



2024-2025 Research Report

Psychiatry and Psychology





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Department Chairs



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2024-2025 Department of Psychiatry and Psychology Annual Research Report

Thank you for your interest in the bi-annual Mayo Clinic, Department of Psychiatry and Psychology 2024-25 Research Report. In this report, we have chosen to focus our Introduction on the strategies and support systems our Department has implemented to mentor and develop the next generation of Psychiatric and Psychological researchers. In this Introduction, we will highlight some of the programs in our Department and across the Mayo Clinic designed to further train our next generation of researchers. We strongly believe in team science and the importance of mentorship.

Departmental Small Grants: This is an annual program administered by Center for Clinical and Translational Science (CCATS) where investigators can seek intramural funding for a pilot project that has scientific merit, is clinically focused, incorporates team science, and focuses on working with underserved populations.

Senior Associate Consultant Research 2 Year Academic Awards: New faculty hires into our department are eligible for up to two years of 20% of their FTE (one day per week) to devote to an academic accomplishment. New faculty, with the support of their Co-Division Chairs form a mentorship committee that will meet at least every six months, to review progress and provide guidance. Goals for this protected FTE generally will be for an external grant submission or a significant educational accomplishment. Pilot funding is potentially available, and dependent upon progress the new faculty member is eligible to receive a 3rd and potentially 4th year of protected academic time. One of our first awardees was Nikki Stricker, Ph.D., who was awarded an R21 from the National Institute of Aging; Stricker Learning Span: A Computer Adaptive Work List Memory Test Optimized for Remote Access. Dr. Stricker now has an RO1 from the National Institute of Aging for this research.

K-Award Submission 6-month Training Program: The Department of Medicine in close collaboration with the Strategic Funding Office, has a structured program to guide and mentor faculty in their submission of a K-Award application to the NIH (National Institutes of Health). This 6-month program provides the applicant with 20% protected time to attend the didactic sessions, complete writing assignments, and participate in mentorship meetings. The program includes internal scientific review by a team of experienced investigators, proofreading and formatting and guidance from the Strategic Funding Office. Balwinder Singh, MD participated in this program and was recently accepted into Mayo Clinic's NIH funded KL2 Program. Nick Bormann, MD is a participant in the 2024 cohort of this training program.

Mayo Clinic Scholar 1 Year Program: New faculty hires who can benefit from additional training either internally at Mayo Clinic or externally, can apply to devote 50% of their FTE to receiving additional training and education. Training experiences can be with Mayo Clinic (such as graduate level courses in research methodology) or can be external resources including both online learning and being offsite at another academic institution. Fi Fonseca, M.B.B.Ch., Janae Kirsch, Ph.D. are recent participants in the Mayo Clinic Scholar Program.

Kern Scholars 3 Year Program: This program is available to clinically trained junior faculty and prepares the next generation in health services research. Scholars receive 40% protected time in year 1, and 20% protected time in years 2 and 3. Using the science of health care delivery, Scholars will develop and execute projects focused on positively impacting clinic practice within and beyond Mayo Clinic. The program includes course work, seminars, and a mentorship committee. Several faculty members in our Department have been Kern Scholars and were able to advance to successful NIH funding upon completion of this program. Jocelyn Lebow, PhD was a Kern Scholar and is now the PI (Principal Investigator) of a study funded by the National Institute of Mental Health, R34: Evaluating the feasibility of a primary care-based treatment for restrictive eating disorders in children and adolescents. Tyler S. Oesterle, MD, is a current Kern Scholar and is funded by the Agency for Healthcare Research and Quality, R18: Connecting Primary Care to Substance Use Disorder Treatment Using a Telehealth Collaborative Care Platform.

KL2 Mentored Career Development 3 Year Program: Mayo Clinic Center for Clinical and Translational Science (CCaTS) has a three-year career development program that guides KL2 scholars toward independent research careers. KL2 Scholars receive support for their effort (usually 75% time), a research budget of \$ 25,000 a year to cover supplies, equipment, study personnel, and statistical services. KL2 scholars also receive some support for travel and support from their mentors. Shawna Ehlers, PhD is a past participant and Balwinder Singh, MD will be joining the class of 2027.

Benefactors: The generosity of our benefactors has inspired growth and innovation in psychiatry and psychology research, allowing us to accelerate our efforts at a pace that wouldn't otherwise be possible. Many investigators in our department have benefited from philanthropic support, enabling new investigators to gather pilot data and obtain federal funding for their research and also advancing the research of senior investigators. We are grateful for this support that has empowered us to drive the research advances described in this report.

Clinical-Investigator Training Program: This program aims to develop clinical trialists specifically equipped to design and conduct prospective, clinical trials. The awardee receives 40% protected time for two years and the program engages new investigators who will aim to develop a clinical trial portfolio, including multi-site clinical trials. A clinical trialist is responsible for all aspects of a clinical trial including concept and protocol development, Institutional Review Board approval, recruitment of participants, informed consent, data collection, analysis of data, financial management as well as ensuring regulatory compliance and ethical conduct of all trial activities. The program includes didactic and mentored experiential components to assist trainees in the development of skills essential to lead clinical trials. All activities are guided by an individualized development plan, agreed upon by the trainee, mentors, and program leadership. Laura Suarez Pardo, M.D. was a recent participant and Jeremiah B. Joyce, M.D., M.S. will be a participant in 2025.

Mayo Clinic Depression Center



INVESTIGATORS

Nicholas D. Allen, M.D., Kendra K. Anderson, A.P.R.N., C.N.S., M.S., Arjun P. Athreya, Ph.D., M.S., Michael R. Basso, Ph.D., L.P., Hannah K. Betcher, M.D., Scott A. Breitingner, M.D., Paul E. Croarkin, D.O., M.S., Barbara J. Daily, R.N., Mark A. Frye, M.D., Christine W. Galaray, M.D., Ph.D., Manuel A. Gardea Resendez, M.D., Michael N. Govrik, P.A.-C., Melinda S. Hutchison, R.N., Emily A. Jazdzewski, M.A.N., R.N., Nicola Keeth, A.P.R.N., C.N.P., D.N.P., Simon Kung, M.D., Katherine M. Moore, M.D., Bonnie M. Neville, R.N., Nicholas A. Nunez, M.D., M.S., Aysegul Ozerdem, M.D., Ph.D., Matthew R. Powell, Ph.D., L.P., Debra A. Ryan, R.N., Balwinder Singh, M.D., Michelle K. Skime, M.S., Jennifer L. Vande Voort, M.D., & Marin Veldic, M.D. (Mayo Clinic Rochester)

Depression is a significant public health problem, in this country and across the globe. Treatment can be challenging to identify for the individual, and relapse is common after effective depression treatment. Therefore, effective, individualized, long-lasting treatments are needed for depression. The main focus of the Mayo Clinic Depression Center is to conduct clinically relevant research in treatment-resistant depression and bipolar disorder in adults, adolescents, and children. Our current research projects aim to build on our comprehensive and multidisciplinary depression treatment programs. Mayo Clinic Depression Center is a Center of Excellence for the National Network of Depression Centers, a network of 22 leading clinical and academic Centers of Excellence, as well as 5 Associate member organizations in the U.S. working to transform the field of depressive illness and related mood disorders.

GRANTS

Funded by National Science Foundation, FW-HTF-RM: Introducing Patient-Specific Therapy Profiles in Electronic Health Records for Guiding Treatment Selection in the Era of Genomic Medicine, 9/2020 – 8/2025. PI: Arjun Athreya, Ph.D., M.S.

Funded by National Institute of Nursing Research, SCH: Wearable Augmented Prediction of Burnout in Nurses: A Synergy of Engineering, Bioethics, Nursing and Wellness Sciences, 4/2022 – 1/2026. PI: Arjun Athreya, Ph.D., M.S.

Funded by Breakthrough Discoveries for Thriving with Bipolar Disorder (BD2), BD2 Integrated Health Network Site. 8/2023 – 6/2028. PI: Balwinder Singh, M.D.

Funded by National Institute of Mental Health, A Randomized Controlled Trial of Sequential Bilateral Accelerated Theta Burst Stimulation in Adolescents with Suicidal Ideation Associated with Major Depressive Disorder. 9/2020 – 8/2025. PI: Paul Croarkin, D.O., M.S.

Funded by Minnesota Partnership for Biotechnology and Medical Genomics, Minnesota Partnership for Biotechnology – “Minnesota Precision Neuromodulation Center (MinPeNCe). 5/2023 – 4/2025. PI: Paul Croarkin, D.O., M.S.

Funded by Breakthrough Discoveries for Thriving with Bipolar Disorder, BD2 Integrated Network SSC Chair. 10/2022 – 6/2025. PI: Mark Frye, M.D.

KEY RECENT PULICATIONS

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Individualized Medicine and Biobank for Bipolar Disorder



INVESTIGATORS

Osama Abulseoud, M.D., Andres Acosta, M.D., Dina N. Ali, M.D., Anthony Batzler, Hannah K. Betcher, M.D., Joanna M. Biernacka, Ph.D., Brandon J. Coombes, Ph.D., Alfredo B. Cuellar Barboza, M.D., Mete Ercis, M.D., Mark A. Frye, M.D., Manuel Gardea-Resendez, M.D., Mohammad Ghafouri, M.D., Tamahara Gonzalez Campos, M.D., Ada M. Ho, Ph.D., Ming-Fen Ho, Ph.D., Simon Kung, M.D., Francisco Lopez-Jimenez, M.D., M.B.A., Susan L. McElroy, M.D., Angie Lam, Alessandro Miola, M.D., Katherine M. Moore, M.D., Aysegul Ozerdem, M.D., Ph.D., Richard S. Pendergraft, Miguel L. Prieto Cancino, M.D., Francisco Romo-Nava, M.D., Ph.D., Jorge A. Sanchez Ruiz, M.D., M.S., Ashok Seshadri, M.D., Balwinder Singh, M.D., Michelle K. Skime, M.S., Monica J. Taylor-Desir, M.D., M.P.H., Jennifer L. Vande Voort, M.D., Marin Veldic, M.D., Richard Weinshilboum, M.D., & Stacey J. Winham, Ph.D. (Mayo Clinic Rochester)

In 2009, Mayo Clinic researchers in Psychiatry and Computational Biology established a Biobank for Bipolar Disorder. This collection now includes biological samples and detailed clinical phenotyping from over 3000 individuals with bipolar disorder, and the initiative has expanded into a collaboration with Mayo Clinic investigators in Gastroenterology, Endocrinology, Biochemistry & Molecular Biology, Cardiology, Physiology, and Molecular Pharmacology & Experimental Therapeutics. This is a highly collaborative endeavor with partners at the Lindner Center of HOPE / University of Cincinnati, the Universidad Autónoma de Nuevo León in Monterrey, Mexico, and the Universidad de los Andes Santiago, Chile. The infrastructure of this data-rich biobank has facilitated epidemiological and biomarker studies of disease risk, disease progression, comorbid illness, and treatment outcomes using state-of-the-art research technology. Using the Biobank resource, the research team has completed a series of studies investigating genetic variation that contributes to disease risk focusing on subtypes of bipolar disorder defined by the presence of specific illness characteristics or comorbidities, as well as genetic variation that influences how a patient responds to pharmacological treatment of bipolar depression. Other projects have utilized serum, plasma, and slow frozen cells extracted from blood specimens to investigate a variety of biomarkers including protein expression, epigenetic variation, and measures of mitochondrial function. The Mayo Clinic Bipolar Biobank is also collaborating with researchers at the Broad Institute, Johns Hopkins University, Karolinska Institutet, Stanford University, University of Mississippi, University of Toronto, Queensland University, and large international research consortia, including the Psychiatric Genomics Consortium (PGC) and the International Consortium for Lithium Genetics (ConLiGen). The identification of genetic risk factors associated with disease onset can potentially lead to early interventional treatment in at-risk patients. This early intervention is particularly important in bipolar disorder because the initiation of any treatment is often delayed by over a decade from onset. Also, identifying pharmacogenomic predictors of treatment response could increase selectivity to treatment recommendations and help prevent adverse events such as treatment emergent mania.

GRANTS

Baszucki Brain Research Fund Award 2021. Co-PIs: Joanna M. Biernacka, Ph.D. and Mark A. Frye, M.D.

Thomas and Elizabeth Grainger Family Partnership in Precision Psychiatry (P3) Co-PIs: Joanna M. Biernacka, Ph.D. and Mark A. Frye, M.D.

The J. Willard and Alice S. Marriot Foundation Co-Principal Investigator – Mark Frye, M.D. and Joanna Biernacka, Ph.D.

KEY RECENT PUBLICATIONS

Allen O 4th, Coombes BJ, Pazdernik V, Gisabella B, Hartley J, Biernacka JM, Frye MA, Markota M, Pantazopoulos H. Differential Serum Levels of CACNA1C, Circadian Rhythm and Stress Response Molecules in Subjects with Bipolar Disorder: Associations with Genetic and Clinical Factors. medRxiv [Preprint]. 2024 Apr 12:2024.04.11.24305678. doi: 10.1101/2024.04.11.24305678. PMID: 38645236; PMCID: PMC11030295.

