023 – 03/31/2026
Direct Costs: \$ 75,989
Total Costs: \$ 83,588.46
- An Open Label, Single Arm, Multi-center Extension Study evaluating long-term safety, tolerability and effectiveness of Ofatumumab in subjects with relapsing MS.
Role: PI
Funding Source: Novartis
Grant Number: IRB 18-2059
Dates: 08/24/2018-06/08/2026
Direct Costs: \$168,472.11
Total Costs: \$233,989.04
- A Single-arm, prospective, multi-centre, open-label study to evaluate ofatumumab treatment effectiveness and patient reported outcomes in patients with relapsing MS transitioning from dimethyl fumarate or fingolimod therapy.
Role: PI
Funding Source: Novartis
Grant Number: IRB 20-0705
Dates: 03/01/20-06/30/2026
Direct Costs: \$55,466.21
Total Costs: \$77,036.40
- A Phase 3, randomized, double-blind, efficacy and safety study comparing SAR442168 to placebo in participants with nonrelapsing secondary progressive multiple sclerosis.

(HERCULES)

Role: PI

Funding Source: Sanofi

Grant Number: IRB 20-1047

Dates: 06/18/2021-06/17/2026

Direct Costs: \$ 42,074.64

Total Costs: \$58,437.00

- A Phase 3, randomized, double-blind, efficacy and safety study comparing SAR442168 to placebo in participants with primary progressive multiple sclerosis (PERSEUS)
Role: PI
Funding Source: Sanofi
Grant Number: IRB 20-1100
Dates: 07/22/21-07/22/2026
Direct Costs: \$10,843.20
Total Costs: \$15,060.00
- Central Vein Sign: A Diagnostic Biomarker in MS
Role: PI
Funding Source: Cleveland Clinic
Grant Number: IRB 20-1000
Dates: 07/01/20-06/30/2026
Direct Costs: \$46,714.81
Total Costs: \$84,170.82
- A Phase III Multicenter, randomized, double-blind, double-dummy, parallel group study to evaluate the efficacy and safety of Fenebrutinib in adults with relapsing MS
Role: PI
Funding Source: Genentech/Roche
Grant Number: IRB 20-2036
Dates: 04/09/21-04/08/2026
Direct Costs: \$86,299.68
Total Costs: \$119,444
- Retrospective Evaluation of De-escalation from anti-CD20 Therapies to Fumarates
Role: PI
Funding Source: Biogen/Investigator initiated
Grant Number: IRB 20-3029
Dates: 12/23/21-12/22/2026
Direct Costs: \$96,915.46
Total Costs: \$134,604.80
- A Phase III Multicenter, randomized, double-blind, double-dummy, parallel-group study to evaluate the efficacy and safety of Fenebrutinib compared with Ocrelizumab in adult patients with primary progressive multiple sclerosis
Role: PI
Funding Source: Genetech/Roche
Grant Number: IRB 21-2663

Dates: 04/04/2021-04/04/2026
Direct Costs: \$179,979.06
Total Costs: \$249,970.91

- A Randomized, double-blind, double-dummy, parallel-group study, comparing the efficacy and safety of Remibrutinib 100mg b.i.d. versus teriflunomide 14 mg q.d. in participants with relapsing MS, followed by extended treatment with open-label Remibrutinib
Role: PI
Funding Source: Novartis
Grant Number: IRB 21-4825
Dates: 09/01/2022-01/30/2031
Direct Costs: \$
Total Costs: \$
(SIV just took place)
- A Multi-center, single-arm, open-label, extension, rollover study to evaluate the long-term safety and efficacy of Ocrelizumab in patients with MS (Olero)
Role: PI
Funding Source: Roche/Genentech
Grant Number: IRB 22-0480
Dates: 09/29/2022-09/28/2027
Direct Costs: \$178,227.36
Total Costs: \$247,538
- Rocky Mountain Multiple Sclerosis Center Biorepository for the Study of Neuroimmunological Disorders.
Role: PI – Investigator Initiated
Funding Source: Rocky Mountain MS Center
Grant Number: IRB 12-0968
Dates: 1/1/2015—present
Direct Costs: \$44,120
Total Costs: \$44,120 (awarded for 2022/2023)
- Risk Factors in Early Multiple Sclerosis (RisE-MS).
Role: PI. CO-I John Corboy and Jill Norris – Investigator Initiated
Funding Source: Rocky Mountain MS Center, Philanthropy
Grant Number: IRB 17-1884
Dates: 1/1/2018 – 1/1/2026
Direct Costs: \$167,708.61
Total Costs: \$232,928.62
- Determining the Effectiveness of early intensive versus escalation approaches for the treatment of relapsing remitting multiple sclerosis (**DELIVER MS**) **MS-1610-37047**
Role: PI
Funding Source: Cleveland Clinic - PCORI
Grant Number: IRB 18-1633
Dates: 2/1/2018 – 03/01/2028
Direct Costs: \$202,432

Total Costs: \$283,405

- An open label extension study of Ubituximab in subjects with relapsing multiple sclerosis.
Role: PI
Funding Source: TG Therapeutics
Grant Number: IRB 19-2378
Dates: 06/02/2020 - 06/30/2026
Direct Costs: \$122,661.67
Total Costs: \$34,345.24

14.1. GRANT SUPPORT – CURRENT – AS Co-INVESTIGATOR (selected studies only)

- Mechanisms of IgG Antibody-Mediated Neuronal Cytotoxicity in Multiple Sclerosis
Role: Co-I
Funding Source: DoD, CDMRP
Grant Number: HT9425-24-1-0815
Dates: 07/2024 – 07/2027
Direct Costs: \$14,584
Total Costs: \$14,584
- Blood IgG Aggregates as Biomarkers for Prognosis and Monitoring Response to B Cell Therapies in Multiple Sclerosis
Role: Co-I
Funding Source: Genentech, Inc.
Grant Number: ML45517
Dates: 8/1/2025-6/30/2026
Direct Costs: \$4,787
Total Costs: \$4,787

14.2. GRANT SUPPORT – PENDING – AS PRIMARY INVESTIGATOR/CO-INVESTIGATOR

- Characterizing the Cytokine Profile Before and After anti-CD20 and anti-CD52 Infusions: A Comparison of Rituximab, Ocrelizumab and Alemtuzumab
Role: PI
Funding Source: Investigator Initiated
Grant Number: IRB 18-1968
Dates:
Direct Costs:
Total Costs:

14.3. GRANT SUPPORT – PAST – AS PRIMARY INVESTIGATOR/CO-INVESTIGATOR

- Sprint-MS-2 Project
Role: Sub PI
Funding Source: Cleveland Clinic Foundation
Grant Number: IRB 23-1158
Dates: 07/01/2023 – 03/31/2025
Direct Costs: \$10,370

Total Costs: \$1,128.44

- A Multicenter, Randomized, Double-Blind, Placebo-Controlled Study in Subjects With Relapsing Multiple Sclerosis to Evaluate the Efficacy and Safety of BIIB033 as an Add-On Therapy to Anti-Inflammatory Disease-Modifying Therapies. **215MS202. AFFINITY**
Role: PI
Funding Source: Biogen
Grant Number: IRB 18-0482
Dates: 6/28/2018 – 6/27/2023
Direct Costs: \$34,376.40
Total Costs: \$47,745.00
- Multicenter, Randomized, Double-blind, Placebo-controlled Study to Evaluate Efficacy, Safety, and Tolerability of IMU-838 in Patients with Progressive Multiple Sclerosis
Role: PI
Funding Source: Immunic Therapeutics
Grant Number: IRB 22-1607
Dates: 01/13/2023 – 12/20/2024
Direct Costs: \$24,290
Total Costs: \$31,092
- Feasibility of the Multiple Sclerosis Performance Test (MSPT) device for assessment of functional performance measures in MS patients.
Role: PI
Funding Source: Biogen
Grant Number: IRB 19-1192
Dates:
Direct Costs: \$258,672
Total Costs: \$331,100
- An open-label, single arm, multi-center extension study evaluating long-term safety, tolerability and effectiveness of Ofatumumab in subjects with relapsing multiple sclerosis.
Role: PI
Funding Source: Novartis
Grant Number: IRB 18-2059
Dates: 8/24/2018 – 6/8/2022
Direct Costs: \$168,472.11
Total Costs: \$233,989.04
- A Single-arm, prospective, multi-center, study to explore maintained efficacy with Ofatumumab therapy in patients with relapsing MS who discontinue intravenously delivered anti-CD20 monoclonal antibody (aCD20 mAb) therapy (OLIKOS)
Role: PI
Funding Source: Novartis
Grant Number: IRB 20-2135
Dates: 02/01/21-01/31/2024

