

Enrique Alvarez III, MD, PhD, MSCI
CURRICULUM VITAE

1. PERSONAL HISTORY

- Enrique Alvarez III, MD, PhD, MSCI
Assistant Professor, Neuroimmunology
Medical Director of Outpatient Neurology
Department of Neurology, University of Colorado
Rocky Mountain Multiple Sclerosis Center at University of Colorado
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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 **Master Spanish Mastery**
University of Colorado Health

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3. ACADEMIC APPOINTMENTS

2013-present **Assistant Professor of Neurology, Department of Neurology**
University of Colorado School of Medicine

2013-present **Denver Health Medical Center, Neurology**

2017-present **Medical Director of Outpatient Neurology**
University of Colorado Hospital

2016-2017 **Assistant Medical Director of Outpatient Neurology**
University of Colorado Hospital

4. PROFESSIONAL HISTORY

1993-1996 Undergraduate Research Aide
North Dakota State University, Agricultural Research Serve, Dr. Chris A. Wozniak's
laboratory: *"Biocontrol of the Sugar Beet Root Maggot"*

1995-1996 Spanish telephone tutor for the High School satellite class *"Hablemos Espanol"*
Prairie Public Television

1997 Undergraduate Research Aid
University of Minnesota, Dr. Linda Boland's laboratory: *"Cloning of Potassium Channels"*

2008-2009 Member of the Neurology Resident Recruitment Committee
Washington University, St. Louis, MO

2014-present Neuroimmunology Block Director, Neurology Residents
University of Colorado School of Medicine

2016-2017 Associate Medical Director of Outpatient Neurology

2017-present Medical Director of Outpatient Neurology

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

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- 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 4thECTRIMS 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”

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
- 2016-2017 American Academy of Neurology--abstract review 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

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

- None

10. REVIEW AND REFEREE WORK

- Multiple Sclerosis Journal: Experimental, Translational and Clinical
- The Journal of Neuropsychiatry and Clinical Neurosciences
- Annals of Clinical and Translational Neurology
- JAMA Neurology
- Neurology: Clinical Practice
- The International Journal of Neuroscience
- Journal Molecular Diagnosis & Therapy
- Neurology: Neuroimmunology & Neuroinflammation
- Journal of Neurology, Neurosurgery, and Psychiatry
- PLOS ONE
- CNS Drugs
- Multiple Sclerosis Journal

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

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- 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 Euroconference, 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
- 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

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” Key Note 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

INTERNATIONAL:

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

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- 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 5rd 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

12. TEACHING RECORD

- 1995-1996 Telephone tutor, Hablemos Espanol! 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

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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 University of Colorado School of Medicine
Sept. 2016 Pathology of MS lecture to physical Therapy students University of Colorado School of Medicine
Dec. 2017 "Introduction to Multiple Sclerosis" and "Symptom Management" talks to Neurology Residents
-present
July 2017 "Multiple Sclerosis" lecture to Neuropsychology Group University of Colorado School of Medicine
-present
July 2017 "Multiple Sclerosis" lecture to Physical Therapy students University of Colorado School of Medicine
-present
2014-present Neuroimmunology Block Director for Neurology Residents University of Colorado School of Medicine

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's of Science program at Regis University "Research should be conducted to establish clinical biomarkers for MS medication"

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- 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 monthl. 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 Lorraine J. Robinson for her Master’s of Science program at Regis University “Biomarkers in Multiple Sclerosis” Graduated May, 2015
- 2014-present Mentored Greg Fliney for Medical Student Research Track at the University of Colorado, Denver. “Characterization of Exosomes in Cerebrospinal Fluid in Neurological Diseases” Expected Graduation May, 2018
- 2014-present 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’s 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: Physical Therapy. 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
- 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
- 2016-present Mentor to Markus Hannan through Clinical Coaching Program
- 2017-present Mentor to Neuroimmunology Fellow, Lindsay Horton
- 2018-present Mentor to Neuroimmunology Fellow, Krystof Romanowski
- 2018-present 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.