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LEADERSHIP ROLES

Mark Frye, M.D., President, National Network of Depression Centers, 2022-present

Mark Frye, M.D., Vice-Chair Scientific Advisory Board, Depression Bipolar Support Alliance, 2022-present

Joanna Biernacka, Ph.D., Division Chair Computational Biology, Mayo Clinic

Interventional Psychiatry: Electroconvulsive Therapy, Transcranial Magnetic Stimulation, Deep Brain Stimulation, Ketamine, and Biomarkers

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The Mayo Clinic Interventional Psychiatry Research Team in Rochester, Minnesota, focuses on electroconvulsive therapy (ECT), ketamine, transcranial magnetic stimulation (TMS), deep brain stimulation (DBS), and emerging brain stimulation technology research. Dr. Lapid is the site PI for a NIH-funded multi-site randomized controlled clinical trial to investigate the efficacy of ECT for treatment-refractory dementia-related agitation. She is also PI on a single-site feasibility and pilot randomized controlled study of TMS to improve cognition in Mild Cognitive Impairment (MCI), funded by small grants and Foundations, and a PI on a trial of transcranial direct current stimulation (tDCS) for treatment-resistant depression. Dr. Kung is pioneering work with TMS interventions for patients with Long COVID. Drs. Croarkin, Shekunov, and Vande Voort are leading an NIH funded study of sequential bilateral accelerated theta burst stimulation for adolescents with suicidal ideation in the context of major depressive disorder. Drs. Kung, Vande Voort and Singh have led novel registry studies of Ketamine and TMS to inform future clinical practice. Dr. Singh is pioneering metabolomic and neuroimaging biomarkers work to individualize Ketamine interventions for treatment resistant depression. Dr. Markota focuses biomarker and intervention development with transcranial magnetic stimulation for patients with Schizophrenia. Future transcranial magnetic stimulation studies will examine novel dosing strategies such as theta burst stimulation guided by an artificial intelligence platform and closed loop electroencephalography. Current initiatives with DBS examine optimizations for the treatment of depression in epilepsy and Parkinson's disease with novel technology. This research team is also leading efforts to develop biomarkers for neuromodulation with magnetic resonance spectroscopy, functional magnetic resonance imaging, quantitative electroencephalography, and transcranial magnetic stimulation neurophysiology studies. These examples of our interventional psychiatry research highlight the underlying goal: to expand our knowledge and treatment options for depression and other psychiatric illnesses beyond conventional medications and psychotherapies.

GRANTS

A Randomized Controlled Trial of Electroconvulsive Therapy plus Usual Care versus Simulated-ECT plus Usual Care for the Acute Management of Severe Agitation in Alzheimer's Dementia (ECT-AD) R01 AG61100 09/2018 – 5/2025. PI: Maria I. Lapid, M.D.

Randomized Controlled Trial of Sequential Bilateral Accelerated Theta Burst Stimulation in Adolescents with Suicidal Ideation Associated with Major Depressive Disorder National Institute of Mental Health. R01 MH 124655: A. 09/2020 – 08/2024. PI: Paul Croarkin, D.O., M.S.

Closed Loop Electroencephalography Optimized Transcranial Magnetic Stimulation Pilot Study for Advanced Treatment Outcomes in Adult Major Depressive Disorder (CLEOPATRA) UMN-Mayo Partnership Application (Department of Psychiatry). Funded by Minnesota Partnership for Biotechnology and Medical Genomics. (P010969401): 05/2023 - 04/2025 PI: Paul Croarkin, D.O., M.S.

Transcranial Random Noise Stimulation for ADHD Symptoms (Funded by Innosphere) PI: Paul Croarkin, D.O., M.S.

A Feasibility and Pilot Randomized Controlled Double-blind Trial of Intermittent Theta Burst Stimulation to Improve Memory in Mild Cognitive Impairment. Funded by Benefactors, Small Grants Programs, and Mayo Clinic Department of Psychiatry. 1/2021-6/2025. PI: Lapid

A Feasibility Study of Transcranial Direct Current Stimulation (tDCS) as an Adjunctive Treatment for Treatment Resistant Depression (TRD) in Hospitalized Patients. Funded by Small Grants Program, 07/2023 - 06/2025 and Mayo Clinic Values Council, 1/2025-12/2026. PI: Lapid

Assessment of rs-fMRI Biomarkers using the Compact 3T for Predicting the Cognitive Effects of iTBS in Mild Cognitive Impairment. Funded by the Mayo Clinic Radiology Research Internal Grant Program. 1/2025-12/2026. Co-PI: Lapid (PI: Welker, Neuroradiology)

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LEADERSHIP ROLES

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-Pharmacology and Neurotherapeutics Committee, American Academy of Child and Adolescent Psychiatry

Maria Lapid, M.D.

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Wellness Coaching and Resiliency



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Mayo Clinic has several innovative approaches to improving the wellness of its trainees, employees, and patients. In Rochester, the Dan Abraham Healthy Living Center (DAHLC) is an on-site facility for employees that provides programs for aerobic fitness, healthy nutrition, weight management, health and wellness coaching, and resiliency interventions for over 14,000 employee members. Dr. Vickers helped create, design, and implement the Mayo Clinic Health and Wellness Coaching Certification Program and she trains healthcare providers from across the country in coaching communication and self-management education approaches for application into medical settings. Dr. Rackley is the Assistant Dean for Trainee Well-Being for the Mayo Clinic School of Graduate Medical Education. In this role, Dr. Rackley supports and advises training program wellness projects, develops curriculum for trainees and faculty on recognition of stress and mental illness, and ensures appropriate resources are available for trainee well-being. Dr. Stonnington is the Associate Medical Director of the Office of Joy and Well-Being, Mayo Clinic Arizona, which strives to cultivate a collaborative atmosphere, where all Mayo Clinic staff feel valued, fulfilled, and supported to strive for excellence so that they can deliver on the promises that we make with patients and each other. Dr. Stonnington directs research and education and co-directs all programs, interventions, and collaborations for the Office of Joy and Well-Being. Dr. Bright is the Assistant Dean for Student Affairs at the Mayo Clinic Alix School of Medicine (MCASOM), Arizona Campus. In this role, he oversees the student advising, coaching, and career planning and works closely with the Director of Wellness and Student Services team. Dr. Jain is Director of the psychiatry clinical clerkship for MCASOM students on the Arizona campus. She is dedicated to student wellbeing by ensuring a positive learning environment and reducing stigma around seeking mental health treatment. Additionally, several research-funded projects have been conducted and published; examples include a randomized controlled trial of a resiliency intervention for physician and advanced practitioner mothers, a health coaching intervention for patients with chronic obstructive pulmonary disease, and a randomized control trial comparing in-person versus smartphone-delivered resiliency interventions for healthcare workers.

GRANT

National Heart, Lung, and Blood Institute. RO1 HL 140486: Home Based Rehabilitation incorporating Health Coaching for COPD 03/2018 - 01/2024. PI: Roberto P. Benzo, M.D.; Co-investigator: Matthew M. Clark, Ph.D.

KEY RECENT PUBLICATIONS

Anand U, Schwartz R, Stonnington CM. Using Their Words to Shape Curricula: Targeted Well-Being Programming for Graduate Medical Education Trainees. *Acad Psychiatry*. 2023 Nov 28 [Epub ahead of print] PMID: 38017332 DOI: 10.1007/s40596-023-01906-2.

Benzo MV, Barwise A, Clark MM, Dupuy-McCauley K, Roy M, Benzo RP. Improving Dyspnea by Targeting Weight Loss in Patients With Chronic Obstructive Lung Disease and Severe Obesity Through Health Coaching and Remote Monitoring. *Chronic Obstr Pulm Dis*. 2023 Oct 26; 10(4):444-449. PMID: 37606647 PMCID: 10699486 DOI: 10.15326/jcopdf.2023.0404.

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Edmonds VS, Chatterjee K, Girardo ME, Butterfield RJ 3rd, Stonnington CM. Evaluation of a Novel Wellness Curriculum on Medical Student Wellbeing and Engagement Demonstrates a Need for Student-Driven Wellness Programming. *Teach Learn Med*. 2022 Feb 2; 1-13 Epub 2022 Feb 02 PMID: 35107397 DOI: 10.1080/10401334.2021.2004415.

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LEADERSHIP ROLES

Matthew M. Clark, PhD, Member, Scientific Advisory Council, Institute of Coaching, Harvard University.

Cynthia M. Stonnington, MD, Associate Medical Director, Office of Joy and Well-Being, Mayo Clinic in Arizona. Steering Council and Strategic Initiative Leader, The Well-Being Collaborative of Arizona Health Professionals.

Sandra Rackley, MD MEd, Assistant Dean for Trainee Well-Being, Mayo Clinic School of Graduate Medical Education. Clinical Director for Mental Health Counseling, Office of Wellness and Academic Support, Mayo Clinic College of Medicine and Science

Pediatric Anxiety Disorders

INVESTIGATORS

Bridget K. Biggs, Ph.D., L.P., Julie E. Dammann, M.A., L.P., Deanna R. Hofschulte, C.C.R.P., Mark W. Olsen, M.D., Stephanie T. Reneson-Feeder, M.S., L.P.C.C., Michael S. Tiede, M.A., L.P., & Stephen P. Whiteside, Ph.D., L.P. (Mayo Clinic Rochester)



The goal of this multidisciplinary research team is to improve the care of children and adolescents with anxiety disorders and obsessive-compulsive disorder. Most significantly, we have completed and published a randomized controlled trial demonstrating that the treatment we developed for childhood anxiety disorders, Parent-coached Exposure Therapy, is more effective and efficient than the gold-standard cognitive behavioral therapy. This study is the culmination of development, experimentation, and clinical innovation spanning 20 years. Other work included validating more efficient strategies for assessing childhood anxiety disorders and their symptoms, as well as exploring the potential of virtual reality to improve treatment. Over the past few years we have collaborated and published with clinicians and academics from four separate institutions across the United State and abroad.

Our ongoing work planned for the coming years continues our efforts to make child anxiety treatment as effective, efficient, and accessible as possible. First, through the generosity of benefactors we will be piloting the use of a digital child anxiety treatment tool to further enhance the effect of our treatment program. Second, we will continue to examine our Parent-coach Exposure Therapy protocol to understand for what patients it is most effective and what patients need additional intervention.

GRANT

Funded by the National Institute of Mental Health. Low-Cost, Virtual Reality System to Increase Access to Exposure Therapy for Anxiety and Obsessive Compulsive Disorders. 12/2018 – 07/2023. PI: Bridget Biggs, Ph.D., L.P., Co-Investigator: Stephen Whiteside, Ph.D., L.P.

KEY RECENT PUBLICATIONS

Brennan, E., Bailey, K. J., Biggs, B. K., Cunningham, M. L., Dammann, J. E., Reneson-Feeder, S. T., Tiede, M. S. & Whiteside, S. P. H., (2022). An Uncontrolled Investigation of Feasibility of Parent-Coached Exposure Therapy for Youth with Anxiety Disorders. *Journal of Child and Family Studies*, 32, 1681-1693. DOI: 10.1007/s10826-022-02396-w.

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Whiteside, S. P. H., Sawchuk, N. R., Brennan, E., Lebow, J. R., Sawchuk, C. N., Biggs, B. K., Dammann, J. E., Tiede, M. S., Hofschulte, D. R., Reneson-Feeder, S., Cunningham, M., & LeMahieu, A. M. (2023). Using session recordings to understand the content of community-based treatment for childhood anxiety disorders and response to technology-based training. *Journal of Clinical Psychology*, 79, 2251–2269. <https://doi.org/10.1002/jclp.23537>.

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Perinatal and Young Child Psychiatry Research

INVESTIGATORS

Arjun Athreya, Ph.D., M.S., Hannah Betcher, M.D., Paul Croarkin, D.O., M.S., Juan Garzon, M.D., Katherine Moore, M.D., Magdalena Romanowicz, M.D., Julia Shekunov, M.D., and Jennifer L. Vande Voort, M.D. (Mayo Clinic Rochester)

The Mayo Clinic Perinatal and Young Child Psychiatry Research Team in Rochester, Minnesota, is dedicated to advancing the understanding and treatment of psychiatric conditions in perinatal and young child populations (0-5 years old). The team's focus encompasses a range of research areas, including the identification of early biomarkers for mental health disorders, psychopharmacology during pregnancy and postpartum, the development of innovative therapeutic interventions, and the investigation of the impact of maternal and environmental factors on child development. Drs. Romanowicz, Athreya and Croarkin are co-PIs on a PISTACHIO trial (The Preemption of Disruptive Behavior in Children) that studies Parent Child Interaction Therapy (PCIT) augmented with artificial intelligence (AI), funded by Clinical Trial Stimulus Funding Initiative (CTSFI). Dr. Romanowicz has led novel Rochester Epidemiologic studies to inform future clinical practice. Dr. Romanowicz also recently launched a pilot, industry-sponsored study that will inform adoption of digital health technologies (DHTs) such as wearables (e.g., smartwatches) and mobile apps with ecological momentary assessments to remotely engage young children with Autism Spectrum Disorder (ASD) and their families. Future Parent Child Interaction Therapy studies will examine novel use of AI and wearable technology to augment therapeutic strategies for young children with disruptive behaviors. Dr. Betcher's efforts focused on retrospective studies examining the use of psychotropic medications in pregnancy and postpartum with the hopes to inform future studies. These examples of our Perinatal and Young Child Psychiatry research highlight the underlying goal: to improve mental health outcomes for mothers and their children, ultimately fostering healthier families and communities.

GRANT

Funded by Clinical Trial Stimulus Funding Initiative (CTSFI). STSFI: PISTACHIO (Preemption of Disruptive Behavior in Children) PCIT Augmented with Artificial Intelligence Randomized Controlled Trial. 09/2021 – 11/2024. PI: Magdalena Romanowicz, M.D.; Arjun Athreya PhD, M.S.; Paul Croarkin, D.O., M.S.

KEY RECENT PUBLICATIONS

Aron E, Londono Tobon A, Finelli J, Romanowicz M. Serving Families Where They Live: Supporting Multigenerational Health During Infancy and Early Childhood Through Community-centered Approaches. *Child Adolesc Psychiatr Clin N Am*. 2024 Jul; 33 (3):331-342 PMID: 38823807 DOI: 10.1016/j.chc.2024.03.007.

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Pease E, Shekunov J, Savitz ST, Golebiowski R, Dang V, Arbon J, Pines A, Lloyd R, Baughn J, Romanowicz M. Association between early childhood sleep difficulties and subsequent psychiatric illness. *J Clin Sleep Med*. 2023 Dec 1; 19 (12):2059-2063 PMID: 37539644 PMCID: 10692938 DOI: 10.5664/jcsm.10756.

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LEADERSHIP ROLES

Magdalena Romanowicz, M.D.

- Chair, Infant Preschool Committee American Academy of Child and Adolescent Psychiatry.

Addictions

INVESTIGATORS

Joanna M. Biernacka, Ph.D., Mark A. Frye, M.D., Man Choi (Ada) Ho, Ph.D., Victor M. Karpyak, M.D., Ph.D., Bhanu P. Kolla, M.D., Larissa L. Loukianova, M.D., Ph.D., Tyler S. Oesterle, M.D., M.P.H., Terry D. Schneekloth, M.D., Nicholas Bormann, M.D., & Ming-Fen Ho, Ph.D.