Direct Costs: \$158,855.38
Total Costs: \$220,632.47

- Phase III: Ublituximab in Multiple Sclerosis Treatment Effects. **ULTIMATE II, TG1101-RMS302**
Role: PI
Funding Source: TG Therapeutics
Grant Number: IRB 17-1170
Dates: 11/27/2017 – 11/27/2020
Direct Costs: \$120,042.35
Total Costs: \$166,725.48
- A randomized, double-blind, double-dummy, parallel-group study comparing the efficacy and safety of Ofatumumab administered subcutaneously versus teriflunomide administered orally in patients with relapsing forms of multiple sclerosis. **COMB157G2302**
Role: PI
Funding Source: Novartis
Grant Number: IRB 16-0976
Dates: 4/11/2017 – 4/1/2020
Direct Costs: \$191,340.13
Total Costs: \$265,750.18
- Long-term, prospective, multinational, parallel-cohort study monitoring safety in patients with MS newly started on Fingolimod once daily or treated with another approved disease modifying therapy. **PASSAGE, CFTY720D2403**
Role: PI
Funding Source: Novartis
Grant Number: IRB 15-0657
Dates: 12/12/2016 – 5/20/2023
Direct Costs: \$46,718.00
Total Costs: \$64,886.12
- A Phase IIIB Multicenter, randomized, double-blind, controlled study to evaluate the efficacy, safety and pharmacokinetics of a higher dose of Ocrelizumab in adults with primary progressive multiple sclerosis
Role: PI
Funding Source: Genentech/Roche
Grant Number: IRB 20-1852
Dates: 03/18/21-03/17/23
Direct Costs: \$16,542.72
Total Costs: \$22,976.00
- A Phase 1, two-part, open-label dose-escalation and double-blind, placebo-controlled dose-expansion study with an open-label extension to evaluate the safety and efficacy of ATA188 in subjects with progressive MS
Role: PI
Funding Source: Atara
Grant Number: IRB 20-0454

Dates: 07/02/20-07/01/25
Direct Costs: \$48,099.79
Total Costs: \$66,805.26

- A phase III, multicentre, randomized, parallel-group, double-blinded, placebo-controlled A randomized, double-blind, double-dummy, parallel-group study to evaluate the efficacy and safety of Ocrelizumab in Comparison to Interferon Beta-1A (Rebif) in patients with relapsing MS.

ORATORIO, WA25046

Role: PI
Funding Source: Hoffman-LaRoche Inc
Grant Number: IRB 11-1327
Dates: 01/01/2011-12/31/2022
Direct Costs: 356,000.85
Total Costs: \$481,082.23

- A Phase 3, randomized, double-blind, efficacy and safety study comparing SAR442168 to teriflunomide (Aubagio) in participants with relapsing forms of multiple sclerosis (GEMINI 1)

Role: PI
Funding Source: Sanofi
Grant Number: IRB 20-1101
Dates: 12/01/20-04/11/24
Direct Costs: \$27,241.20
Total Costs: \$37,835.00

- Cerebrospinal fluid-biomarkers-based diagnostic and prognostic models for MS

Role: PI
Funding Source: Wash U St Louis
Grant Number: IRB 20-1025
Dates: 04/2020-03/31/2023
Direct Costs: \$29,154.75
Total Costs: \$32,394.17

- A multicenter, global, retrospective, observational study to characterize real-world clinical outcomes. An open-label, single-arm study to evaluate the effectiveness and safety of ocrelizumab in patients with early-stage relapsing remitting multiple sclerosis.

ENSEMBLE, MA30143

Role: PI
Funding Source: Genentech
Grant Number: IRB 16-2527
Dates: 2/1/2017 – 4/16/2021
Direct Costs: \$1,218,396.54
Total Costs: \$1,646,481.81

- Characterizing GI events in early versus recent TECFIDERA cohorts at two large MS centers.

Role: PI
Funding Source: Biogen, Inc.

Grant Number: IRB 18-1097
Dates: 06/13/2018-06/12/2023
Direct Costs: \$146,120.40
Total Costs: \$202,945.00

- An Open Label Extension of the TG1101-RMS201 Trial, for subjects currently enrolled in TG1101-RMS201 treated with Ublituximab for relapsing forms of MS.
Role: PI
Funding Source: TG Therapeutics, Inc.
Grant Number: IRB 17-1395
Dates: 10/16/2017-11/30/2024
Direct Costs: \$ 162,632.65
Total Costs: \$219,773.85
- Does Long-Term Natalizumab (NTZ) Therapy Normalize Brain Atrophy Rates and Quality of Life (QOL) in Relapsing Remitting Multiple Sclerosis (RRMS)? A Longitudinal Study Using Whole Brain, Neocortical and Subcortical Atrophy Rates and Patient Reported Outcomes (PROs). **US-TYS-13-10470**
Role: PI – Investigator Initiated
Funding Source: Biogen
Grant Number: IRB 13-2927
Dates: 11/01/2013 – 10/31/2020
Direct Costs: \$601,027
Total Costs: \$757,294
- Comparing effectiveness on long term Gilenya (fingolimod) vs Copaxone (glatiramer acetate) on brain atrophy rates and cognition and patient reported outcomes in patients with MS
Role: Co-PI; PI: Kavita Nair
Funding Source: Novartis
Grant Number: IRB 14-0774
Dates: 06/01/14—present
Percent Effort: 3%
Direct Costs: \$575,727
Total Costs: \$725,416
- A multicenter, global, retrospective, observational study to characterize real-world clinical outcomes in patients with with relapsing-remitting multiple sclerosis treated with disease-modifying therapies (Tecfidera®, Copaxone®, Aubagio®, or Gilenya®). **EFFECT, 109MS421**
Role: PI
Funding Source: Biogen
Grant Number: IRB 16-0836
Dates: 10/6/2016 – 10/5/2019
Direct Costs: \$95,844
Total Costs: \$120,764
- Multiple Sclerosis Wellness Clinic
Role: Co-PI; PI Timothy Vollmer

Funding Source: Rocky Mountain MS Center/Heuga Foundation

Grant Number: N/A – clinical program

Dates: 3/1/2017 – 2/28/2018

Percent Effort: 2.5%

Direct Costs: 138,305

Total Costs: 138,305

- Retrospective creation of a multi-center database to study real world brain changes and patient outcomes in MS patient on fingolimod
Role: PI
Funding Source: IMS AG
Grant Number: IRB 15-2165
Dates: 12/01/15—1/11/18
Direct Costs: \$18,214
Total Costs: \$22,950
- A Double-Blind, Placebo controlled, Single Ascending Intravenous Infusion Study of rHlgM22 in Subjects with Multiple Sclerosis Immediately Following a Relapse. **IM22-MS**
Role: PI
Funding Source: Acorda
Grant Number: IRB 15-0293
Dates: 7/15/2015 –7/14/2018
Direct Costs: \$314,071
Total Costs: \$395,730
- A multicenter, retrospective, observational study evaluating real-world clinical outcomes in relapsing-remitting multiple sclerosis patients who transition from Tysabri to Tecfidera. **STRATEGY, 109MS412**
Role: PI
Funding Source: Biogen
Grant Number: IRB 14-1078
Dates: 9/9/2014—9/8/2017
Direct Costs: \$58,492
Total Costs: \$73,700
- A Phase4 Multicenter, Open-Label, Single Arm Study to Evaluate Switching from BRACET/Gilenya to Natalizumab in Subjects with Relapsing Forms of Multiple Sclerosis (MS). **ESCALATE, 101MS409**
Role: PI
Funding Source: Biogen
Grant Number: IRB 14-1295
Dates: 03/2015—07/2016
Direct Costs: \$89,475
Total Costs: \$112,738

- A Multicenter, Randomized, Open-Label Study to Assess the Impact of Natalizumab versus Fingolimod on Central Nervous System Tissue Damage and Recovery in Active Relapsing-Remitting Multiple Sclerosis Subjects. **REVEAL, 101MS408**
 Role: PI
 Funding Source: Biogen
 Grant Number: IRB 14-1729
 Dates: 4/01/2015—3/01/16
 Direct Costs: \$211,367
 Total Costs: \$266,323
- The impact of switching from Tysabri to Gilenya on imaging and clinical effectiveness outcomes. **CFTY720DUS8T**
 Role: PI – Investigator Initiated
 Funding Source: Novartis
 Grant Number: IRB 14-2349
 Dates: 2/15/2015—8/15/16
 Direct Costs: \$87,466
 Total Costs: \$110,207
- Comparison of First vs. Second Line Use of Gilenya on Real World Clinical Efficacy and MRI Based Outcomes: A Two-Site Retrospective Study
 Role: Co-PI; PI: Kavita Nair
 Funding Source: Novartis
 Grant Number: IRB 14-0774
 Dates: 9/26/2014 – 12/31/2017
 Percent Effort: 5%
 Direct Costs: \$157,737
 Total Costs: \$198,749
- NeuroNEXT NN102 A Randomized, double-blind, placebo-controlled study to evaluate the safety, tolerability, and activity of Ibudilast (MN-166) in subjects with Progressive Multiple Sclerosis
 Role: PI
 Funding Source: NIH/NINDS
 Grant Number: IRB 13-0389
 Dates: 3/31/14-3/9/2017
 Direct Costs: \$126,023
 Total Costs: \$193,090
- Detection and Risk in Early MS (DREAMS)
 Role: Co-PI; PI: Teri Schreiner
 Funding Source: NMSS
 Grant Number: IRB 19-0393
 Dates: 10/01/21-10/01/23
 Direct Costs: \$296,996.32
 Total Costs: \$329,995.91