14. GRANT SUPPORT – CURRENT – AS PRIMARY INVESTIGATOR

- 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 – 10/31/2019
Direct Costs: \$601,027
Total Costs: \$757,294
- A multicenter, global, retrospective, observational study to characterize real-world clinical outcomes in patients 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
- 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 – 2/28/2019
Direct Costs: \$291,365
Total Costs: \$367,120
- 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: \$26,200
Total Costs: \$33,012
- 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: \$269,048
Total Costs: \$339,000

- Lymphocyte counts after discontinuation of TECFIDERA: A retrospective, multi-center, observational pooled analysis. **CLB-BGT 16-11066**
Role: PI
Funding Source: Biogen
Grant Number: IRB 17-0318
Dates: 5/12/2017 – 5/11/2020
Direct Costs: \$7,000
Total Costs: \$8,960
- 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: \$36,600
Total Costs: \$46,116
- 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: \$230,889
Total Costs: \$290,920
- 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:
Direct Costs:
Total Costs:

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

- 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
Current Percent Effort: 3%
Direct Costs: \$575,727
Total Costs: \$725,416

- 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
- 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: 18-1262
Dates: 2018 – present
Current Percent Effort: 3%
Direct Costs:
Total Costs:

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

- 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: Pending
Direct Costs: Pending
Total Costs: Pending
- A 12-Month, prospective, multicenter, two-cohort, nonrandomized, open-label study in adult patients with Relapsing Multiple Sclerosis (RMS), to investigate changes in immune phenotype biomarkers after treatment with 0.5 mg fingolimod (FTY720) [FLUENT]
Role: PI
Funding Source: Novartis
Grant Number: IRB 17-2060
Dates: Pending

Direct Costs: Pending
Total Costs: Pending

- Pilot study of Oxtellar XR (oxcarbazepine extended release) in Neurology patients with trigeminal neuralgia.
Role: Co-PI; PI Jacci Bainbridge
Funding Source: Supernus Pharmaceuticals
Grant Number: IRB 16-2189
Dates: Pending
Direct Costs: pending
Total Costs: pending

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

- 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
Current 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

15. BIBLIOGRAPHY—PEER-REVIEWED PUBLICATIONS

1. Clayton DA, Mesches MH, **Alvarez E**, Bickford PC, Browning MD. [A Hippocampal NR2B Deficit Can Mimic Age-related Changes in Long-term Potentiation and Spatial Learning in the Fischer 344 Rat](#). *Journal of Neuroscience* 22(9): pp 3628-37, May 1, 2002
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
10. **Alvarez E**, Piccio L, Mikesell RJ, Klawiter EC, Parks BJ, Naismith RT, Cross AH. [CXCL13 is a biomarker of inflammation in multiple sclerosis, neuromyelitis optica, and other neurological conditions](#). *Multiple Sclerosis Journal* 19(9): pp 1204-8. Aug 2013.
11. Fenoglio C, Ridolfi E, Cantoni C, De Riz M, Bonsi R, Serpente M, Villa C, Pietroboni AM, Naismith RT, **Alvarez E**, Bresolin N, Cross AH, Piccio L, Galimberti D, Scarpini E. [Decreased circulating](#)

- [miRNA levels in patients with multiple sclerosis](#). *Multiple Sclerosis Journal* 19(14): pp 1938-42. December 2013
12. Seibert J., **Alvarez E**. [Severe anemia in a patient with multiple sclerosis treated with natalizumab](#). *Neurology* 84(8) pp 861. February, 24, 2015
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2. Seibert J, Blackburn J, Vollmer B, Bennett J, Corboy J, Miravalle A, Schreiner T, Vollmer T, **Alvarez E**. Assessing the Safety, Efficacy and Tolerability of Rituximab for the treatment of Multiple Sclerosis. (In preparation)
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17. BOOK CHAPTERS

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18. ABSTRACTS AND POSTERS

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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
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 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
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 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
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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.
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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

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 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
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 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
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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 at ECTRIMS 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 at ECTRIMS 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 at ECTRIMS 2019 in Stockholm, Sweden
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