KEY COLLABORATORS

Department of Molecular Pharmacology and Experimental Therapeutics

Doo-Sup Choi, Ph.D., Ming-Fen Ho, Ph.D., Liewei Wang, M.D., Ph.D., & Richard Weinshilboum, M.D.

Department of Quantitative Health Sciences

Stacey J. Winham, Ph.D. & Brandon J. Coombes, Ph.D.

Department of Internal Medicine/Gastroenterology and Hepatology

Vijay Shah, M.D. & Tiffany Wu, M.D.

Mayo Clinic Arizona

Osama Abulseoud, M.D.

Mayo Clinic Health Systems – Albert Lea

Nicholas Bormann, M.D.

Hazelden Betty Ford Foundation

Quyen Ngo, Ph.D. & Jackie Braughton, Ph.D.

National Institute of Alcohol Abuse and Alcoholism (NIAAA)

Ray Litten, Ph.D., Daniel Falk, Ph.D., David Goldman, M.D., & Melanie Schwandt, Ph.D.

International collaborators

University of Paris

Phillip Gorwood, M.D.

Zentralinstitut für Seelische Gesundheit (Central Institute of Mental Health)

Stephanie Witt, Ph.D., Josef Frank, Marcella Rietschel, Ph.D., Falk Kiefer, Patrick Bach, B.Sc., Lea Zillich, M.Sc. Psych., & Birgit Hrinkow

The goal of addictions research is to better understand the molecular mechanisms and genetic predisposition to alcohol and substance use disorders. The initial stage of this work has been facilitated by the Samuel C. Johnson Genomics of Addiction Program, which played essential role in hiring SC Johnson Scholars and providing seed funds for projects. Since then, researchers and clinicians received Federal, Private and Foundation grants to support and advance their research in the following main directions:

- Identification of genomics/multi-omic biomarkers contributing to the risk of substance use disorder and treatment response. This line of research includes highly innovative use of stem cell lines and brain organoids developed from cells collected from patients receiving treatment in community-based programs.
- Discovery of the role of sex hormones and other sex-specific biomarkers in phenotypic presentation, progression and treatment response in men and women with alcohol and substance use disorders.
- Development of digital platforms which may allow capturing digital biomarkers associated with alcohol and substance use disorders and assist with treatment efforts.
- Exploring potential benefits of using novel treatment options such as Deep Brain Stimulation and Transcranial Magnetic Stimulation in patients with treatment resistant alcohol and substance use disorders.

This work is being conducted in close collaboration with researchers affiliated with Mayo Clinic in Rochester and Albert Lea, MN, Scottsdale, AZ as well as other institutions based in the United States and abroad. The list of the main collaborators is presented above.

GRANTS

Brain and Behavior Research Foundation. 31329. Precision Medicine and Acamprostate Treatment Response in Patients with Alcohol Use disorder: A Multi-omics Study. 1/15/2024 - 1/14/2026

National Institute on Drug Abuse. R01DA 57928-1. Single cell multi-omics of iPSC-derived brain organoids from patients with opioid use disorder: synthetic opioids as molecular probes. 7/15/2023 – 5/31/2028. PI: Ming-Fen Ho, Ph.D.

National Institute on Alcohol Abuse and Alcoholism. K01AA 28050-5. Acamprostate pharmacogenomics: iPSC-based model of alcohol use disorder. 9/20/2019-11/30/2024. PI: Meng-Fen Ho, Ph.D.

National Institute on Alcohol Abuse and Alcoholism. AA30273-01. Genomics of Alcohol Withdrawal and Treatment Response to Benzodiazepines 2023-2027. PI: Victor Karpyak, M.D., Ph.D., Co-PI: Joanna Biernacka, Ph.D.



Agency for Healthcare Research and Quality. 1R18HS029774-01. Connecting Primary Care to Substance Use Disorder Treatment Using a Telehealth Collaborative Care Platform 9/30/2023 – 7/31/2027. PI: Tyler Oesterle, M.D.

Mayo Clinic Kern Health Care Delivery Scholar Award. Focusing on the digital delivery of substance use disorder services. PI: Tyler Oesterle, M.D.

National Institute on Alcohol Abuse and Alcoholism. U01AA027487. Pharmacogenomics of Acamprosate Treatment Outcome. 09/2018 – 08/2023. PI: Victor Karpyak, M.D., Ph.D., Co-Investigator: Joanna Biernacka, Ph.D.

National Institute on Alcohol Abuse and Alcoholism. R01AA27486-01-05. Alcohol Use Disorder: Acamprosate Pharmacometabolomic-informed Pharmacogenomics. 09/2018 – 05/2023. Richard Weinshilboum, M.D.

KEY RECENT PUBLICATIONS

Coombes, B. Oesterle, T. Jennings, M. Fennessy, B. Pazdernik, V. Batzler, A. Frank, J. Karpyak, V. Ruiz, JAS. Ryu, E. Charney, A. Sanchez-Roige, S. Biernacka, J. A multi-prs approach to predicting substance use disorders and associated comorbidities. *European Neuropsychopharmacology*. 2023 Oct; 75(Suppl 1): S9-S10 [Abstract].

Hatoum, A.S., Colbert, S.M.C., Johnson, E.C., et al. Multivariate genome-wide association meta-analysis of over 1 million subjects identifies loci underlying multiple substance use disorders. *Nat. Mental Health* 1, 210–223 (2023). <https://doi.org/10.1038/s44220-023-00034-y>.

Ho, Ada Man-Choi, et al. “Associations of sex-related steroid hormones and proteins with alcohol dependence: A United Kingdom Biobank study.” *Drug and alcohol dependence* vol. 244 (2023): 109781. doi:10.1016/j.drugalcdep.2023.109781.

Ho MF, et al. “Epigenetic regulation of GABA catabolism in iPSC-derived neurons: The molecular links between FGF21 and histone methylation.” *Molecular Metabolomics* 2023 Sep 7:101798. doi: 10.1016/j.molmet.2023.101798. Epub ahead of print. PMID: 37689244.

Ho MF, et al., “IL17RB genetic variants are associated with acamprosate treatment response in patients with alcohol use disorder: A proteomics-informed genomics study” *Brain behavior and Immunity*, (in revision).

Ho MF, et al. “Molecular mechanisms involved in alcohol craving, IRF3, and endoplasmic reticulum stress: a multi-omics study” *Translational Psychiatry*, March 2024.

Ho, Ming-Fen et al. “Single cell transcriptomics reveals distinct transcriptional responses to oxycodone and buprenorphine by iPSC-derived brain organoids from patients with opioid use disorder.” *Molecular psychiatry*, 10.1038/s41380-022-01837-8. 27 Oct. 2022, doi:10.1038/s41380-022-01837-8.

Ho, Ming-Fen et al. “Plasma TNFSF10 levels associated with acamprosate treatment response in patients with alcohol use disorder.” *Frontiers in pharmacology* vol. 13 986238. 1 Sep. 2022, doi:10.3389/fphar.2022.986238.

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Karpyak, Victor M et al. “Genetic predisposition to major depressive disorder differentially impacts alcohol consumption and high-risk drinking situations in men and women with alcohol use disorder.” *Drug and alcohol dependence* vol. 243 (2023): 109753. doi:10.1016/j.drugalcdep.2022.109753.

Kolla, Bhanu Prakash, et al. “The Interaction Between Brain-Derived Neurotrophic Factor Levels and Alcohol Consumption, Sleep Disturbance and Sex-Hormones in Alcohol Use Disorders.” *Alcohol and alcoholism (Oxford, Oxfordshire)* vol. 58,2 (2023): 209–215. doi:10.1093/alcal/agad001.

Reffi, AN. Kolla, BP. Graham, M. Elizabeth Cardoni, M. Amin, S. Conroy, DA. Todd Arndt, J. Substance-related disorders and sleep. In: Kushida CA, editor(s). *Encyclopedia of sleep and circadian rhythms*. : Academic Press; 2023. 413-27. [Chapter].

Yuen, J. Goyal, A. Rusheen, AE. Kouzani, AZ. Berk, M. Kim, JH. Tye, SJ. Abulseoud, OA. Oesterle, TS. Blaha, CD. Bennet, KE. Lee, KH. Oh, Y. Shin, H. Oxycodone-induced dopaminergic and respiratory effects are modulated by deep brain stimulation. *Frontiers in Pharmacology*. 2023; 14(): 1199655 [Article].

SELECTED RECENT PRESENTATIONS

Ho, Ming-Fen, et al., “IL17RB Genetic Variants Are Associated with Acamprosate Treatment Response in Patients with Alcohol Use Disorder: A Multi-Omics Study” *ASCP*, May 2024

Ho, Ming-Fen, et al., “IL17RB Genetic Variants as Biomarkers of Acamprosate Treatment Response in Patients with Alcohol Use Disorder: A Multi-Omics study” *CINP Tokyo Congress*, May 2024

Karpyak, Victor, et al., Poster presentation “Sex-related Hormone and Protein Levels in Alcohol Dependent Males and Females in Early Recovery” *CINP Tokyo Congress*, May 2024

Ho, Ming-Fen, et al., “Single cell transcriptomics reveals distinct transcriptional responses to oxycodone and buprenorphine by iPSC-derived brain organoids from patients with opioid use disorder” *NIDA Genetics and Epigenetics Cross-Cutting Research Team meeting*, May 2024

Heider, Robin, et al., “Alcohol Craving, Cortisol Metabolism and Acamprosate Treatment Response in Patients with Alcohol Use Disorder” *ASCP*, May 2024 (New Investigator Award (NIA) recipient)

Liu D., et al., Principal Organizer and Co-chair of Session entitled: “RNA-binding proteins and post-transcriptional gene regulation in addiction disorders” *NIDA Genetics and Epigenetics Cross-Cutting Research Team Meeting*, May 2024

Liu D., et al., Oral Presentation entitled: “Neuron-specific RNA-binding Protein ELAVL2 and Post-transcriptional Gene Regulation in Substance Use Disorders” *NIDA Genetics and Epigenetics Cross-Cutting Research Team Meeting*, May 2024

Ho, Ada, et al., Poster presentation “Associations of Sex-Related Hormone and Protein Combinations With Alcohol Dependence” *RSA*, June 2024

Zhu X., et al., Poster Presentation “Pharmacogenomics of Acamprosate and Naltrexone Therapy Response for Alcohol Use Disorder (AUD): Role of FNDC4” *RSA*, June 2024

Saleh A, et al., “Post-transcriptional Gene Regulation (PTGR) and Antidepressant Treatment Response: Functional Characterization of ELAVL2 RNA-binding protein in iPSC-Derived Neurons” *ASCPT*, March 2024 (Jason Morrow Trainee Award & Presidential Trainee Award Recipient)

Zhu, Xiujuan, et al., “Alcohol Use Disorder Pharmacogenomics: Role of FNDC4 in Human Neuronal Function” *ASCPT*, March 2024 (Presidential Trainee Award Recipient)

LEADERSHIP ROLES

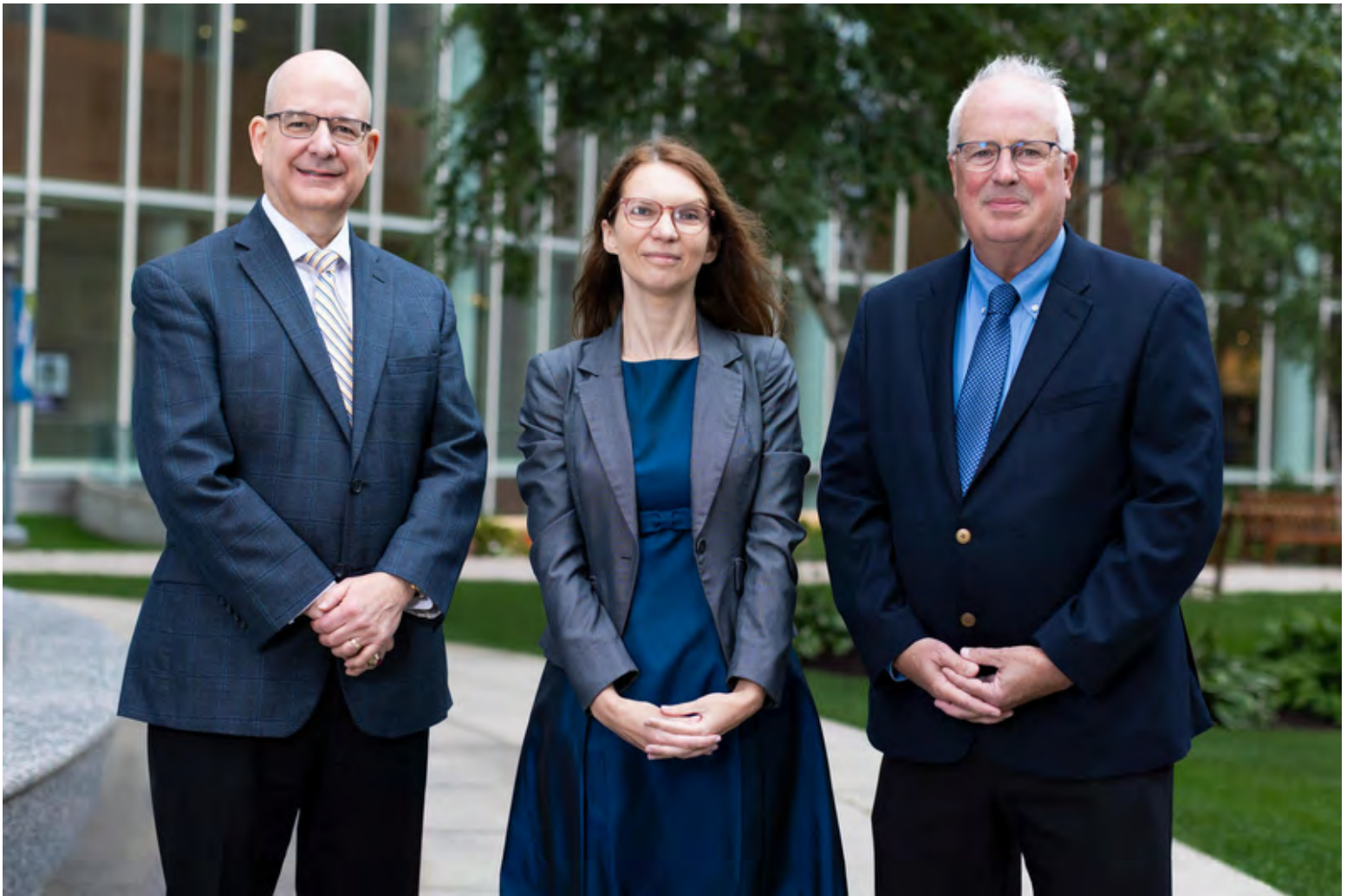
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Magdalena Romanowicz, M.D.- Co-Chair of Research in Psychiatry and Psychology

Matthew Clark, Ph.D.- Co-Chair of Research in Psychiatry and Psychology



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Psychiatric Genomics and Pharmacogenomics (PGaP)



INVESTIGATORS

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This research program's main objectives are to better understand genetic variability that contributes to psychiatric traits and disorders including addiction and mood disorders, as well as response to the treatment of these conditions. Members of this research team collaborate on genetics research studies spanning multiple research programs across the Department of Psychiatry and Psychology, including the Genomics of Addiction and the Bipolar Disorder Biobank Research Programs, as well as studies of antidepressant response in major depressive disorder. Investigators in the group have broad expertise in genetics of psychiatric traits as well as statistical genetics, bioinformatics, and computational methods, and lead cutting-edge psychiatric genomics research. Members of the PGaP Research Program also work with many external collaborators and large consortia including the Psychiatric Genomics Consortium (PGC), Consortium for Lithium Genetics (ConLiGen), and the Antidepressant Pharmacogenomics Consortium.