- Evaluating the tolerability and safety profile of switching from rituximab to ocrelizumab: A real world evaluation of patients with relapsing forms of multiple sclerosis.
 Role: Co-PI; PI Timothy Vollmer
 Funding Source: Genentech
 Grant Number: IRB 16-1354
 Dates: 5/19/2017 – 5/18/2020
 Current Percent Effort: 3%
 Direct Costs: \$1,092,300
 Total Costs: \$1,359,714
- Evaluation of shorter infusion times with ocrelizumab in patients with relapsing-remitting multiple sclerosis. Role: Co-PI; PI Timothy Vollmer
 Funding Source: Genentech
 Grant Number: 18-1262
 Dates: 5/30/2017 – 5/29/2022
 Current Percent Effort: 3%
 Direct Costs: \$312,500
 Total Costs: \$400,000
- Safety and Efficacy study of Elezanumab (ABT-555) in progressive forms of multiple sclerosis.
 Role: Co-PI; PI: Amanda Piquet, M.D.
 Funding Source: Abbvie
 Grant Number: IRB 18-2152
 Dates: 8/12/2019 – 8/11/2024
 Direct Costs: \$1,030,310
 Total Costs: \$1,318,798
- Safety and efficacy study of Elezanumab (ABT-555) in relapsing forms of multiple sclerosis.
 Role: Co-PI; PI: Amanda Piquet, M.D.
 Funding Source: Abbvie
 Grant Number: IRB 18-2451
 Dates: 8/12/2019 – 8/11/2024
 Direct Costs: \$1,030,310
 Total Costs: \$1,318,798

15. BIBLIOGRAPHY—PEER-REVIEWED PUBLICATIONS (ORCID iD 0000-0001-5854-9643)

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2. Buytaert-Hoefen KA, **Alvarez E**, Freed CR. [Generation of Tyrosine Hydroxylase Positive Neurons from Human Embryonic Stem Cells after Coculture with Cellular Substrates and Exposure to GDNF.](#) *Stem Cells* 22: pp 669-674, September, 2004
3. **Alvarez E**, Zhou W, Witta SE, Freed CR. [Characterization of the Bex gene family in humans, mice, and rats.](#) *Gene* 357(1): pp 18-28, August 29, 2005

4. Klawiter EC, **Alvarez E**, Xu J, Paciorkowski AR, Zhu L, Cross AH, Naismith RT. [NMO-IgG Detected in CSF in Seronegative Neuromyelitis Optica](#). *Neurology* 72(12): pp 1101-1103, March 24, 2009
5. Wu GF, **Alvarez E**. [The immunopathophysiology of multiple sclerosis](#). *Neurologic Clinics* 29(2): pp 257-78, May, 2011. Review
6. Clifford DB, Ances B, Costello C, Rosen-Schmidt S, Andersson M, Parks D, Perry A, Yerra R, Schmidt R, **Alvarez E**, Tyler KL. [Rituximab-Associated Progressive Multifocal Leukoencephalopathy in Rheumatoid Arthritis](#). *Archives of Neurology* 68(9): pp 1156-64. September, 2011
7. **Alvarez E** and Cross AH. Update on Multiple Sclerosis. *Clinical Laboratory International*: pp 8-10. November, 2011. Review
8. Qian P, Lancia S, **Alvarez E**, Klawiter EC, Cross AH, Naismith RT. Pain Frequency and Treatment Response in Neuromyelitis Optica. *Archives of Neurology* 69(11): pp 1482-7. November, 2012
9. Leo H, Wang LH, Bucelli RC, Patrick E, Rajderkar D, **Alvarez E**, Lim MM, DeBruin G, Sharma V, Dahiya S, Schmidt RE, Benzinger TS, Ward BA, Ances BM. [Role of Magnetic Resonance Imaging, Cerebrospinal Fluid, and Electroencephalogram in Diagnosis of Sporadic Creutzfeldt-Jakob Disease](#). *Journal of Neurology* 260(2): pp 498-506. February, 2013
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12. Seibert J., **Alvarez E**. [Severe anemia in a patient with multiple sclerosis treated with natalizumab](#). *Neurology* 84(8) pp 861. February, 24, 2015
13. Hampton CW, Galperin D, **Alvarez E**, West MS. [Encephalomyeloneuropathy with CRMP-5 antibodies in a patient with a primary mediastinal serinoma](#). *Neurol Neuroimmunol Neuroinflamm*(2)3 pp e82. June, 2015. DOI 10.1212/NXI.0000000000000082
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16. PEER-REVIEWED PUBLICATIONS IN PROGRESS

1. Vollmer B, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E**. Ocrelizumab real-world safety and effectiveness in the two-year treatment of multiple sclerosis compared to other disease modifying therapies (in preparation)
2. Zanganeh N, Selva S, Nair K, Machtinger J, Vollmer T, **Alvarez E**. Cytokine changes induced by antiCD20 Infusions: A Comparison of Rituximab vs. Ocrelizumab (in preparation)
3. Wolf, A and **Alvarez E**. Neutropenic Fevers after Treatment with B Cell Depletion Therapies in Patients with Multiple Sclerosis (in preparation)
4. Neurologic Outcomes in People With Multiple Sclerosis Treated With Immune Checkpoint Inhibitors for Oncologic Indications (in preparation)

17. BOOK and BOOK CHAPTERS

1. Norris SA, **Alvarez E**, and Awadalla S. “Neurologic Disorders” in The Washington Manual® of Outpatient Internal Medicine. 2nd edition. Philadelphia: Lippincott Williams & Wilkins. 2015. Pp.906—939
2. Prater D, Ontaneda D, and **Alvarez E**. “Clinical trial design in Multiple Sclerosis” in Neuroimmunology: Multiple Sclerosis, Autoimmune Neurology and Related Diseases. 1st Edition. SpringerLink. 2021
3. Neuroimmunology: Multiple Sclerosis, Autoimmune Neurology and Related Diseases 1st Edition. Edited by Amanda L. Piquet and **Enrique Alvarez**. SpringerLink. 2021
4. Ontaneda D, and **Alvarez E**. “Clinical trial design in Multiple Sclerosis” in Neuroimmunology: Multiple Sclerosis, Autoimmune Neurology and Related Diseases. 2nd Edition. SpringerLink. In preparation
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18. ABSTRACTS AND POSTERS

1. **Alvarez E**. Isolation and Characterization of Bacteriophages for Xanthomonas Maltophilia. 43rd International Science and Engineering Fair. Nashville, Tennessee, 1992
2. **Alvarez E**. Study of the Bioluminescence of Xenorhabdus luminescens. 44th International Science and Engineering Fair. Mississippi Beach, Mississippi, 1993
3. **Alvarez E**, Zawada M, Freed C. FGF-8 and FGF-2 are Equivalent in Promoting Survival of Rat Mesencephalic Dopamine Neurons in Vitro. Society for Neuroscience 30th Annual Meeting, Miami, Florida, 2000
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5. **Alvarez E**, Witta S, Zhou W, Jarman R, Freed C. Two Members of the BEX Family: Possible Roles in Development and Apoptosis. Society for Neuroscience 31st Annual Meeting, San Diego, California 2001
6. Clayton D, Mesches M, **Alvarez E**, Rabiner C, Allgeier C, Bickford P, Browning M. The Age-related Deficit in NR2B Expression is Sufficient to Produce Deficits in LTP and Spatial Learning. Society for Neuroscience 31st Annual Meeting, San Diego, California, 2001
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8. **Alvarez E**, Jarman R, Costa A, Bjugstad K, Bell P, Patterson D, Freed C. Stem Cell Transplantation to Repair a Mouse Model of Down Syndrome. 2nd Annual Coleman Institute for Cognitive Disabilities Workshop. Boulder, Colorado, 2002
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14. Clifford D, **Alvarez E**, Schmitt R, Perry A, Ances B, Parks D. Rituximab associated progressive multifocal leukoencephalopathy in the setting of rheumatoid arthritis. International Society of Neurovirology Meeting, Milan, Italy, 2010
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26. **Alvarez E**, Vollmer B, Blackburn J, Corboy J, Vollmer T, Sillau S, Nair K, Seibert J. Effectiveness of Switching to Rituximab over Fingolimod or Dimethyl Fumarate after Natalizumab in Preventing Disease Activity in Multiple Sclerosis. 67th American Academy of Neurology Annual Meeting. Washington D.C., 2015
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30. **Alvarez E**, Seibert J, Vollmer B, Blackburn J, Strobel M, Freeman J, Sillau S, Honce J, Bennet JL, Miravalle A, Schreiner T, Corboy J, Vollmer T, Nair K. Assessing the efficacy, tolerability, and safety of rituximab for the treatment of multiple sclerosis: experience is 313 patients at a large academic center. Abstract and poster presentation at the 31stECTRIMS, Barcelona, Spain, October 2015
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32. Smith D, Stein A, Miravalle A, Schreiner T, Corboy J, Vollmer T, **Alvarez E**. Central Nervous System Neurosarcoidosis Experience at a Large Academic Center. Poster and abstract presentation at the Americas Association of Sarcoidosis and Other Granulomatous Disorders 9AASOG) Conference, University of Colorado Anschutz Medical Campus, Aurora, Colorado, September 2015
33. Solomon A, Qu H, Springmann V, Ionete C, Pbert L, Anthony W, Griffin C, Tierman B, Hopson A, Berrios Morales I, **Alvarez E**, Phillips G, Col N. Differences between Patients' and Providers' Treatment Goals for Therapeutic Decisions in Multiple Sclerosis and Implications, Washington, DC, November 2015
34. Bove R, Elson L, **Alvarez E**, Borisow N, Cortez M, Matee F, Melay M, Sorum J, Mutch K, Topyne S, Ruprecht K, Buckle G, Levy M, Wingerchuk D, Friedemann P, Cross A, Weinshenker B, Jacobs A, Klawiter E, Chitnis T. Hormonal exposures relate to clinical phenotype in women with

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35. Col N, Solomon A, Qu H, Springmann V, Ionete C, Pbert L, Anthony W, Griffin C, Tierman B, Kutz C, Berrior Morales I, Hopson A, Phillips G, **Alvarez E**. Comparison of Therapeutic Goals and Preferences in Multiple Sclerosis Patients and Providers Using Nominal Group Technique. Poster and abstract presentation at the Annual Meeting of the American Academy of Neurology, Vancouver, BC, Canada, April 2016
 36. **Alvarez E**, Vollmer B, Sillau S, Nair K, Corboy J, Vollmer T, Honce J. The impact of very short transition times on switching from Tysabri to Gilenya on imaging and clinical effectiveness outcomes. Poster and abstract presentation at the Annual Meeting of the American Academy of Neurology, Vancouver, BC, Canada, April 2016
 37. Ontaneda D, Vollmer B, Sillau S, Cohn S, Nair K, Bermel R, Vollmer T, Fox R, Corboy J, Cohen J, Hersh C, **Alvarez E**. Comparative Efficacy and Discontinuation of Fingolimod and Dimethyl Fumarate in Two Large Academic Medical Centers. P3.109 Poster and abstract presentation at the Annual Meeting of The American Academy of Neurology, Vancouver, BC, Canada, April 2016
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 39. Honce J, Nair K, Hoyt B, Sillau S, Wedeman B, Engebretson E, Vollmer B, Johnson K, Tenenbaum N, Herrera V, Siconolfi L, Miravalle A, Bennett J, Corboy J, Vollmer T, **Alvarez E**. Comparison of Baseline Characteristics of Glatiramer Acetate Versus Fingolimod in Multiple Sclerosis Patients on Brain Volume, Cognition and Neuro-QOL Outcomes: Preliminary Analysis of a Longitudinal Observational Study. Poster presentation at the Annual Meeting of the American Academy of Neurology, Vancouver, BC, Canada, April 2016
 40. Davis L, Almuklass A, Derquaoi K, Hamilton L, Hebert J, Vollmer T, **Alvarez E**, Enoka, R. Neuromuscular Electrical Stimulation Can Improve Walking Endurance in Individuals with Multiple Sclerosis. Poster presentation at the 2016 Annual Meeting of the American College of Sports Medicine
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 42. Solomon A, Qu H, Springmann V, Ionete C, Pbert L, Anthony W, **Alvarez E**, Griffin C, Tierman B, Hopson A, Kutz C, Berrios Morales I, Phillips G, Col N. What Factors Influence Changes in MS Management? Comparing the Perspectives of Patients and Health Care Providers using Nominal Group Technique. Poster presentation at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC) National Harbor, MD, June 2016
 43. Hoyt B, Honce J, Sillau S, Wedeman B, Engebretson E, Johnson K, Tenenbaum N, Herrera V, Siconolfi L, **Alvarez E**, Nair K. Preliminary Comparison of Baseline Cognition and Correlations with PROs of FTY versus GA in MS Patients in a Longitudinal Observational Study. Poster presentation at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), National Harbor, MD, June 2016

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45. Vollmer L, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E**. Comparison of Fingolimod and Dimethyl Fumarate in the Treatment of Multiple Sclerosis: Two Year Experience. Poster presentation at the 32nd Congress of theECTRIMS, London, September 2016
46. Honce J, Nair K, Sillau S, Vollmer T, Vollmer B, **Alvarez E**. Predicting Which Patients with Multiple Sclerosis will develop a Progressive Course Using Patient Information and Clinically Obtained Brain Volumes. Poster presentation at the 32nd Congress of theECTRIMS, London, September 2016
47. Col N, Solomon A, Springmann V, Garbin C, Ionete C, Pbert L, **Alvarez E**, Tierman B, Hopson A, Kutz C, Berrios Morales I, Griffin C, Phillips G, Ngo L. A Stakeholder-Centered Approach to Eliciting Patient Treatment Goals in the Context of High-Stake Clinical Decisions. 38th Annual North American Meeting of the Society for Medical Decision Making in Vancouver, BC, Canada. October 23-26. 2016
48. **Alvarez E**, Nair K, Hoyt B, Sillau S, Wedeman B, Engebretson E, Miravalle A, Bennett J, Corboy J, Vollmer T, Honce J. Comparison of Baseline Characteristics of Natalizumab versus Healthy Controls in Multiple Sclerosis Patients on Brain Volume, Cognition and Neuro-QOL outcomes: Preliminary Analysis of a Longitudinal Observational Study." Poster presentation at the American Academy of Neurology 69th Annual Meeting, Boston, MA, April 2017
49. **E Alvarez**, Nair K, Hoyt B, Sillau S, Wedeman B, Engebretson E, Miravalle A, Bennett J, Corboy J, Vollmer T, Honce J. Comparison of Baseline Characteristics of Natalizumab versus Healthy Controls in Multiple Sclerosis Patients on Brain Volume, Cognition and Neuro-QOL Outcomes: Preliminary Analysis of a Longitudinal Observational. Poster presentation at the American Academy of Neurology 69th Annual Meeting, Boston, MA, April 2017
50. Medina L, Valdez B, **Alvarez E**, Nair K. Exploratory Factor Analysis of a Patient-Reported Outcome Measure in a Multiple Sclerosis Population Cohort at a Large. Poster presentation at the American Academy of Neurology 69th Annual Meeting, Boston, MA, April 2017
51. Lin J, Rawson C, Nair K, Nyberg E, Nagae L, Sillau S, **Alvarez E**, Honce J. Testing the Statistical Agreement of Automated NeuroQuant Volumetric Analysis to Validated Research Methods across Multiple MRI Scanner Manufacturers and Field Strengths. Poster presentation at the American Academy of Neurology 69th Annual Meeting, Boston, MA, April 2017
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55. Honce J, Nair K, Hoyt B, Sillau S, Wedeman B, Engebretson E, Vieira M, Tenenbaum N, Siconolfi L, Corboy J, Vollmer T, **Alvarez E**. Comparison of 12 month changes in Brain Volume in Long Term Users of Glatiramer Acetate versus Fingolimod in Multiple Sclerosis: Preliminary analysis of a Two-Year Longitudinal Observational Study. Poster presentation at the American Academy of Neurology 69th Annual Meeting, Boston, MA, April 2017
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 57. Michel C, Reisdorph R, **Alvarez E**, Bhat V, Goodley P, Reisdorph N. Utilizing an Accurate Mass and Retention Time Library to Facilitate Bio-Marker Discovery in the Human Cerebrospinal Fluid Proteome: American Society for Mass Spectrometry (ASMS) Annual Meeting, Indianapolis, IN, June 2017
 58. Min J, Sloane J, Phillips J, Chan A, Cohan S, **Alvarez E**, Okwuokenye M, Taylor C. Leveraging Real-World Evidence for Comparative Effectiveness: Delayed-Release Dimethyl Fumarate vs. Fingolimod and Glatiramer Acetate in RRMS. Abstract/Poster presentation at America's Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting in San Diego, CA, February 2018
 59. Naismith R, Coffey C, Cudkowicz M, Gleason T, Goodman A, Klawiter E, Matsuda K, McGovern M, Conwit R, Ashokkumar A, Ecklund D, Klinger E, Koeppe M, Natarajan S, Thornell B, Yankey J, Bermel R, Huang X, Lowe M, Nakamura K, Narayanan S, Sakaie K, Debbins J, Zhou X, **Alvarez E**, Apperson M, Bashir K, Cohen B, Coyle P, Delgado S, Dewitt D, Flores A, Giesser B, Goldman M, Jubelt B, Lava N, Lynch S, Moses H, Ontaneda D, Perumal J, Racke M, Repovic P, Riley C, Severson C, Shinnar S, Suski V, Weinstock-Guttman B, Yadav V, Zabeti A, Fox R. Sprint-MS/NN 102 Phase II Trial of Ibudilast in Progressive MS: Top-Line Results Abstract/Poster presentation at America's Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Annual Meeting in San Diego, CA, February 2018
 60. Hersh C, Vollmer B, Bandyopadhyay A, Cohn S, Nair K, Sillau S, Bermel R, Corboy J, Fox R, Vollmer T, Cohen J, Ontaneda D, **Alvarez E**. Comparative Effectiveness and discontinuation of Dimethyl Fumarate and Fingolimod in Two Large Academic Medical Centers at 24-Month Follow-Up: Sub-Group Analyses. Abstract/Poster presentation at the AAN Annual Meeting in Los Angeles, CA, April 2018
 61. Horton L, Gross R, Corboy J, **Alvarez E**. Neutropenia Following Treatment with Rituximab for Multiple Sclerosis. Abstract/Poster presentation at the AAN Annual Meeting in Los Angeles, CA, April 2018
 62. Zanganeh N, Selva S, Nair K, Machtiger J, Vollmer T, **Alvarez E**. Cytokine changes induced by antiCD20 Infusions: A Comparison of Rituximab vs. Ocrelizumab. Abstract/Poster presentation at the AAN Annual Meeting in Los Angeles, CA, April 2018
 63. **Alvarez E**, Nair K, Weinkle L, Craig J, Hoyt B, Sillau A, Engebretson E, Schurr B, Corboy J, Vollmer T, Honce J. Comparison of 12 month changes in Brain Volume among Long Term Users of Natalizumab vs. Healthy Controls in Multiple Sclerosis: Year One Analysis of a Two-Year