The research team has published multiple genome-wide association studies of complex psychiatric traits, often focused on sub-phenotypes of the disorders; this focus on narrowly defined phenotypes aims to reveal the genetic heterogeneity that contributes to the vast clinical heterogeneity of psychiatric disorders. The research team also focuses on building genomic predictive models for psychiatric traits, including application of polygenic risk score approaches, and using polygenic methods to uncover relationships among different psychiatric traits. The research team also uses genomic sequencing data, epigenetic data, and other "omics" data such as metabolomics, as well as approaches such as pathway-based analyses and gene-environment interaction analyses, to gain insights into the molecular and biological pathways contributing to psychiatric conditions. Results of these studies are used to design functional genomics studies to uncover the molecular consequences of genetic variation and the mechanisms by which they impact behavioral and psychiatric phenotypes. Discovery of the genetic contributions to risk of psychiatric disorders, their prognoses and patients' response to treatment of these conditions is ultimately expected to lead to more precise diagnoses and precision treatment strategies with improved efficacy.

GRANTS

National Institute of Mental Health. R01MH 121924-3. 2/4: Leveraging EHR-linked biobanks for deep phenotyping, polygenic risk score modeling, and outcomes analysis in psychiatric disorders. 09/2019 – 05/2025. PI: Joanna Biernacka, Ph.D.

National Institute on Alcohol Abuse and Alcoholism. R01AA 30273-1. Genomics of Alcohol Withdrawal and Treatment Response to Benzodiazepines. 5/2023 - 4/2027 PI: Victor Karpyak, M.D., Ph.D.

KEY RECENT PUBLICATIONS

Coombes BJ, Landi I, Choi KW, Singh KS, Gao YN, Fennessy B, Jenkins GD, Batzler A, Pendegraft R, Nunez NA, Ryu E, Wickramaratne P, Pathak J, Mann JJ, Regeneron Genetics Center, Davis LK, Smoller JW, Olfson M, Charney AW, Biernacka JM. The genetic contribution to the comorbidity of depression and anxiety: a multi-site electronic health records study of almost 178,000 people. *Psychol Med*. 2023 May 5. 1-6 Epub 2023. DOI: 10.1017/S0033291723000983.

Coombes BJ, Sanchez Ruiz JA, Fennessy B, Pazdernik V, Adekanlatu P, Nunez NA, Lepow L, Ryu E, Talati A, Jenkins GD, Pendegraft R, Wickramaratne P, Mann JJ, Olfson M, Weissman MM, Pathak J, Charney AW, Biernacka JM. Phenotype-by-phenome-wide association study of treatment resistant depression. *medRxiv*. 2022 Aug 24. DOI: 10.1101/2022.08.23.2227907.

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LEADERSHIP ROLES

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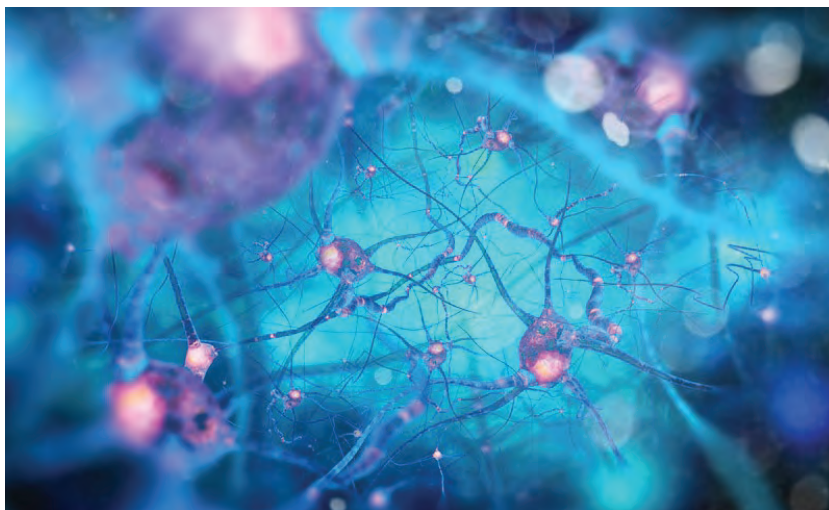
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- Scientific Advisory Committee Member Depression & Bipolar Support Alliance (DBSA)
- Minnesota Psychiatric Society: President

Brain Rehabilitation

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The Section of Brain Rehabilitation, in the Department of Physical Medicine and Rehabilitation's Division of Neurological Rehabilitation, has an established research portfolio and investigative team with members from the Departments of Psychiatry and Psychology, Physical Medicine and Rehabilitation, Nursing, Epidemiology, and Biostatistics. Mayo Clinic's Traumatic Brain Injury (TBI) Model System Center has been continuously funded since 1998, its most recent continuation award, a five-year federal grant by the National Institute on Disability, Independent Living, and Rehabilitation Research, Department of Health and Human Services, to sustain its research through 2027. Our Traumatic Brain Injury Model System Center has contributed data to the longitudinal TBI Model System National Database—the largest non-proprietary TBI data set in the world tracking outcomes for over 20,000 individuals—completing numerous analyses using these data to understand outcome prediction and the natural history of recovery after TBI. Our work has focused on studying population-based epidemiology of TBI—also funded by the Department of Defense—and on the design and implementation of community-based randomized pragmatic clinical trials testing complex behavioral interventions to improve participation and quality of life after TBI.

Our Section's current work involves partnering with the Indian Health Service Bemidji Area Office, Great Lakes Inter-Tribal Epidemiology Center, and state Trauma Programs in Minnesota, Wisconsin, and Michigan to identify the epidemiological profile of TBI among tribal communities in the upper Great Lakes region and understand their lived experience with TBI. The anticipated outcomes are to establish a foundation of trust and build sustainable community-based participatory research relationships between Mayo Clinic, Tribal communities, and Trauma Programs in the upper Great Lakes states, and to identify community priorities and public health intervention targets within tribal communities that will promote health equity and ultimately reduce disease burden related to TBI. Also underway is a large-scale population-based epidemiological investigation of the incidence of post-traumatic epilepsy (PTE), using artificial intelligence to identify digital anatomic and electrophysiological biomarkers of injury severity in PTE prediction modeling. In addition, we are collaborating with the Department of Psychology and Psychiatry on a project to understand the mechanisms of chronic dizziness after TBI, and collaborating with the Department of Neurology at Mayo Clinic Arizona to understand mechanisms of chronic post-traumatic headache. This work further strengthens Mayo Clinic's established reputation as a leading center of innovative brain rehabilitation research and clinical practice, engaged in trans-disciplinary collaborations across the Mayo Clinic Enterprise and with academic centers nationally.

GRANTS

Department of Defense Office of the Congressionally Directed Medical Research Programs. Post-traumatic epilepsy: A longitudinal, population-based medical record review analysis of incidence, risk, and prediction. 10/2021–9/2025. PI: Dmitry Esterov, D.O., M.S.

Department of Defense Office of the Congressionally Directed Medical Research Programs. A Multidisciplinary Translational Approach to Investigate the Mechanisms, Predictors, and Prevention of Persistent Post-Traumatic Headache: 09/2019 – 09/2025. PI: Todd Schwedt, M.D.

National Institute for Disability and Rehabilitation. BeHEALTHY: Chronic Disease Management for Traumatic Brain Injury. 10/2021–9/2025. PI: Dmitry Esterov, D.O., M.S.

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LEADERSHIP ROLES

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 - American Congress of Rehabilitation Medicine
 - Co-chair, Cognitive Rehabilitation Task Force - American Congress of Rehabilitation Medicine
 - Chair-elect, Board of Directors, Minnesota Brain Injury Alliance
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 - Associate Editor, *Brain Injury* - published by Taylor and Francis

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 - Member, MN Department of Health TBI Advisory Committee
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Pain Rehabilitation Center



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The Pediatric Pain Rehabilitation Center in Rochester, MN continues to document the short- and long-term impact of our intensive interdisciplinary pain rehabilitation programs on patient outcome, as well as increase our understanding of treatment-mediating factors such as mood, anxiety, eating, stress and cognitive flexibility. As parents are an important part of the pediatric pain rehabilitation treatment program, research is examining the impact of intensive pain treatment on parents themselves, as well as their thoughts and behaviors known to affect treatment outcome. Novel treatment protocols are also being developed and evaluated. Finally, as the programs also treat patients with co-occurring postural orthostatic tachycardia syndrome, avoidant-restrictive food intake disorder and functional symptoms, this team is examining outcomes and mediating factors for these patients.

The Adult Pain Rehabilitation Center Programs at Mayo Clinic Rochester, Arizona, and Florida continue to evaluate functional outcomes for each of our comprehensive multidisciplinary treatment programs. Drs. Gilliam, Hooten, Morrison and Schumann in Rochester are examining psychosocial and physiological mechanisms that account for effectiveness of the PRC functional restoration treatment approach as well as transdiagnostic process variables that mediate improvement in both pain outcome symptomatology of psychiatric conditions commonly comorbid with chronic pain such as PTSD and depression and eHealth intervention outcomes for minoritized populations. Dr. Sletten's team in Florida is examining biome data as it relates to chronic pain and psychological distress, as well as effectiveness of PRC treatment on patients with postural orthostatic tachycardia syndrome, Ehlers-Danlos Syndrome, and functional neurologic disorders.

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Behavioral Medicine

INVESTIGATORS

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The Behavioral Medicine Program (BMP) Research Group, which includes faculty from Mayo Clinic Rochester and Mayo Clinic Arizona, investigates problems at the interface between medical and psychiatric illnesses, prognostic modeling of psychological and behavioral factors in medical illness, and translational science. Many of the investigators on this team, work in the multidisciplinary Behavioral Medicine Program, and all partner with investigators in multiple medical specialties across Mayo Clinic. Research areas of investigation include functional disorders and psychological and behavioral prognostic factors in medical illness populations. Functional disorder patient populations under investigation include behavioral spells, chronic dizziness, functional movement disorders, functional gastrointestinal tract disorders, somatic symptom disorders and illness anxiety. Medical illness populations under investigation include cancer, heart disease, psychiatric morbidity in medically ill patients, and predictors of disability and health care utilization. Our research collaborations, funding, and publications have an international reach, inclusive of translational science methods to mitigate disparities in health and health care delivery for historically under-resourced populations.

GRANTS

Funded by Department of Defense. (W81XWH-19-1-0021) Novel Tinnitus Implant System for the Treatment of Chronic Severe Tinnitus: An Early Feasibility Study. 09/2019-09/2024. Significant contributor: Jeffrey Staab, M.D., M.S.

Funded by U.S. Army Medical Research Acquisition Activity. (W81XWH-18-1-0760). Advancing Rehabilitation: Psychological, and Neuroimaging Measures of Factors That Predispose, Promote, and Perpetuate Post-Traumatic Dizziness. 09/2018–09/2024. PI: Jeffrey Staab, M.D., M.S.

Funded by Sleep Number. Evaluation of Voice Analysis Technology in Detecting and Managing Depression and Anxiety in Patients Undergoing Cardiac Rehabilitation. 06/2022-05/2024. Co-PI: Jeffery Staab, M.D., M.S.

Hepatobiliary Specialized Program of Research Excellence, Mayo Clinic Cancer. Developing a Cancer Distress Management Program for Liver and Biliary Cancer within a Specialized Program of Research Excellence (SPORE). 01/2022-01/2023. PI: Ehlers

Funded by NIH/NCI. Bright IDEAS-Young Adults: Problem-Solving Skills Training to Reduce Distress among Young Adults with Cancer. 04/2020-03/2025. PI: Donovan

2022 NCATS Mayo Clinic Center for Clinical and Translational Sciences (CCaTS/ NIH CTSA) Role: Associate Director of Postdoctoral Training Program, Behavioral and Social Science Theme Leader. PI: Khosla, Warner, Co-PI: S. Ehlers

Funded by C2DREAM is supported by NIMHD grant (P50MD017342). Cardiac distress in Latinx/Hispanic women with cardiovascular disease and risk factors: examining its prevalence and the role of discrimination and acculturation experiences. extension until mid 2025. PI: Suarez Pardo

KEY RECENT PUBLICATIONS

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Tranby BN, Sia IG, Clark MM, Novotny PJ, Lohr AM, Suarez L, Patten CA, Itghete SO, Zeratsky KA, Rieck TM, Molina L, Porraz Capetillo G, Ahmed Y, Drie H, Wieland M. Negative mood is associated with sociobehavioral factors contributing to cardiovascular risk in an immigrant population. *BMC Public Health* 24, 1911 (2024). <https://doi.org/10.1186/s12889-024-19402-z>.