- Longitudinal Observational Study. Abstract/Poster presentation at the AAN Annual Meeting in Los Angeles, CA, April 2018 and at ECTRIMS 2018 in Berlin, Germany
64. Schubert C, **Alvarez E**, Honce J, Filley C. Use of LesionQuant® to Measure Cerebral White Matter Lesion Distribution in Neuromyelitis Optica and Relapsing Multiple Sclerosis. Abstract/Poster presentation at the AAN Annual Meeting in Los Angeles, CA, April 2018
 65. Weinkle L, Shelton I, Sillau S, Domen C, Nair K, **Alvarez E**. Exploring Cannabis use by Patients with Multiple Sclerosis in a state where Cannabis is legal. Abstract/Poster presentation at the AAN Annual Meeting in Los Angeles, CA, April 2018
 66. Leech J, Sillau S, Valdez B, Vollmer T, **Alvarez E**, Medina L. Treatment satisfaction and illness perception in MS patients. Abstract/Poster presentation at the AAN Annual Meeting in Los Angeles, CA, April 2018
 67. Vollmer B, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E**. Comparison of Rituximab vs. Fingolimod, Dimethyl Fumarate and Natalizumab in the Treatment of Multiple Sclerosis: Two Year Experience. Abstract/Poster presentation at the AAN Annual Meeting in Los Angeles, CA, April 2018
 68. Col N, **Alvarez E**, Pbert L, Ionete C, Berrios Morales I, Solomon A, Jones D, Kutz C, Springmann V, Griffin C, Tierman B, Livingston T, Patel M, Ngo L. The MS-Support Decision Aid Promotes Collaborative Decision-Making and Treatment Adherence for Multiple Sclerosis. Abstract/Poster presentation at the 40th Annual Meeting of the Society for Medical Decision Making 2018.
 69. Col N, **Alvarez E**, Pbert L, Ionete C, Berrios Morales I, Solomon A, Jones D, Kutz C, Springmann V, Griffin C, Tierman B, Livingston T, Patel M, Ngo L. The MS-Support Decision Aid Promotes Collaborative Decision-Making and Treatment Adherence for Multiple Sclerosis. Abstract/Poster presentation at The Consortium of Multiple Sclerosis Centers (CMSC) 2018 as a “later breaker.”
 70. Col N, **Alvarez E**, Berrios Morales I, Solomon A, Jones D, Kutz C, Springmann V, Griffin C, Tierman B, Livingston T, Patel M, van Leeuwen D, Ngo L. A Novel Tool to Improve Shared Decision Making and Adherence in Multiple Sclerosis: A Pilot Study. Poster presentation at the 40th Annual Montreal Society of Medical Decision Making, October 2018
 71. Shelton I, Zanganeh N, Selva S, Sillau S, Nair K, Vollmer T, **Alvarez E**. Characterizing Cytokine Changes Before and After Ocrelizumab Infusions and Their Contribution to Infusion Related Reactions. Poster presentation at ECTRIMS 2018 held in Berlin, Germany.
 72. Ontaneda D, Tallantyre E, Nakamura K, Planchon S, Miller D, Hersh C, Chaudhry B, Bale C, **Alvarez E**, Chataway J, Craner M, Freeman L, Frost N, Goldman M, Hobart J, Hunt D, Hutton G, Hyland M, Joseph F, Lily O, Moses H, Nicholas J, Nicholas R, Overell J, Pearson O, Pomeroy I, Smith A, Zabeti A, Gerry S, Gunzler D, Coles A, LaRocca N, Gray E, Cohen J, Evangelou N. Deliver-MS--Determining the Effectiveness of early Intensive Versus Escalation approaches for the treatment of Relapsing-remitting Multiple Sclerosis. Poster presentation at ECTRIMS 2018 held in Berlin, Germany.
 73. Rose J, **Alvarez E**, Okuda D, Gudesblatt M, Riser E, Spelman T, Butzkueven H, Fam S, Riester K, Wu F, Miller C. Among Real-world Multiple Sclerosis Patients That Experience Delayed-release Dimethyl Fumarate--Associated Lymphopenia, Meaningful Lymphocyte Reconstitution Occurs Within 3 Months After Discontinuation of Delayed-release Dimethyl Fumarate. Poster presentation at ECTRIMS 2018 held in Berlin, Germany.
 74. **Alvarez E**, K. Nair, I. Shelton, N. Zanganeh, S. Sillau, J. Corboy, T. Vollmer. Evaluating the Tolerability and Safety Profile of Switching from Rituximab to Ocrelizumab: Infusion Related

Reactions in Relapsing Forms of Multiple Sclerosis. Poster presentation atECTRIMS 2018 in Berlin Germany

75. Vollmer T, Alvarez E, Nair KV, Cohen J, Boster A, Masterman D, Pradhan A, Pei J, Yang M, Bobbala A, Moss B. Design of a Study to Evaluate the Safety of Administering Ocrelizumab per a Shorter Infusion Protocol in Patients With Primary Progressive Multiple Sclerosis and Relapsing Multiple Sclerosis. Poster presentation at the 2018 European Charcot Foundation in Italy.
76. Alenazy M, Petrigna L, Feka K, **Alvarez E**, Almuklass AM, Enoka R. Electrical stimulation of sensory nerves improves mobility and balance in persons with multiple sclerosis. Abstract presented at the XXVII Congress of the International Society of Biomechanics and 43rd Annual Meeting of the American Society of Biomechanics, Calgary, Canada, July 31 – August 4, 2019
77. Honce J, Nair K, Hoyt B, Sillau S, Corboy J, Vollmer T, and **Alvarez E**. Comparison of 24 Month Changes in Brain Volume Among Long Term Users of Natalizumab in Multiple Sclerosis Versus Healthy Controls Poster presentation at the ACTRIMS 2019
78. Vollmer B, Wallach A, Corboy J, Dubovskaya K, **Alvarez E**, and Kister I. Serious Adverse Events in Rituximab-Treated Patients with Multiple Sclerosis and Related Disorders Poster presentation at ACTRIMS 2019
79. Kwon SH, Nair K, Sillau S, **Alvarez E**. Longitudinal comparison in employment between multiple sclerosis patients versus controls. Poster presentation at ISPOR 2019 in New Orleans, LA
80. Domen C, Weinkle L, Shelton I, Sillau S, Nair K, **Alvarez, E**. Cannabis use by Patients with Multiple Sclerosis in Colorado. Poster presentation at AAN 2019 in Philadelphia, PA
81. **Alvarez E**, Smith P, Deanda K, Sudfeld H, Palmer L, Simpson J, Kern D. A novel practice model incorporating extended rooming and scribing assistance in an academic neurology practice. Poster presentation at AAN 2019 in Philadelphia, PA
82. Vollmer B, Nair K, Sillau S, Vollmer T, Corboy J, **Alvarez E**. Higher Efficacy Therapies Appear to have a Disproportionately Larger Effect in Younger Patients with Multiple Sclerosis. Poster presentation at AAN 2019 in Philadelphia, PA
83. Vollmer T, **Alvarez E**, Nair K, Cohen J, Boster A, Masterman D, Pradhan A, Musch B, Ma X, Pei J, Moss B, Weinstock-Guttman B, Bermel R. Evaluation of shorter infusion times with ocrelizumab in patients with relapsing-remitting multiple sclerosis. Poster presentation at AAN 2019 in Philadelphia, PA
84. Alimohamadi S, Vollmer B, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E**. Ocrelizumab Safety and Effectiveness in the One Year Treatment of Multiple Sclerosis Compared to Other Disease Modifying Therapies. Poster presentation at AAN 2019 in Philadelphia, PA
85. Vollmer B, Nair K, Corboy J, Vollmer T, **Alvarez E**. Characteristics of Patients Switching from Anti-CD20 Therapy to Natalizumab in the Treatment of Multiple Sclerosis. Poster presentation at AAN 2019 in Philadelphia, PA
86. **Alvarez E**, Nair K, Shelton I, Selva S, Voge N, Zanganeh N, Sillau S, Vollmer T. Evaluating the Tolerability and Safety of Switching from Rituximab to Ocrelizumab: Infusion Related Reactions in Relapsing Forms of Multiple Sclerosis. Poster presentation at AAN 2019 in Philadelphia, PA
87. Horton L, Khan M, Ney D, DeMasters D, **Alvarez E**, Piquet A. Central Nervous System T Cell Lymphoproliferative Disease Following Treatment with Alemtuzumab. Poster presentation at AAN 2019 in Philadelphia, PA
88. Kern D, **Alvarez E**, Deanda K, Sudfeld H, Smith P, Palmer L, Simpson J, Frey L. Effects of a novel practice model on medical team burnout in an academic neurology practice. Poster presentation at AAN 2019 in Philadelphia, PA
89. Hersh C, Vollmer B, Harris H, Nair K, Bermel R, Corboy J, Fox R, Vollmer T, Cohen J, Ontaneda D, **Alvarez E**. Discontinuation and Comparative Effectiveness of Dimethyl Fumarate and

- Fingolimod in Two Large Academic Medical Centers at 36-month Follow-Up. Poster presentation at AAN 2019 in Philadelphia, PA
90. Rose J, Alvarez E, Okuda D, Gudesblatt M, Riser E, Spelman T, Butzkueven H on behalf of MSBase Investigators, Fam S, Riester K, Wu F, Miller C. Among Real-world Multiple Sclerosis Patients That Experience Delayed-release Dimethyl Fumarate-associated Lymphopenia, Meaningful Lymphocyte Reconstitution Occurs Approximately 3 Months After Discontinuation of Delayed-release Dimethyl Fumarate. Poster presentation at AAN 2019 in Philadelphia, PA
 91. Wallach A, Vollmer B, Corboy J, Dubovskaya K, Kister I, **Alvarez E**. Serious Adverse Events in Rituximab-Treated Patients with Multiple Sclerosis and Related Disorders. Poster presentation at AAN 2019 in Philadelphia, PA
 92. Vollmer T, **Alvarez E**, Nair K, Cohen J, Boster A, Pradhan A, Musch B, Ma X, Pei J, PhD4, Yang M, Moss B, Weinstock-Guttman B, Bermel R. Evaluation of Shorter Infusion Times with Ocrelizumab in Patients with Relapsing-Remitting Multiple Sclerosis. Abstract presented at CMSC 2019 in Seattle, WA
 93. **Alvarez E**, Bar-Or A, Buckle G, Cohan S, Cree B, Mao-Draayer Y, McCarthy M, Miller A, Weinstock-Guttman B, Jaitly N, Cruz L, Kolodny S, Meng X, Tomic D, Su W. Assessing the Safety and Tolerability of Conversion to Siponimod in Patients with Relapsing Forms of Multiple Sclerosis: Design of the Exchange Study. Abstract presented at CMSC 2019 in Seattle, WA
 94. Vollmer B, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E** Higher efficacy therapies appear to have a disproportionately larger effect in younger patients. Presentation atECTRIMS 2019 in Stockholm, Sweden
 95. **Alvarez E**, Nair K, Shelton I, Sillau S, Selva S, Vollmer T Characterizing Cytokine Changes Before and After Ocrelizumab Infusions and Their Contribution to Infusion Related Reactions. Poster presentation atECTRIMS 2019 in Stockholm, Sweden
 96. Vollmer B, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E** Ocrelizumab real-world safety and effectiveness in the one year treatment of multiple sclerosis compared to other disease modifying therapies. Poster presentation atECTRIMS 2019 in Stockholm, Sweden
 97. **Alvarez E**, Nair K, Shelton I, Sillau S, Vollmer T Tolerability and Safety of Switching from Rituximab to Ocrelizumab: Evaluating Factors Associated with Infusion Related Reactions. Poster presentation atECTRIMS 2019 in Stockholm, Sweden
 98. **Alvarez E**, Nair K, Ritchie A, Shelton I, Gendelman S, Sillau S, Owens G, Vollmer T Serum Neurofilament Levels in Long Term Rituximab Treated Multiple Sclerosis Patients: Are We Over or Under Treating? Poster presentation atECTRIMS 2019 in Stockholm, Sweden
 99. Steinman L, Fox E, Hartung HP, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Power S, Bosco J, Mok K, Cree B Study Design and Patient Demographics of the ULTIMATE Phase III Trials Evaluating Ublituximab (UTX), a Novel Glycoengineered Anti-CD20 Monoclonal Antibody (mAb), in Patients with Relapsing Multiple Sclerosis (RMS). Poster presentation atECTRIMS 2019 in Stockholm, Sweden
 100. Vollmer T, **Alvarez E**, Nair K, Cohen J, Boster A, Katz J, Pardo G, Pei J, Raut P, Merchant S, Bobbala A, Pradhan A, Moss B Safety results for administering ocrelizumab per a shorter infusion protocol in patients with primary progressive and relapsing multiple sclerosis. Poster presentation atECTRIMS 2019 in Stockholm, Sweden
 101. Vollmer T, **Alvarez E**, Nair K, Gorritz M, Maloney H, Ding Y, Golan T, Bartolome L, Wade RL, 2, Kumar R, Su W, Russo P. Physicians' perspectives on the identification and diagnosis of secondary progressive multiple sclerosis during the clinical encounter. Poster presentation atECTRIMS 2019 in Stockholm, Sweden
 102. Steinman L, Fox E, Hartung HP, Cree B, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K. Baseline Demographics and Disease

- Characteristics from the ULTIMATE Phase III Trials Evaluating Ublituximab, a Novel Glycoengineered Anti-CD20 Monoclonal Antibody, in Patients with Relapsing Multiple Sclerosis. Poster presentation at AAN Virtual Annual Meeting, April 25, 2020
103. Engmann N, Sheinson D, Yang E, Fiore D, **Alvarez E**, Nair K, Vollmer T. Real-world outcomes with ocrelizumab compared with other disease-modifying therapies in US commercial claims databases. Poster presentation at AAN Virtual Annual Meeting, April 25, 2020
 104. Vollmer B, Gendelman S, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E**. A Year and Half of Real World Efficacy and Safety of Ocrelizumab in the Treatment of Multiple Sclerosis. Poster presentation at AAN Virtual Annual Meeting, April 25, 2020
 105. Piquet A, **Alvarez E**, Bennett J, Knapp C, Sillau S, Nair K, Vollmer T. A Retrospective, Cross-sectional Study Evaluating Plasma Neurofilament Light Levels in Autoimmune Encephalitis. Poster presentation at AAN Virtual Annual Meeting, April 25, 2020
 106. Gross R, Ritchie A, Sillau S, Nair K, Knapp C, Selva S, Owens G, Bennett JL, **Alvarez E**, Vollmer T. A cross-sectional exploration of four CSF and plasma biomarkers across headache, multiple sclerosis, and neuromyelitis optica spectrum disorder. Poster presentation at AAN Virtual Annual Meeting, April 25, 2020
 107. **Alvarez E**, Ritchie A, Nair K, Gross R, Piquet A, Knapp C, Selva S, Sillau S, Bennett JL, Owens G, Vollmer T. Evaluating the Correlation Between Spinal Fluid and Blood Levels of Neurofilament Light, GFAP, Tau, and UCHL1: Do We Need a Correction Factor in Evaluating Blood Levels? Poster presentation at AAN Virtual Annual Meeting, April 25, 2020
 108. Vollmer B, Vollmer T, Corboy J, **Alvarez E**. Evaluation of Risk Factors in Developing Lymphopenia and Hypogammaglobulinemia in Anti-CD20 Treated Multiple Sclerosis Patients. Poster presentation at AAN Virtual Annual Meeting, April 25, 2020
 109. Kletenik I, Medina L, Honce J, Lopez Paniagua D, Valdez B, Engebretson E, Vollmer T, **Alvarez E**. Metacognitive Insight and Reduced Brain Volume in Multiple Sclerosis. Poster presentation at the International Neuropsychological Society 2020 Annual Meeting in Denver, CO.
 110. **Alvarez E**, Gendelman SZ, Nair KV, Ritchie A, Shelton IT, Sillau SH, Owens GP, Vollmer TL. No Effect of Body Mass Index on Serum Neurofilament Light in Long Term Rituximab Treated Multiple Sclerosis Patients: The Need to Correct for Age, Blood Volume, and Disability. Poster presentation at ACTRIMS 2020 in Palm Beach, FL.
 111. Wundes A, **Alvarez E**, Freedman M, Mokliatchouk O, Chen H, Kapadia S, Messer J, Naismith R. Efficacy of Diroximel Fumarate in Highly Active Relapsing-Remitting Multiple Sclerosis: Interim Results from the Phase 3 EVOLVE-MS-1 Study. Abstract accepted for CMSC Virtual 2020
 112. Manago M, **Alvarez E**, Kline P, Christiansen C. Proximal Movement Compensations Are Related to Muscle Function and Walking Capacity in People with Multiple Sclerosis. Abstract accepted for CMSC Virtual 2020
 113. **Alvarez E**, Ritchie A, Nair K, Gross R, Piquet A, Knapp C, Selva S, Sillau S, Bennett J, Owens G, Vollmer T. Correlation Between Spinal Fluid and Blood Levels of Neurofilament Light, GFAP, Tau, and UCHL1: Do We Need a Correction Factor? Poster Presentation at ECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020
 114. Ritchie A, Selva S, Owens G, Knapp C, Parra Gonzalez J, **Alvarez E**, Nair K, Vollmer T. Determining the effect of blood anticoagulants on the detection level of neurobiomarkers in headache and control patients on the SIMOA platform. Poster Presentation at ECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020
 115. Gross R, Ritchie A, Selva S, Parra Gonzalez J, Knapp C, Sillau S, Owens G, Nair K, Vollmer T, **Alvarez E**. Monitoring Multiple Sclerosis Treatment with Plasma Biomarkers: NfL, GFAP, UCH-L1, and Tau. Poster Presentation at ECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020