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Vencill JA, Kirsch JL, McPherson K, Sprankle E, Patten CA, Campana K, Brockman T, Bronars C, Hughes C, Gastineau D, Ehlers SL. Prospective Association of Psychological Distress and Sexual Quality of Life Among Hematopoietic Stem Cell Transplant Survivors. *J Clin Psychol Med Settings*. 2024 Apr 14 [Epub ahead of print] PMID: 38615280 DOI: 10.1007/s10880-024-10013-9.

LEADERSHIP ROLES

Shawna L. Ehlers, Ph.D., L.P.

- American Psychological Association: Health Psychology Representative, Inter-divisional Health Care Committee, 2021-2025
- Society for Health Psychology: Board Member, 2021-25 and Chair, Clinical Health Services Council 2021-2025

Jeffrey P. Staab, M.D., M.S.

- Secretary of the Board of Directors of the Functional Neurological Disorder Society (FNDS) and Co-Chair of the FNDS Classification Committee

Geriatric Psychiatry and Palliative Care



INVESTIGATORS

Matthew M. Clark, Ph.D., Melanie T. Gentry, M.D., Maria I. Lapid, M.D., & Teresa A. Rummans, M.D.
(Mayo Clinic Rochester)

Joshua M. Baruth, M.D., Ph.D.
(Mayo Clinic Health Systems)

Steven C. Ames, Ph.D., Shehzad K. Niazi, M.D., & Teresa A. Rummans, M.D.
(Mayo Clinic Florida)

Chun Tao, Ph.D.
(Mayo Clinic Arizona)

The primary goal of the Geriatric Psychiatry and Palliative Care Research Team is to enhance the quality of life and mental health outcomes for patients and their caregivers, particularly those who are older, have serious and advanced illnesses, or facing end-of-life situations. This multidisciplinary research team spans the Jacksonville, Florida; Rochester, Minnesota; and Scottsdale, Arizona, Mayo Clinic campuses. Assessments focus on the biopsychosociospiritual domains, and interventions range from biologic to holistic and integrative. This research team is involved in several externally and internally funded research projects using multidisciplinary approaches and collaborative models.

GRANTS

National Institute on Aging. R01 AG 61100: Electroconvulsive Therapy for the Acute Management of Severe Agitation in Dementia (ECT-AD). 08/2018-5/2025. PI: Maria I. Lapid, M.D.

National Institute on Aging. U19 AG63911: ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD): Clinical Core. 09/2019-06/2025. PI: Bradley F. Boeve, M.D.; Co-Investigator: Maria I. Lapid, M.D.

National Institute on Aging. R33 AG 69767: Definition and Caregiver Appraisal of Paradoxical Lucidity in Dementia. 09/2022-05/2025. PI: Joan M. Griffin, Ph.D.; Co-Investigator: Maria I. Lapid, M.D.

National Institute on Aging. AG56270: National Institute on Aging Alzheimer's Disease Family-Based Study (NIA-AD FBS). 08/2022-04/2027. PI: Bradley F. Boeve, M.D.; Co-Investigator: Maria I. Lapid, M.D.

Department of Psychiatry and Psychology Small Grants Program. A Feasibility Study of Transcranial Direct Current Stimulation (tDCS) as an Adjunctive Treatment for Treatment Resistant Depression (TRD) in Hospitalized Patients. 07/2023-06/2025. PI: Maria I. Lapid, M.D.; Co-Investigators: Simon Kung, M.D., Paul E. Croarkin, D.O., M.S., Michael R. Basso, Ph.D., L.P.

Division of Community Internal Medicine, Geriatrics & Palliative Care (CIMGP) Small Grants Program. Methylene blue mouthwash for oral mucositis pain in cancer: An open-label, non-randomized, controlled study. 2022-2024. PI: Regina M. Mackey, M.D.; Co-Investigator: Maria I. Lapid, M.D.

Division of Community Internal Medicine, Geriatrics & Palliative Care (CIMGP) Small Grants Program. Hospice Care for People Living with Dementia: Experiences from a Community Practice. 2024-2026. PI: Mairead M. Bartley, M.B., B.Ch., B.A.O., M.D.; Co-Investigator: Maria I. Lapid, M.D.

Benefactor funded. A Feasibility and Pilot Randomized Controlled Double-blind Trial of Intermittent Theta Burst Stimulation (iTBS) repetitive Transcranial Magnetic Stimulation (rTMS) to Improve Memory in Mild Cognitive Impairment (MCI). 2022-2024. PI: Maria I. Lapid, M.D.; Co-Investigators: Simon Kung, M.D., Paul E. Croarkin, D.O., M.S., Michael R. Basso, Ph.D., L.P.

Benefactor funded. Enhancing Brain and Mental Health through Respiratory Training: Clinical Applications in Cancer and Dementia Care for Patients and Caregivers. 2024-2026. PI: Paul H. Min, Ph.D.; Co-PI: Maria I. Lapid, M.D.; Co-Investigators: Teresa A. Rummans, M.D., Matthew M. Clark, Ph.D., Melanie T. Gentry, M.D.

Benefactor funded. Resilient Living program for Patients with Advanced Cancer and Their Caregivers. Principal Investigator: Deirdre Pachman, M.D.; Co-Investigators: Teresa A. Rummans, M.D., Matthew M. Clark, Ph.D., Maria I. Lapid, M.D.

Benefactor funded. Impact of Massage Therapy and Music Therapy on the Quality of Life of Hospice Patients. Principal Investigator: Maria I. Lapid, M.D.

Benefactor funded. Music Therapy Intervention to Reduce Caregiver Distress at the End of Life: A Feasibility Study. Principal Investigator: Kevin J. Whitford, M.D.; Co-Investigator: Maria I. Lapid, M.D.

Mayo Clinic – Arizona State University. Feasibility and Acceptability of a Dyad-based Physical Activity Intervention for Hematopoietic Cell Transplant Recipients and Caregivers. Langer, S. (Co-PI), Khera, N. (Co-PI); Co-investigator; Chun Tao, Ph.D.

KEY RECENT PUBLICATIONS

Baruth JM, Bateman DR, Kovacs RJ, Bateman PV, Pazdernik VM, Santivasi WL, Dunlay SM, Lapid MI. Cardiac healthcare disparities and electrocardiography (ECG) differences in schizophrenia at end of life. *Schizophr Res.* 2023 Dec; 262:60-66 Epub 2023 Nov 04 PMID: 37925752 DOI: 10.1016/j.schres.2023.10.017.

Corriveau-Lecavalier N, Barnard LR, Przybelski SA, Gogineni V, Botha H, Graff-Radford J, Ramanan VK, Forsberg LK, Fields JA, Machulda MM, Rademakers R, GavriloVA RH, Lapid MI, Boeve BF, Knopman DS, Lowe VJ, Petersen RC, Jack CR, Kantarci K, Jones DT. Assessing network degeneration and phenotypic heterogeneity in genetic frontotemporal lobar degeneration by decoding FDG-PET. *Neuroimage Clin.* 2023 Dec 22; 41:103559 [Epub ahead of print] PMID: 38147792 DOI: 10.1016/j.nicl.2023.103559.

Cummings J, Sano M, Auer S, Bergh S, Fischer CE, Gerritsen D, Grossberg G, Ismail Z, Lancot K, Lapid MI, Mintzer J, Palm R, Rosenberg PB, Splaine M, Zhong K, Zhu CW. Reduction and prevention of agitation in persons with neurocognitive disorders: an international psychogeriatric association consensus algorithm. *Int Psychogeriatr.* 2023 Mar 6; 1-12 Epub 2023 Mar 06 PMID: 36876335 PMCID: 10480345 DOI: 10.1017/S104161022200103X.

Griffin JM, Kim K, Finnie DM, Lapid MI, Gaugler JE, Batthyany A, Bangerter LR, Biggar VS, Frangiosa T. Developing and describing a typology of lucid episodes among people with Alzheimer's disease and related dementias. *Alzheimers Dement.* 2024 Feb 2 Epub 2024 Feb 02 PMID: 38305566 DOI: 10.1002/alz.13667.

Niazi SK, Brennan E, Spaulding A, Crook J, Borkar S, Keaveny A, Vasquez A, Gentry MT, Schneekloth T, Taner CB. Impact of Recipient Age at Liver Transplant on Long-term Outcomes. *Transplantation.* 2023 Mar 1; 107 (3):654-663 Epub 2022 Nov 10 PMID: 36398331 DOI: 10.1097/TP.0000000000000426.

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Park S, Forester BP, Lapid MI, Harper DG, Hermida AP, Inouye SK, McClintock SM, Nykamp L, Petrides G, Schmitt EM, Seiner SJ, Mueller M, Patrick RE. A Novel Approach to Monitoring Cognitive Adverse Events for Interventional Studies Involving Advanced Dementia Patients: Insights From the Electroconvulsive Therapy for Agitation in Dementia Study. *J Geriatr Psychiatry Neurol.* 2023 Oct 17; 8919887231207641 [Epub ahead of print] PMID: 37848185 DOI: 10.1177/08919887231207641.

Patrick RE, Dickinson RA, Gentry MT, Kim JU, Oberlin LE, Park S, Principe JL, Teixeira AL, Weisenbach SL. Treatment resistant late-life depression: A narrative review of psychosocial risk factors, non-pharmacological interventions, and the role of clinical phenotyping. *J Affect Disord.* 2024 Jul 1; 356:145-154 Epub 2024 Apr 07 PMID: 38593940 DOI: 10.1016/j.jad.2024.04.017.

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Strawn JR, Mills JA, Suresh V, Mayes T, Gentry MT, Trivedi M, Croarkin PE. The impact of age on antidepressant response: A mega-analysis of individuals with major depressive disorder. *J Psychiatr Res.* 2023 Mar; 159:266-273 Epub 2023 Jan 28 PMID: 36774767 PMCID: 9993423 DOI: 10.1016/j.jpsychires.2023.01.043.

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Toller G, Cobigo Y, Callahan P, Appleby BS, Brushaber D, Domoto-Reilly K, Forsberg LK, Ghoshal N, Graff-Radford J, Graff-Radford NR, Grossman M, Heuer HW, Kornak J, Kremers W, Lapid MI, Leger G, Litvan I, Mackenzie IR, Pascual MB, Ramos EM, Rascovsky K, Rojas JC, Staffaroni AM, Tartaglia MC, Toga A, Weintraub S, Wszolek ZK, Boeve BF, Boxer AL, Rosen HJ, Rankin KP, ALLFTD consortium. Multisite ALLFTD study modeling progressive empathy loss from the earliest stages of behavioral variant frontotemporal dementia. *Alzheimers Dement.* 2023 Jul; 19 (7):2842-2852 Epub 2023 Jan 02 PMID: 36591730 PMCID: 10314956 DOI: 10.1002/alz.12898.

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LEADERSHIP ROLES

Shehzad K. Niazi, MD
-Member, Distress Management Panel, National Cancer Center Network

Maria I. Lapid, M.D.
-Chair, ECT-AD Publications Committee

Adult and Pediatric Neuropsychology

INVESTIGATORS

Eva C. Alden, Ph.D., L.P., Michael R. Basso, Ph.D., L.P., Thomas F. Bergquist, Ph.D., L.P., Tanya M. Brown, Ph.D., L.P., Adam R. Cassidy, Ph.D., L.P., Jane H. Cerhan, Ph.D., L.P., Julie A. Fields, Ph.D., L.P., Andrea R. Huebner, Ph.D., L.P., Alisha L. Janssen, Ph.D., L.P., Jun Min Koay, Psy.D., L.P., Mary M. Machulda, Ph.D., L.P., Matthew R. Powell, Ph.D., L.P., Daniel E. Rohe, Ph.D., L.P., Nikki H. Stricker, Ph.D., L.P., John L. Stricker, Ph.D., Savanna M. Tierney, Ph.D., L.P., Max R. Trenerry, Ph.D., L.P., & Michael J. Zaccariello, Ph.D., L.P. (Mayo Clinic Rochester)



INVESTIGATORS

Paula A. Aduen, Ph.D., Melanie J. Chandler, Ph.D., Tanis J. Ferman, Ph.D., John A. Lucas, Ph.D., Beth K. Rush, Ph.D., & David S. Sabsevitz, Ph.D. (Mayo Clinic Florida)

Leslie C. Baxter, Ph.D., Kristin A. Kirlin, Ph.D., Dona E. Locke, Ph.D., Cynthia M. Stonnington, M.D., Jennifer V. Wethe, Ph.D., & Dixie J. Woolston, Ph.D. (Mayo Clinic Arizona)

Neuropsychologists at Mayo Clinic are actively engaged in research and have been successful not only in acquiring their own funding for novel projects but in collaborating with others from multiple disciplines across the Enterprise and across the nation. These forged relationships have given them access to resources that provide state-of-the-art and cutting-edge research opportunities. Some of these include using advanced imaging, artificial intelligence, neural network simulations, and digital techniques to help understand brain networks involved in processes underlying cognitive dysfunction, thereby enhancing capabilities for early detection, prediction of progression and conversion from asymptomatic to symptomatic, and ultimately, development of compensation and management strategies. Further, neuropsychology investigators have helped identify new and atypical phenotypes for common neurodegenerative diseases such as Alzheimer's disease, parkinsonian conditions (Parkinson's disease, Lewy body dementia, or other corticobasal syndromes), frontolobar degeneration, and progressive aphasia. They continue to play an important role in investigations involving longitudinal cognitive and quality of life outcomes following traumatic brain injury, concussion and chronic traumatic encephalopathy, tumor resection, epilepsy surgery, chemotherapy for breast cancer, surgical menopause, and COVID-19, which informs presurgical planning and brain mapping. Other investigators are examining factors such as caregiver experiences and burden, resiliency, and lifestyle characteristics to better understand impact on acquired and neurodegenerative conditions. In addition, neuropsychologists have been at the forefront in updating and developing normative data and in validating remote cognitive testing. Pediatric neuropsychologists in Rochester are also engaged in interdisciplinary research to optimize neurodevelopmental or social-emotional outcomes for children with complex medical problems such as HIV, congenital heart disease or autism, and their caregivers.

GRANTS

National Institute on Aging. R03AG 070486. Machine Learning to Predict Incident MCI using Standard Clinical Measures. 03/01/2021-02/29/2024. Principal Investigator: Melanie Chandler

Ralph C. Wilson Jr. Foundation. Endowment for the HABIT Health Actions to Benefit Independence & Thinking Program, 2017-2037. Co-Investigators: Melanie Chandler, Dona Locke, Anne Shandera-Ochsner

Alzheimer's Association Clinician Scientist Fellowship to Promote Diversity (AACSF-D) 933521. Association between Biomarkers of Chronic Stress and Cognition in Latinos. Principal Investigator: Paula Aduen

Mangurian Foundation for Lewy Body Research. 02//2011-04/2026. Principal Investigator: Dennis Dickson; Co-Investigator: Tanis Ferman

Turner Foundation for Lewy Body Research. Functional Genomics of Lewy Body Disease. Principal Investigator: Brad Boeve; Co-Investigator: Tanis Ferman

American Academy of Neurology Brain Foundation. Development and Validation of a Blood-Based Biomarker to Identify Overt and Prodromal Dementia with Lewy Bodies, 01/01/2022-12/31/2024. Principal Investigator: Owen Ross; Co-Investigator: Tanis Ferman

National Institute of Mental Health. The Aging Autistic Brain: Multimodal Imaging to Predict Accelerated Memory Decline. Co-Investigator: Leslie Baxter

National Institute on Mental Health. R01MH 121191. Neurodevelopment in HEU Children Exposed In Utero to Dolutegravir or Efavirenz. Principal Investigator: Adam Cassidy

National Institute of Child Health and Human Development. FLOURISH - Following Longitudinal Outcomes to Understand, Report, Intervene and Sustain Health of Infants, Children and Adolescents who are HIV-Exposed Uninfected. Co-Investigator: Adam Cassidy

Meil Family Foundation Research Award for Neurocognitive Studies/Adult Congenital Heart Association. Identifying Research and Clinical Priorities To Optimize Neuropsychological and Psychosocial Outcomes for Adults with Congenital Heart Disease. Principal Investigator: Adam Cassidy

National Institute of Child Health and Human Development. Dyadic Parent-Child Influences on Pain Expression and Proxy Ratings in Children with IDD. 2023-2028. Principal Investigator: Andrea Huebner

National Institute on Aging. R44AG 65088. Fostering caregiver connections via intentional technology pairing for caregivers of patients with Alzheimer's Disease and other types of dementia. 05/01/2021 - 03/31/2025. Principal Investigator: Julie Fields

National Institute on Aging. R44AG 74127. Personalized, Easy-To-Use Tool for AD/ADRD Caregivers Addressing Financial Management and Legal Planning. 09/01/2021 - 04/30/2025. Principal Investigator: Julie Fields

National Institute on Aging. R01AG 68128. Identifying Factors Predicting Accurately End-of-Life in Dementia with Lewy Bodies and Promoting Quality End-of-Life Experiences: the PACE-DLB Study. 09/15/2020 - 04/30/2025. Principal Investigator: Julie Fields

National Institute on Aging. U19AG 63911. ARTFL LEFFTDs Longitudinal Frontotemporal Lobar Degeneration (ALLFTD). 09/15/2019 - 06/30/2025. Principal Investigator: Brad Boeve; Co-Investigator: Julie Fields

National Institute of Neurological Disorders and Stroke. U01NS 100620. Longitudinal Imaging Biomarkers of Disease Progression in DLB. 09/01/2022 – 08/31/2027. Principal Investigator: Kejal Kantarci; Co-Investigators: Tanis Ferman, Julie Fields

National Institute on Aging. U19WU-22-0252. North American Prodromal Synucleinopathy Consortium for RBD, Stage 2 (NAPS2). Principal Investigator: Brad Boeve; Co-Investigators: Tanis Ferman, Julie Fields

National Institute of Neurological Disorders and Stroke. R01NS 92625. Synucleinopathies – Novel Targets in Early Diagnosis, Pathophysiology, and Therapeutic Approach. 07/01/2021-06/30/2026. Principal Investigator: Wolfgang Singer; Co-Investigator: Julie Fields

National Institute on Aging. R01AG 50603. Molecular and Structural Imaging in Atypical Alzheimer's Disease: A Longitudinal Study, 04/2021-03/2026. Principal Investigator: Jennifer Whitwell; Co-Investigator: Mary Machulda

National Institute on Deafness and Other Communication Disorders. R01DC 14942. The Neurobiology of Two Distinct Subtypes of Neurodegenerative Apraxia of Speech: Phenotypes of Alzheimer Disease Related 4-Repeat Tauopathies, 04/2023-03/2028. Principal Investigator: Keith Josephs; Co-Investigator: Mary Machulda

The Kevin Merszei Career Development Award in Neurodegenerative Diseases Research IHO Janet Vittone, MD, Validation of a Computer Adaptive Word List Memory Test for Early Detection of Alzheimer's Disease using a Mayo Clinic Remote Cognitive Assessment Platform. 07/2021-06/2024. Principal Investigator: Nikki Stricker. Co-Investigators: Aimee Karstens, Mary Machulda, John Stricker.

National Institute on Aging. R01 AG81955-01A1. Validation of the Mayo Test Drive Screening Battery Composite and Stricker Learning Span for Early Detection and Monitoring of Cognitive Decline in Preclinical and Prodromal Alzheimer's Disease. 12/2023 – 11/2028. Principal Investigator: Nikki Stricker

National Institute on Aging. R21AG073967, Stricker Learning Span: A Computer Adaptive Word List Memory Test Optimized for Remote Assessment. 08/2021-05/2024. Principal Investigator: Nikki Stricker. Co-Investigators: Mary Machulda, John Stricker.

National Institute of Diabetes and Digestive and Kidney Diseases. R03DK 132121. Impact of Abnormal Steroid Metabolome on Cellular Senescence, Frailty and Cognition. 04/2022-03/2024. Principal Investigator: Irina Bancos; Co-Investigator: Nikki Stricker

Clinical Trials Anywhere RFA to Develop New Decentralized Capabilities. Neuro-Oncology Anywhere: Deploying Mayo Clinic's remote cognitive assessment battery and wearable device monitoring platform while assessing the impact of metformin on cognition and quality of life in patients with history of cranial radiation. 01/2024-12/2025. PI: Ugur Sener. Co-Investigators: Nikki Stricker, John Stricker, Eva Alden

National Institute on Aging R21AG 69052. "What is N?" Towards Operationalizing Neurodegeneration in Alzheimer's and Related Dementias. 04/2021-03/2026. Principal Investigator: Jonathan Graff-Radford; Co-Investigator: Nikki Stricker

National Institute on Aging R21AG 73726. Influence of Exercise Training and Intensity on Cerebral Blood Flow Regulation and Cognitive Function in Mid-Life Adults with Cardiovascular Disease. 04/2022-05/2024. Principal Investigator: Jenna Taylor; Co-Investigator: Nikki Stricker

National Institute on Aging. 3P30AG062677-04S1: Identification and measurement of influences on brain donation decision making in African Americans. 7/1/2022-4/30/2024. PI: Ron Petersen. Site PI: John Lucas.

National Institute on Aging. P30AG062677-24. Mayo Alzheimer's Disease Research Center. 06/2024-04/2029. PI: Ron Petersen. Co-Investigators: John Lucas, Tanis Ferman, Mary Machulda, Julie Fields.

KEY RECENT PUBLICATIONS

Agarwal K, Backler W, Bayram E, Bloom L, Boeve BF, Cha JH, Denslow M, Ferman TJ, Galasko D, Galvin JE, Gomperts SN, Irizarry MC, Kantarci K, Kaushik H, Kietlinski M, Koenig A, Leverenz JB, McKeith I, McLean PJ, Montine TJ, Moose SO, O'Brien JT, Panier V, Ramanathan S, Ringel MS, Scholz SW, Small J, Sperling RA, Taylor A, Taylor JP, Ward RA, Witten L, Hyman BT. Lewy body dementia: Overcoming barriers and identifying solutions. *Alzheimers Dement*. 2024;20(3):2298-308. Epub 20240124. doi: 10.1002/alz.13674. PubMed PMID: 38265159; PubMed Central PMCID: PMC10942666.

Armstrong MJ, Dai Y, Sovich K, LaBarre B, Paulson HL, Maixner SM, Fields JA, Lunde AM, Forsberg LK, Boeve BF, Manning CA, Galvin JE, Taylor AS, Li Z. Caregiver experiences and burden in moderate-advanced dementia with Lewy bodies. *Neurol Clin Pract*. 2024;14(3):e200292. Epub 20240410. doi: 10.1212/CPJ.0000000000200292. PubMed PMID: 38617555; PubMed Central PMCID: PMC11014644.

Basso MR, Guzman D, Hoffmeister J, Mulligan R, Whiteside DM, Combs D. Use of perceptual memory as a performance validity indicator: Initial validation with simulated mild traumatic brain injury. *J Clin Exp Neuropsychol*. 2024;46(1):55-66. Epub 20240212. doi: 10.1080/13803395.2024.2314991. PubMed PMID: 38346160.

Basso MR, Whiteside DM, Combs D. Introduction to the special issue on performance validity: What are we doing? What should we do? *J Clin Exp Neuropsychol*. 2024;46(1):1-5. Epub 20240428. doi: 10.1080/13803395.2024.2347119. PubMed PMID: 38678395.

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NATIONAL LEADERSHIP ROLES

Dr. Bergquist: Co-chair, Cognitive Rehabilitation Task Force, American Congress of Rehabilitation Medicine

Dr. Cassidy: Member, Executive Committee, Cardiac Networks United (CNU)

Dr. Cerhan: Assessment Team Lead, Item Development Committee, EPPP Licensure Exam, Association of State and Provincial Psychology Boards

Dr. Ferman: Member, Scientific Advisory Committee, Lewy Body Dementia Association (LBDA)

Dr. Huebner: Member, Board of Directors, and Treasurer, American Board of Clinical Neuropsychology (ABCN)

Dr. Janssen: Chair, Division 22 (Rehabilitation Psychology) Riff Raff Boards Study Group, American Psychological Association

Dr. Lucas: Member, Alzheimer's Association Inclusion Diversity and Equity for ALL (IDEALL) Council

Dr. Rohe: President, Foundation for Rehabilitation Psychology

Dr. Stricker: Minnesota Delegate, Conference to Update Education and Training Guidelines in Clinical Neuropsychology

Dr. Wethe: Founder/past Chair, Athlete Development and Sports Rehabilitation Networking Group, American Congress of Rehabilitation Medicine

Dr. Woolston: Member, Women in Neuropsychology, National Academy of Neuropsychology

Obesity and Eating Disorders

INVESTIGATORS

Bridget K. Biggs, Ph.D., Matthew M. Clark, Ph.D., David C. Fipps, D.O., Karen B. Grothe, Ph.D., Afton M. Koball, Ph.D., Sarah A. Kalsy, M.A., L.P., Jennifer D. Lanners, M.S., L.P.C.C., Jocelyn R. Lebow, Ph.D., Abigail L. Matthews, Ph.D., M.H.A., & Leslie A. Sim, Ph.D., (Mayo Clinic Rochester)

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This multidisciplinary research team is involved in several National Institutes of Health (NIH) and Industry funded clinical trials that examine the influence of psychological functioning and neurobiology on obesity and eating disorders treatment outcomes. Clinical programs and research interventions are conducted at the Rochester, Minnesota, Mayo Clinic Health System Midwest, Phoenix, Arizona, and Jacksonville, Florida, sites of Mayo Clinic. Current adult obesity investigations focus on obesity medication and endoscopic sleeve treatment of obesity, the effect of bariatric surgery versus calorie restriction on metabolism, the microbiome and the microbiome in patients with type 2 diabetes, the relationship between history of childhood trauma and food addiction, the onset of addictive behaviors, psychological consequences, and weight recurrence after having bariatric surgery. Pediatric obesity studies focus on translation and outcomes of research-developed interventions into clinical practice, use of family input in program development, and the roles of social support, parent-adolescent interactions, and motivational factors on adolescents' eating and activity habits. Eating disorders research focuses on developing primary care interventions for eating disorders, as well as understanding the overlap between eating disorders and other medical conditions such as inflammatory bowel disease, postural orthostatic tachycardia syndrome and chronic pain. Through our investigations, we hope to improve long-term treatment outcomes for persons with eating disorders and obesity.

GRANTS

Funded by National Institute of Mental Health. (R34 MH 128296) Evaluating the feasibility of a primary care-based treatment for restrictive eating disorders in children and adolescents. 02/2023-01/2026. PI: Jocelyn R. Lebow, Ph.D.; Other Significant Contributor: Afton Koball, Ph.D.

Funded by National Institute of Diabetes and Digestive and Kidney Diseases. (R01 DK 113999) Stories for Change (S4C): Digital Storytelling for Diabetes Self-Management among Hispanic Adults. 06/2018-05/2024. Co-PI: Afton Koball, Ph.D.

Funded by 2024 Florida CPC Innovation Program. (EA24CPC004) Shared Decision Making in Overweight and Obesity Care. 01/2024-12/2024. Co-PI: Afton Koball, Ph.D.

National Institute on Minority Health and Health Disparities. (MD 17342) Center for Chronic Disease Reduction and Equity Promotion Across Minnesota: C2DREAM. 09/2021 - 06/2026. PI: Christi A. Patten, Ph.D.; Co-Investigator: Matthew M. Clark, Ph.D.

National Institutes of Health. (R43MD19549-1) Inclusive Online Interactive Platform for Parents in Rural Settings to Promote Healthy Habits. 09/2024-06/2025. PI: Bridget K. Biggs, Ph.D., L.P.

KEY RECENT PUBLICATIONS

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LEADERSHIP ROLES

Matthew M. Clark, Ph.D.

- Co-Chair of Research, Department of Psychiatry and Psychology and David H. Murdock, Dole Food Professor of Nutrition
- Editorial Board, *Eating Behaviors*
- Associate Editor, *Obesity*

Karen B. Grothe, Ph.D.