116. Greenberg B, **Alvarez E**, Foley J, Henry R, Brown J, Camacho E, Meng X, Ziehn M, Brown B, Hua L. OLIKOS study design: exploring maintained ofatumumab efficacy in relapsing MS patients who transition from intravenous anti-CD20 therapy. Poster Presentation atECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020
117. Vollmer B, Declusin A, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E**. Ocrelizumab real-world safety and effectiveness in the two years of treatment in multiple sclerosis. Poster Presentation atECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020
118. Vollmer B, Vollmer T, Corboy J, **Alvarez E**. Risk Factors for Developing Lymphopenia and Hypogammaglobulinemia in anti-CD20 Treated Patients with Multiple Sclerosis. Poster Presentation atECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020
119. Ziemssen T, Giovannoni G, **Alvarez E**, Bhan V, Hersh C, Hoffmann O, Oreja-Guevara C, Robles-Cedeño R, Trojano M, Vermersch P, Dobay P, Khwaja M, Stadler B, Hach T, Piani-Meier D, Burton J. MSProDiscuss™ is a useful tool to aid discussion of multiple sclerosis disease progression: Results from a large, real-world qualitative survey. Poster Presentation atECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020
120. Smoot K, **Alvarez E**, Chen C, Vollmer B, Stuchiner T, Grote L. Characterizing GI events in early versus recent dimethyl fumarate cohorts at two large MS centers. Poster Presentation atECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020
121. **Alvarez E**, Ritchie A, Nair K, Gross R, Piquet A, Knapp C, Selva S, Sillau S, Bennett J, Owens G, Vollmer T. Correlation Between Spinal Fluid and Blood Levels of Neurofilament Light, GFAP, Tau, and UCHL1: Do We Need a Correction Factor? Poster Presentation atECTRIMS/ACTRIMS 8th Joint Meeting September 11-13, 2020
122. Roman C, Hersh C, Sillau S, **Alvarez E**. Comparative Safety of Dimethyl Fumarate and Fingolimod: Findings from the FDA Adverse Event Reporting System (FAERS). Abstract presentation at AAN Virtual Annual Meeting, April 17, 2021
123. Vollmer B, Ijadi N, Declusin A, Nair K, Sillau S, Corboy J, Vollmer T, **Alvarez E**. Ocrelizumab two-year real-world safety and effectiveness over in the treatment of multiple sclerosis. Abstract presentation at AAN Virtual Annual Meeting, April 17, 2021
124. Ziemssen T, **Alvarez E**, Bhan V, Burton J, Hoffmann O, Oreja-Guevara, Robles-Cedeno R, Trojano M, Vermersch P, Napoli S, Miravalle A, Xu Y, Vandercappellen J, Khwaja M, Marchaterre M, Stadler B, Hach T, Giovannoni G. Development and Usability Testing of a Patient-based Digital Tool to Understand Early Signs of Changes in Multiple Sclerosis Symptoms and Progression: Your MS Questionnaire. Abstract presentation at AAN Virtual Annual Meeting, April 17, 2021
125. Hua L, **Alvarez E**, Foley J, Henry R, Brown J, Camacho E, Meng X, Ziehn M, Brown B, Greenberg B. OLIKOS Study Design: Exploring Maintained Ofatumumab Efficacy in Relapsing MS Patients who Transition from Intravenous Anti-CD20 Therapy. Abstract presentation at AAN Virtual Annual Meeting, April 17, 2021
126. Ziemssen T, Arnold D, **Alvarez E**, Cross A, Willi R, Li B, Kukkaro P, Kropshofer H, Ramanathan K, Merschhemke M, Su W, Haering D, Hauser S, Kappos L, Kuhle J. Prognostic Value of Serum NfL for Subclinical Disease Activity and Worsening in Patients with RMS: Results from the Phase 3 ASCLEPIOS I and II Trials. Abstract presentation at AAN Virtual Annual Meeting, April 17, 2021
127. Steinman L, Fox E, Hartung HP, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, Cree B. Efficacy and safety of ublituximab versus teriflunomide in relapsing multiple sclerosis: Results of the Phase 3 ULTIMATE I and II trials. Abstract presentation at AAN Virtual Annual Meeting, April 17, 2021
128. A Patient-based Digital Tool to Detect Early Signs of Changes in MS Symptoms and Progression: Your MS Questionnaire – Abstract presentation at the European Academy of Neurology Annual Meeting, June 19, 2021

129. Wolf A, Pratt R, Crooks K, Borko T, Parra Gonzalez J, Vollmer T, Frazer-Abel A, **Alvarez E**. Response to COVID-19 mRNA Vaccination in Patients with Multiple Sclerosis on anti-CD20 Disease Modifying Therapies. Abstract presentation at the ANA 2021 Annual Meeting, October 15, 2021
130. Evaluating the Impact of Administering Ocrelizumab Via a Home Infusion on Safety and Patient Reported Outcomes. Late-Breaking Poster Presentation at the 2021 Annual Meeting of the Consortium of Multiple Sclerosis Centers in Orlando, Florida
131. Olikos Study Design: Exploring maintained ofatumumab efficacy in relapsing MS patients who transition from intravenous anti-cd20 therapy. Poster Presentation at the 2021 Annual Meeting of the Consortium of Multiple Sclerosis Centers in Orlando, Florida
132. Improving Communication about Multiple Sclerosis: The MS-Support Decision Aid. Poster Presentation at the 2021 Annual Meeting of the Consortium of Multiple Sclerosis Centers in Orlando, Florida
133. Real-World Cost of Care, Treatment Completion and Site of Care Cost for Patients with Multiple Sclerosis Initiating Infused Disease-Modifying Therapies. Poster Presentation at the 2021 Annual Meeting of the Consortium of Multiple Sclerosis Centers in Orlando, Florida
134. Steinman L, Fox E, Hartung H, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, and Cree B. Efficacy and Safety of Ublituximab Versus Teriflunomide in Relapsing Multiple Sclerosis: Results of the Phase 3 Ultimate I and II Trials. Poster Presentation at the 2021 Annual Meeting of the Consortium of Multiple Sclerosis Centers in Orlando, Florida
135. Characterizing Activities of Daily Living in MS Patients with Processing Speed Scores Above and Below a Threshold Previously Shown to Predict Employment Status. Poster Presentation at the 2021 Annual Meeting of the Consortium of Multiple Sclerosis Centers in Orlando, Florida
136. Ph3 results of the ULTIMATEI&II global studies: Ublituximab v. teriflunomide in RMS. Poster presentation at theECTRIMS 2021 European Charcot Foundation Annual Meeting
137. Ublituximab Is Associated With Significant Improvement in the Multiple Sclerosis Functional Composite (MSFC): Results From the Phase 3 ULTIMATE I & II Studies. Poster Presentation at ECTRIMS 2021
138. Development of Your MS Questionnaire: A Patient Completed Digital Tool to Monitor Multiple Sclerosis Disease Symptoms and Their Impact on People’s Life. Poster Presentation at ECTRIMS 2021
139. CELLO: a phase IV, multicenter, randomized, double-blind, placebo-controlled study assessing efficacy of ocrelizumab in radiologically isolated syndrome. Poster Presentation at ECTRIMS 2021
140. Longbrake E, Hua L, Mowry E, Gauthier S, **Alvarez E**, Cross A, Pei J, Priest J, Winger R, Hafler D. CELLO: A Phase IV, Multicenter, Randomized, Double-Blind, Placebo-Controlled Study Assessing Efficacy of Ocrelizumab in Radiologically Isolated Syndrome. Poster presentation at ACTRIMS 2022 in West Palm Beach, FL
141. Cree B, Fox E, Hartung H, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, Lee L, Steinman L. Reduction in T1 Hypointense Lesions With Ublituximab vs Teriflunomide in the Phase 3 ULTIMATE I and II Studies in Relapsing Multiple Sclerosis. Poster presentation at ACTRIMS 2022 in West Palm Beach, FL
142. **Alvarez E**, Steinman L, Fox E, Hartung H, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, Lee L, Cree B. Neutralizing Antibodies and Antidrug Antibodies in the Ublituximab Phase 3 ULTIMATE I and II Studies in Relapsing Multiple Sclerosis. Poster presentation at ACTRIMS 2022 in West Palm Beach, FL

143. Fox E, Steinman L, Hartung H, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, Lee L, Cree B. Pharmacodynamics of B-Cell Depletion and Pharmacokinetics of the Novel Anti-CD20 Monoclonal Antibody Ublituximab in Patients With Relapsing Multiple Sclerosis. Poster presentation at ACTRIMS 2022 in West Palm Beach, FL
144. **Alvarez E**, Steinman L, Fox E, Hartung H, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, Lee L, Cree B. Ublituximab Treatment Is Associated With a Significant Proportion of Patients Achieving No Evidence of Disease Activity (NEDA): Results From the Ultimate I and Ultimate II Phase 3 Studies of Ublituximab vs Teriflunomide in Relapsing Multiple Sclerosis (RMS) Abstract Presentation at AAN 2022 Seattle, WA
145. Cree B, Fox E, Hartung H, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, Lee L, Steinman L. Disability Improvements With Ublituximab in Relapsing Multiple Sclerosis (RMS): Expanded Disability Status Scale (EDSS), 9-Hole Peg Test (9-HPT), and Timed 25-Foot Walk (T25FW) Evaluations From the Phase 3 ULTIMATE I and II Studies. Abstract Presentation at AAN 2022 Seattle, WA
146. Fox E, Steinman L, Hartung H, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, Lee L, Cree B. Infusion-Related Reactions (IRRs) With Ublituximab in Patients With Relapsing Multiple Sclerosis (RMS): Post Hoc Analyses From the Phase 3 ULTIMATE I and II Studies. Abstract Presentation at AAN 2022 Seattle, WA
147. Fox E, Steinman L, Hartung H, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Weiss M, Bosco J, Power S, Mok K, Lee L, Cree B. Relapse Rate and Time to First Relapse Were Improved With Ublituximab vs Teriflunomide in the Phase 3 ULTIMATE I and ULTIMATE II Studies in Patients With Relapsing Multiple Sclerosis (RMS). Abstract Presentation at AAN 2022 Seattle, WA
148. Vollmer B, Riddle E, Mendoza J, **Alvarez E**. Retrospective Evaluation of De-Escalation from Anti-CD20 Therapies to Fumarates as a Treatment Approach. Poster Presentation at AAN 2022 Seattle, WA
149. Borko T, Selva S, Baxter R, Cabrera-Martinez B, Rester C, Sillau S, Pastula D, Sabalza M, Venkataraman I, Bennett J, **Alvarez E**, Gross R, Shah A, Kammeyer R, Vollmer T, Corboy J, Kedl R, Hsieh E, Piquet A. An Observational Study on the Humoral and Cellular Immune Response to SARS-CoV-2 mRNA Vaccination in Multiple Sclerosis and Other Autoimmune Neurological Disorders treated with Anti-CD20 Therapies. Abstract Presentation at AAN Summer Conference 2022 San Francisco, CA
150. **Alvarez E**, Wray S, Hersh C, Robertson D, Gupta A, Hu X, Zielman R, Boer I, Cheadle A, Cohen J. Compliance and Persistence With Ofatumumab Treatment in Patients with Relapsing Multiple Sclerosis in Clinical Trials for Up to 4 Years. Abstract Presentation at 38th European Committee for Treatment & Research in Multiple Sclerosis (ECTRIMS) Congress October 2022
151. Col N, Solomon A, **Alvarez E**, Pbert L, Ionete C, Berrios Morales I, Chester J, Kutz C, Iwuchukwu C, Livingston T, Springmann V, Col H, Ngo L. Can a Shared Decision-Making Tool Improve Multiple Sclerosis DMT Utilization? The MS-SUPPORT Decision Aid. Poster Presentation at CMSC 2022 in National Harbor, MD
152. **Alvarez E**, Steinman L, Fox E, Hartung H, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Lee L, Cree B. Reduced Disease Progression with Ublituximab Vs Teriflunomide in the Phase 3 Ultimate I and II Studies in Relapsing Multiple Sclerosis. An Oral Presentation given at CMSC 2022 in National Harbor, MD
153. Kuhle J, Kappos L, Ziemseen T, Arnold D, **Alvarez E**, Cross A, Boer I, Gupta A, Hu X, Kukkaro P, Kieseier B, Zielman R, Hauser S. Serum Neurofilament Light Chain Levels and NEDA-3 Status With Ofatumumab Treatment in RMS Patients: Longer-term Analysis from ASCLEPIOS I/II and

- ALITHIOS. *High Scoring* Poster Presentation at 38th congress ofECTRIMS 2022, 26 – 28 October 2022 Amsterdam, The Netherlands.
154. **Alvarez E**, Robertson D, Wynn D, Xu Y, Lee L, Wray S. Ublituximab Is Associated With Significant Improvement in Fatigue: Results From ULTIMATE I and II. *Anticipated Planned Poster Presentation at CMSC 2023 in Denver, CO*
 155. Ghezzi L, Kosa P, Freedman C, Cross A, **Alvarez E**, Freedman M, Greenwood M, Piccio L, Bielekova B. A Multi-site Assessment of Cerebrospinal Fluid-based Molecular Diagnostic Test of Multiple Sclerosis. Poster Presentation at ACTRIMS 2023 in San Diego, CA
 156. Borko TL, Barrera B, Ritchie A, Selva S, Sillau S, Engebretson E, Seale R, **Alvarez E**, Corboy JR, shah A, Gross R, Silva D, Owens G, Piquet AL, Bennett JL, Vollmer TL, Chahin S, Nair KV. Establishing Baseline Demographic Specific Reference Ranges for NfL and GFAP in Healthy Controls. Poster Presentation at ACTRIMS 2023 in San Diego, CA
 157. Brown B, **Alvarez E**, Henry RG, Brown J, Camacho E, Meng X, Ziehn M, Greenberg BM, Hua LH. Findings From OLIKOS: Baseline Immunoglobulin and B-Cell Concentrations in Patients Who Switch from Ocrelizumab to Ofatumumab. Poster Presentation at ACTRIMS 2023 in San Diego, CA
 158. **Alvarez E**, Wray S, Robertson D, Huang D, Mok K, Garner CA, Lee L, Qian P. Onset and Maintenance of No Evidence of Disease Activity with Ublituximab: Analyses of the Phase 3 ULTIMATE I and II Studies in Participants with Relapsing Multiple Sclerosis. Poster Presentation at ACTRIMS 2023 in San Diego, CA
 159. Vollmer B, Nair K, Sillau S, Corboy JR, **Alvarez E**. Comparison of Ocrelizumab and Rituximab over Two Years of Treatment for Multiple Sclerosis. Poster Presentation at ACTRIMS 2023 in San Diego, CA
 160. Vollmer B, Nair K, Sillau S, Corboy JR, **Alvarez E**. Examining the Effect of Disease Duration in High-Efficacy Versus Mid-Efficacy Disease Modifying Therapies: Could this Inform when to De-Escalate? Poster Presentation at ACTRIMS 2023 in San Diego, CA
 161. Steinman L, Fox E, Hartung HP, **Alvarez E**, Qian P, Wray S, Robertson D, Huang D, Selmaj K, Wynn D, Bosco JA, Mok K, Garner C, Cree B. Ublituximab Efficacy in Treatment-Naive Participants With Relapsing Multiple Sclerosis in the Phase 3 ULTIMATE I and II Studies. Poster Presentation at American Academy of Neurology (AAN) 2023 in Boston, MA
 162. **Alvarez E**, Hersh CM, Robertson D, Das Gupta A, Hu X, Zielman R, Boer I, Cheadle A, Cohen JA. Compliance and Persistence With Ofatumumab Treatment in Patients With Relapsing Multiple Sclerosis in Clinical Trials for Up to 4 Years. Poster Presentation at American Academy of Neurology (AAN) 2023 in Boston, MA
 163. Borko T, Barrera B, Ritchie A, Selva S, Sillau S, Engebretson E, Seale R, Valdez B, **Alvarez E**, Corboy J, Shah A, Gross R, Silva D, Owens G, Piquet AL, Bennett J, Vollmer T, Chahin S, Nair K. Establishing Baseline Demographic Specific Reference Ranges for NfL and GFAP in Healthy. . Poster Presentation at American Academy of Neurology (AAN) 2023 in Boston, MA
 164. Vollmer B, Nair K, Sillau S, Corboy JR, **Alvarez E**. Examining the Effect of Disease Duration in High-Efficacy Versus Mid-Efficacy Disease Modifying Therapies: Could this Inform when to De-Escalate? Poster Presentation at American Academy of Neurology (AAN) 2023 in Boston, MA
 165. **Alvarez E**, Steinman L, Hartung HP, Fox E, Qian P, Wray S, Robertson D, Mok K, Garner C, Cree B. Disease Outcomes With Ublituximab in Participants With Highly Active Disease: Subpopulation Analyses of the Phase 3 ULTIMATE I and II Studies in Participants With Relapsing Multiple Sclerosis. Poster Presentation at American Academy of Neurology (AAN) 2023 in Boston, MA
 166. **Alvarez E**, Robertson D, Wynn D, Yihuan X, Lee L, Wray S. Ublituximab Is Associated with Significant Improvement in Fatigue: Results from Ultimate I and II. Oral presentation at the 2023 Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC), Denver, CO.

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