- Member, American Society of Metabolic and Bariatric Surgery, Masters in Behavioral Health Course Program Committee, Integrated Health Clinical Issues Committee
- Chair, Masters in Behavioral Health Course Program Committee
- Editorial Board, *Bariatric Times*

Afton M. Koball, Ph.D

- Member, American Society of Metabolic and Bariatric Surgery, Integrated Health Program Committee, Behavioral Health Subcommittee

Leslie Sim, Ph.D.

- Co-Chair, Educational Programming Committee, Academy of Eating Disorders
- Member, Steering Committee, Proposed Division of Eating Disorders, American Psychological Association
- Member, Academy of Eating Disorders, Awards and Scientific Review Committee

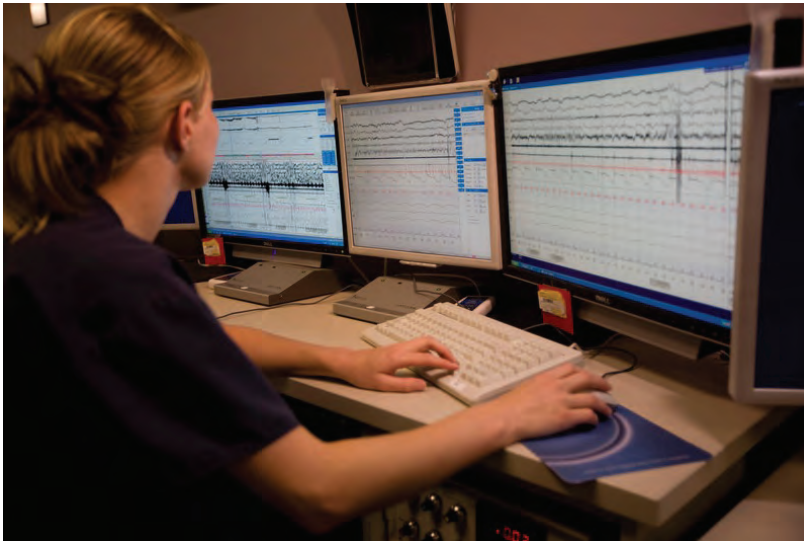


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and Psychology
Treatment Center





Sleep Medicine

INVESTIGATORS

R. Robert Auger, M.D., and Bhanu Kolla, M.D.
(Mayo Clinic Rochester)

Lois E. Krahn, M.D.
(Mayo Clinic Arizona)

Mayo Clinic Department of Psychiatry & Psychology has historically been featured prominently in the field of sleep medicine. The late Peter J. Hauri, Ph.D., L.P., (former Director of the Mayo Clinic Sleep Center until his 2000 retirement) founded the American Sleep Disorders Association, authored the internationally renowned self-care book *No More Sleepless Nights*, and was widely considered to be the world's authority on insomnia. Dr. Paul Fredrickson is past president of the American Academy of Sleep Medicine (AASM). Drs. Auger, Kolla and Krahn continue this legacy of national visibility and scholarship. Dr. Krahn served as joint editor of an influential sleep medicine textbook, *Sleep Medicine in Clinical Practice*, the second edition, which was recently published. Her research interests include narcolepsy and wearable technology used for sleep disorders. She previously received funding from the Narcolepsy Network, NIH via a sub award through Arizona State University, and industry (Jazz, Flamel, Harmony, Balance and Takeda). She is chair of the AASM Task Force authoring a clinical practice guideline for the administration of the Multiple Sleep Latency Testing and Maintenance of Wakefulness Testing. Dr. Auger served as editor and chapter contributor to the recently published *Circadian Rhythm Sleep-Wake Disorders: An Evidence-Based Guide for Clinicians and Investigators*. He has served and/or chaired various AASM task forces, which have resulted in prominent publications and associated practice parameters. He was previously a member of the AASM Research Committee and of the American Sleep Medicine Foundation Executive Board. He chaired the AASM Circadian Rhythms Membership Section and has directed and participated in numerous sleep medicine sessions at national meetings. His primary research interests reside in the realm of circadian-based interventions for the treatment of sleep disorders. Dr. Kolla is currently Co-Chair of Education for the Department of Psychiatry and Psychology. His research is focused on examining the intersection of sleep disorders and addiction. He is a Fellow of the Royal College of Psychiatrists and serves as a Section Editor for the *Mayo Clinic Proceedings*.

GRANT

Randomized Controlled Trial Examining Real-World Effectiveness of a Prescription Digital Therapeutic for the Treatment of Insomnia and Depression, Food and Drug Administration, PI Dr. Kolla.

KEY RECENT PUBLICATIONS

Carvalho DZ, Mansukhani MP, St Louis EK, Ruoff CM, Kolla BP. Aging and sex are associated with multiple sleep latency test findings and their relationship with self-reported sleepiness. *Sleep Biol Rhythms*. 2024 Feb 25;22(3):343-35.

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Kolla BP, Mansukhani MP, Chakravorty S, Frank JA, Coombes BJ. Prevalence and associations of multiple hypnotic prescriptions in a clinical sample. *J Clin Sleep Med*. 2024;20(5):793-800.

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LEADERSHIP ROLES

Bhanu Kolla, M.D.

- Member, American Academy of Sleep Medicine Foundation Investigator Initiated Awards Review Committee
- United States Department of Defense Study Section Reviewer

Transplant Psychiatry and Psychology

INVESTIGATORS

David Fipps, D.O., Daniel Hall-Flavin, M.D., Victor Karpyak, M.D., Bhanu Kolla, M.D., & Terry Schneekloth, M.D.
(Mayo Clinic Rochester)

Steven Ames, Ph.D., Sheila Jowsey-Gregoire, M.D., Shehzad Niazi, M.D., Teresa Rummans, M.D., & Adriana Vasquez, M.D.
(Mayo Clinic Florida)



The Mayo Clinic Transplant Psychiatry and Psychology efforts reflect ongoing collaborations with a variety of interdisciplinary teams within the Mayo Clinic that allow us to leverage innovative research strategies to better understand key questions in the field. Dr. Niazi's time as a scholar in the Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery helped link our researchers with the Kern Center's capabilities, informatics, and health care delivery research science to better understand the needs of transplant patients. In the last two years, Drs. Niazi, Rummans and Schneekloth have utilized technology and database creation to better understand the availability of mental health resources for transplant patients and the impact of community health rankings on transplant outcomes. Due to a close relationship with the bariatric practice our team has a better understanding of transplant patients who have complex surgical, psychological, and psychiatric needs who would benefit from bariatric surgery. In this context, Dr. Fipps has published on his expertise in the influence of mental health and substance use comorbidities on the patients who require both a bariatric surgery and organ transplantation surgery. Dr. Fipps was also invited to be part of the core faculty for the Academy of Consultation Liaison Psychiatry's pre-conference transplant psychiatry course, and has published on the impact of phosphatidylethanol screening in liver transplant candidates, as well as the influence of adverse childhood experiences on liver transplant outcomes. A unique aspect of the Transplant practice is the co-location of experts in substance use disorders which allows for improved communication and treatment planning for this population. Researchers in the transplant center have been active in better understanding substance use issues with research initiatives led by Dr. Schneekloth, Hall-Flavin, Karpyak and Kolla on factors impacting relapse and survival for patients with alcohol related liver disease. Drs. Jowsey-Gregoire and Vasquez participated in an American Society of Transplantation initiated group that partnered with members of the Academy of Consultation-Liaison Psychiatry to determine the role of testing for substances in transplant populations. Drs. Niazi and Ames and colleagues have investigated the impact of depression and anxiety on opiate use in stem cell recipients. Transplant based researchers, Drs. Jowsey-Gregoire, Kennedy, Amer, Moran and Mardini joined forces with researchers in the Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery and the Knowledge and Evaluation Research Unit laboratory which was founded by principal investigator Victor M. Montori, M.D. to research the best ways to promote shared decision-making. This collaboration led to a successful effort to compete for and receiving funding from the Congressionally Directed Medical Research Program, administered by the Department of Defense, to study shared decision making in Vascularized Composite Transplantation. Dr. Jowsey-Gregoire and her research team are completing their study utilizing qualitative research methods and research on patient-physician communication to develop a shared decision-making prototype for individuals interested in hand or face transplantation.

KEY RECENT PUBLICATIONS

Fipps DC, Nguyen T, Meyer R, Smith B, Roden R, Clark M, Watt K, Jowsey S (2024). The Frequency and Impact of Adverse Childhood Experiences on Mood, Alcohol Relapse, and Outcomes in Liver Transplantation: A Retrospective Cohort Study. *Journal of the Academy of Consultation Liaison Psychiatry*.

Fipps, D. C., Meyer, R., Woods, J., Watt, K., Schneekloth, T., Gifford, J., & Kolla, B. P. (2023). Clinical Utility and Impact of Phosphatidylethanol Testing in Liver Transplantation Evaluations. *Journal of the Academy of Consultation-Liaison Psychiatry*, 65(2), 157–166. <https://doi.org/10.1016/j.jaclp.2023.11.683>.

Kukla A, Sahi S, Navratil P, Benzo R, Smith B, Duffy D, Park W, Shah M, Sha P, Clark M, Fipps D.C., Denic A, Schinstock C, Dean P, Stegall M, Kudva Y, Diwan T (2024). Weight Loss Surgery Increases Kidney Transplantation Rates in Patients with Renal Failure and Obesity. *Mayo Clinic Proceedings*. <https://doi.org/10.1016/j.mayocp.2024.01.017>.

LEADERSHIP ROLE

Sheila Jowsey-Gregoire, M.D.
-Member of Chauvet Steering Committee for the Chauvet Workgroup, International Society of Vascularized Composite Allotransplantation

Integrated Behavioral Health



INVESTIGATORS

Scott A. Breiting, M.D., RoxAnne M Brennan, M.A.N., R.N., Megan Cassidy, Ph.D., L.P., Ramona S. DeJesus, M.D., Cesar A. Gonzalez, Ph.D., L.P., William B. Leasure, M.D., Jocelyn R. Lebow, Ph.D., L.P., Brian A. Lynch, M.D., Angela B. Mattson, D.N.P., R.N., N.E.-B.C., Gabrielle J. Melin, M.D., Eric R. Pease, M.D., Anne I. Roche, Ph.D., L.P., Thomas G. Salter, M.D., Samuel T. Savitz, Ph.D., Craig N. Sawchuk, Ph.D., L.P., Kileen T. Smyth, L.I.C.S.W., M.S.W., Kristin S. Vickers, Ph.D., L.P., & Mark D. Williams, M.D.
(Mayo Clinic Rochester)

Nathaniel J. Lombardi, Ph.D., L.P., & Sarah Trane, Ph.D.
(Mayo Clinic Health System Midwest)

The interface between primary care and behavioral health is a rich environment for research. This multidisciplinary team specializes in investigating and implementing evidence-based quality improvement and research projects designed to improve patient outcomes in the primary care setting. Ongoing projects are utilizing large-scale clinical databases of patients enrolled in care coordination to improve mental health outcomes for adult and adolescent depression. The adult database, for example, has been helpful in creating a machine learning algorithm to identify those in the care coordination eligibility list at highest risk of emergency department use. Efforts are underway to add patients with bipolar and addiction to care coordination for adult depression.

A core mission for our division is to improve access to evidence-based psychotherapy interventions in primary care. Our team has been adapting and testing new ways of delivering both individual and group-based cognitive behavioral therapy (CBT) in primary care, including virtual delivery. We have developed a psychotherapy tracking database that has demonstrated the effectiveness of CBT in reducing symptoms of anxiety and depression in adult primary care patients. We are also using this database to evaluate outcomes among child and adolescent populations. We are currently investigating the impact of single-session interventions on reducing wait times, enhancing clinical outcomes, and improving patient satisfaction, as well as in preventing the onset of mental health concerns in adolescents. Additionally, we are studying predictors of response to primary care CBT.

For child and adolescent patients with restrictive eating disorders, we have worked with pediatric and nursing collaborators to develop an innovative, new treatment model in which evidence-based Family Based Treatment interventions are delivered entirely by primary care providers, with regular case consultation from IBH psychologists. This model was designed to address the numerous treatment-access barriers that characterize the field of child and adolescent eating disorder treatment. We have established proof-of-concept and feasibility of the model and are currently evaluating the outcomes of a clinical sample who have received the intervention. In addition, dissemination work is underway in which we have partnered with teams from a range of academic and for-profit institutions to implement and evaluate the model in their settings.

We have started several feasibility studies including the use of passive and active data collection through patient mobile phones with the mindLAMP app developed by colleagues at Beth Israel Deaconess Medical Center. This research seeks to define digital phenotypes and/or predictive risk markers for symptoms of bipolar disorder and major depression. Additionally, we have sought to transform Mayo Clinic's 2030 vision into practice with the initial design and ongoing development of digital interfaces to screen and proactively engage patients with care. In 2022, we have begun participating in a multi-site trial with investigators at the University of Washington to clarify which bipolar measures are most accepted and effective in the primary care setting. We continue to explore opportunities to apply Care Coordination models to new patient populations and to reach more patients through expansion of telemedicine as a key component of delivering care. In 2023 and 2024, we have begun designing and testing the tools and workflows of implementation of screening and management of bipolar and substance use disorders as a part of care coordination, aiming at fall of 2024 for initial enrollment. As a part of these efforts, innovations include more proactive ways of addressing obesity in patients with mood disorders, the use of a Mayo designed app for the management of addiction, and an ECHO model with mood specialists to work towards fidelity in the use of the latest evidence-based-guidelines for the treatment of bipolar disorder.

GRANTS

National Institute of Mental Health (MH 125935): Bipolar Measures in Clinical Care. Multisite study. 03/2022-02/2025. Site Principal Investigator: William Leasure

National Institute of Mental Health (MH 109190): Low-Cost, Virtual Reality System to Increase Access to Exposure Therapy for Anxiety and Obsessive-Compulsive Disorders. Funded by National Institute of Mental Health. (MH 109190) 12/2018 - 07/2023. Principal Investigator: Bridget Biggs Co-Investigator: Kristin Vickers

National Institute of Mental Health (R34 Planning Grant): Evaluating the feasibility of a primary care-based treatment for restrictive eating disorders in children and adolescents. 05/2023-04/2026. Principal Investigator: Jocelyn Lebow

KEY RECENT PUBLICATIONS

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Zolnoori M, Williams MD, Angstman KB, Patel S, Ngufor C, Wi C, Leasure WB. Emergency Department Risk Model: Timely Identification of Patients for Outpatient Care Coordination Model *The American Journal of Managed Care*. 2024.

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LGBTQ+

INVESTIGATORS

Leo E. Candelario Perez, Ph.D., L.P., Fí D. Fonseca M.B., B.Ch., B.A.O., M.S., Cesar A. Gonzalez, Ph.D., L.P., M.S.C.P., A.B.P.P., Eleshia J. Morrison, Ph.D., L.P., A.B.P.P., Jennifer A. Vencill, Ph.D., L.P., A.B.P.P., C.S.T., & Karen E. Weiss, Ph.D., L.P. (Mayo Clinic, Rochester, MN)



The LGBTQ+ Research and Advisory Group is dedicated to advancing the health, well-being, and equity of populations marginalized on the basis of sexual orientation, and gender identity/expression. Our work integrates content expertise and research methodologies with advisory resources to support both developing and established clinician-scientists and scholars in addressing complex health challenges faced by LGBTQ+ individuals.

LGBTQ+ Health Through Transdisciplinary Collaboration

Through our transdisciplinary approach, we synthesize perspectives from medicine, psychology, sociology, public health, and diversity science. We aim to disaggregate the traditional biopsychosocial model to understand the intricate complexities within biological, medical, psychological, sociocultural, and structural determinants as they relate to LGBTQ+ health.

We address complex health disparities through innovative, boundary-spanning methods to:

- Develop New Ways of Thinking:** Generate novel conceptual frameworks incorporating biological, psychological, social, and structural determinants of LGBTQ+ health.
- Create Practical Solutions:** Develop comprehensive interventions addressing root causes of health disparities, including minority stress, stigma, and systemic barriers to care.
- Provide Insights:** Advance the understanding of intersectionality in health outcomes to better serve LGBTQ+ populations and address disparities.
- Promote Intersectionality:** Examine how multiple identities and social positions influence health outcomes.
- Bridge Research and Practice:** Create knowledge translation strategies to improve real-world outcomes for LGBTQ+ individuals.
- Address Health Inequities:** Develop interventions targeting root causes of disparities.

GRANTS

MDH Family Medicine Residency Grant Program. Funded by Minnesota Department of Health. 06/2021 – 06/2024. Co-PI: Matthew Meunier

Barriers to Providing Queer-Affirming Health Care in the Emergency Department. Funded by the Transgender and Intersex Specialty Care Clinic, Mayo Clinic. 02/2024 – 02/2025. Co-PI: Candelario Perez

Surviving and Thriving: Protective Factors and Health Outcomes for Bi+ Adults from Diverse Racial and Gender Communities. Funded by GLMA's Lesbian Health Fund. 08/2022 – 10/2024. Co-PI: Vencill

The Flourish Study: Delivery of An App-Based Behavioral Management Intervention for Transgender Adult Patients With Chronic Pain. Funded by the Transgender and Intersex Specialty Care Clinic, Mayo Clinic. 02/2024 – 02/2025. PI: Morrison

Validating a Standardized Measure of Premenstrual Symptoms among Transgender Men and Gender-Diverse Adults: A Preliminary Study. Funded by the Department of Psychiatry and Psychology, Mayo Clinic. PI: Fonseca; Co-PI: Gonzalez, Vencill.

KEY RECENT PUBLICATIONS

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Gustavo A. Cortes-Puentes, Thomas G. Allison, Caroline J. Davidge-Pitts, Cesar A. Gonzalez, Amanda R. Bonikowske, Kaiser G. Lim, Cassie C. Kennedy. Cardiopulmonary Exercise Testing in Transgender and Gender-Diverse Patients: The Influence of Sex and Gender on Predicted Aerobic Capacity CHEST Pulmonary. 2024.

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Jahan N, Cathcart-Rake E, Vierkant RA, Larson N, Loprinzi C, O'Sullivan CC, Faubion S, Kuhle C, Vencill JA, Couch F, Olson JE, Ruddy KJ. Sexual Dysfunction in Patients With Metastatic Breast Cancer. *Clin Breast Cancer*. 2024 Jan; 24 (1):72-78.e4 Epub 2023 Oct 01 PMID: 37867114 DOI: 10.1016/j.clbc.2023.09.018.

Parikh N, Aro-Lambo M, Vencill JA, Collins CS, Helo S, Kohler T, Ziegelmann M. Perceived influence of medical school sexual health education on specialty selection in young urologists specializing in sexual dysfunction. *Transl Androl Urol*. 2023 Jul 31; 12 (7):1071-1078 Epub 2023 July 03 PMID: 37554536 PMCID: PMC10406534 DOI: 10.21037/tau-22-793.

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Sobel T, Derakshani D, Vencill JA. Menopause experiences in sexual minority women and non-binary people. *Maturitas*. 2024 Jul; 185:108007 Epub 2024 Apr 24 PMID: 38677174 DOI: 10.1016/j.maturitas.2024.108007.

Strand N, Gomez DA, Kacel EL, Morrison EJ, St Amand CM, Vencill JA, Pagan-Rosado R, Lorenzo A, Gonzalez C, Mariano ER, Reece-Nguyen T, Narouze S, Mahdi L, Chadwick AL, Kraus M, Bechtel A, Kling JM. Concepts and Approaches in the Management of Transgender and Gender-Diverse Patients. *Mayo Clin Proc*. 2024 Jul; 99(7):1114-1126 PMID: 38960496 DOI: 10.1016/j.mayocp.2023.12.027.

Weiss, K. E., Li, R., Chen, D., Palermo, T. M., Scheurich, J. A., & Groenewald, C. B. (2024). Sexual orientation/gender identity discrimination and chronic pain in children: A national study. *American Journal of Preventive Medicine*, 67(2), 175-183. <https://doi.org/10.1016/j.amepre.2024.03.010>.

INTERNATIONAL PRESENTATIONS

Dispenza, F., Vencill, J. A., & Nakamura, N. (2024, July). Evolution and impact of revising APA's Guidelines for Psychological Practice with Sexual Minority Persons. Presented at the International Congress of Psychology, Prague, Czech Republic

Vencill, J. A., & Rider, G. N., (2023, November). Health and resilience among racially and gender diverse bisexual adults. Presented at the 26th Congress of the World Association for Sexual Health, Antalya, Turkey.

NATIONAL PRESENTATIONS

Gonzalez, C. A., Perez, L. C., Schofield, K., & St. Amand, C. (2024, August 10). Diagnostic and psychopharmacological considerations in the care of trans and gender diverse people. In APA 2024 Convention. Society for Prescribing Psychology. Seattle, WA.

Sobel, T., Faubion, S., Vencill, J. A., & Kling, J. M. (2023, September). Associations of sexual function and sexual orientation in cisgender women. Presented at the annual meeting of the North American Menopause Society, Philadelphia, PA.

LEADERSHIP ROLES

Cesar A. Gonzalez, PhD, LP, MSCP, ABPP
- CME Course Co-Director, "Principles in Care of Transgender and Intersex Patients"
- Editorial Board Member, *International Journal of Transgender Health*

Jennifer A. Vencill, PhD, LP, ABPP, CST
- Editorial Board Member, *International Journal of Sexual Health*
- Editorial Board Member, *Psychology of Sexual Orientation & Gender Diversity*
- Treasurer, Division 44 (Society for the Psychology of Sexual Orientation & Gender Diversity), American Psychological Association

Paul E. Croarkin, D.O., M.S.

Dr. Croarkin's research focuses on novel diagnostics and therapeutics for children, adolescents, adults, and families. This includes research efforts with artificial intelligence, wearable devices, novel computational approaches, and brain stimulation modalities. This work has been funded by a number of foundation, industry, and federal grants. Work conducted by Dr. Croarkin's team provided a foundation for the 2024 FDA clearance of transcranial magnetic stimulation treatments for adolescents. He is fortunate to work with many diverse, external and Mayo Clinic collaborators spanning psychosocial, clinical psychiatry, neurostimulation, developmental neuroscience, ethics, basic science, physics, and engineering expertise.

SELECTED GRANTS

Funded by UMN-Mayo Partnership for Biotechnology and Medical Genomics (P010969401) Minnesota Precision Neuromodulation Program. 05/2023-04/2025. Co-PI: Paul Croarkin, D.O., M.S.

Funded by National Institute of Mental Health. R01 MH 124655: A Randomized Controlled Trial of Sequential Bilateral Accelerated Theta Burst Stimulation in Adolescents with Suicidal Ideation Associated with Major Depressive Disorder. 09/2020-08/2024. PI: Paul Croarkin, D.O., M.S.

Funded by National Institute of Nursing Research. R01 NR 20362: SCH: Wearable Augmented Prediction of Burnout in Nurses: A Synergy of Engineering, Bioethics, Nursing and Wellness Sciences. 04/2022-01/2026. Co-PI: Paul Croarkin, D.O., M.S. and Arjun Athreya, Ph.D., M.S.

AWARDS

Top Reviewer for Neuropsychopharmacology - American College of Neuropsychopharmacology 2023

KEY RECENT PUBLICATIONS

Aaronson ST, Goldwaser EL, Croarkin PE, Geske JR, LeMahieu A, Sklar JH, Kung S. A Pilot Study of High-Frequency Transcranial Magnetic Stimulation for Bipolar Depression. *J Clin Psychiatry*. 2024 May 20; 85 (2) PMID: 38780536 DOI: 10.4088/JCP.23m15056.

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Dhami P, Moreno S, Croarkin PE, Blumberger DM, Daskalakis ZJ, Farzan F. Baseline markers of cortical excitation and inhibition predict response to theta burst stimulation treatment for youth depression. *Sci Rep*. 2023 Nov 4; 13 (1):19115 Epub 2023 Nov 04 PMID: 37925557 PMCID: 10625527 DOI: 10.1038/s41598-023-45107-1.



Doruk Camsari D, Lewis CP, Sonmez AI, Ozger C, Fatih P, Yuruk D, Shekunov J, Vande Voort JL, Croarkin PE. Event-Related Potential Markers of Suicidality in Adolescents. *Int J Neuropsychopharmacol*. 2023 Aug 29; 26 (8):566-575 PMID: 37422891 PMCID: PMC10464930 DOI: 10.1093/ijnp/pyad039.

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Taylor JJ, Palm ST, Cohen AL, Croarkin PE, Drew W, Fox MD, Siddiqi S. Brain Circuits Involved in Transcranial Magnetic Stimulation Response in Adults Are Connected to a Similar Prefrontal Target in Children. *Biol Psychiatry* 2024 Mar 1; 95 (5):e9-e11 Epub 2023 Oct 24 PMID:37877924 DOI:10.1016/j.biopsych.2023.08.019.

Thai M, Nair AU, Klimes-Dougan B, Albott CS, Silamongkol T, Corkrum M, Hill D, Roemer JW, Lewis CP, Croarkin PE, Lim KO, Widge AS, Nahas Z, Eberly LE, Cullen KR. Deep transcranial magnetic stimulation for adolescents with treatment-resistant depression: A preliminary dose-finding study exploring safety and clinical effectiveness. *J Affect Disord*. 2024 Jun 1; 354:589-600 Epub 2024 Mar 12 PMID: 38484878 PMCID: 11163675 DOI: 10.1016/j.jad.2024.03.061.

Yuruk D, Ozger C, Garzon JF, Nakonezny PA, Vande Voort JL, Croarkin PE. A retrospective, naturalistic study of deep brain stimulation and vagal nerve stimulation in young patients. *Brain Behav*. 2024 Mar; 14 (3):e3452 PMID: 38468454 PMCID: 10928335 DOI: 10.1002/brb3.3452.

LEADERSHIP ROLES

- Standing Study Section Member, National Institute of Health, Child Psychopathology and Developmental Disabilities
- Editor-in-Chief, *Journal of Child and Adolescent Psychopharmacology* Ervin A. and Margaret C. Mueller Director-Mayo Clinic Children's Research Center, Mayo Clinic, Rochester, Minnesota
- Associate Chair for Pediatric Research, Mayo Clinic Children's Center/Department of Pediatrics and Adolescent Medicine



Jeffrey P. Staab, M.D., M.S.

Dr. Staab is Professor of Psychiatry and Consultant in the Departments of Psychiatry and Psychology and Otorhinolaryngology – Head and Neck Surgery. His research centers on problems at the interface of neurology, otology, and psychiatry. He chaired the Behavioral Subcommittee of the Barany Society (the international neuro-otology research society) that defined the functional neuro-otologic disorder of persistent postural-perceptual dizziness, which is now recognized as the most common cause of chronic dizziness throughout the world. He continues to investigate potential pathophysiologic mechanisms and treatments for this disorder. Dr. Staab recently extended his work to patients with vestibular and balance symptoms after mild traumatic brain injuries and to individuals with other subtypes of functional neurological disorder.

GRANTS

U.S. Army Medical Research Acquisition Activity. FP00097062: Advancing Rehabilitation: Physiological, Psychological, and Neuroimaging Measures of Factors That Predispose, Promote, and Perpetuate Post-Traumatic Dizziness. 09/2018–09/2024. PI: Jeffrey Staab, M.D., M.S.

Novel Tinnitus Implant System for the Treatment of Chronic Severe Tinnitus: An Early Feasibility Study. Funded by Department of Defense. 09/2019–09/2024. Other Significant Contributor: Jeffrey Staab, M.D., M.S.

Sleep Number. FP00118449: Evaluation of Voice Analysis Technology in Detecting and Managing Depression and Anxiety in Patients Undergoing Cardiac Rehabilitation. 06/2022–05/2024. PI: Amir Lerman, M.D., Co-Investigator: Jeffrey Staab, M.D., M.S.

KEY RECENT PUBLICATIONS

Callister MN, Klanderman MC, Boddu SP, Moutvic MA, Geissler EN, Traver KJ, Staab JP, Hassan A. Outpatient Motor Retraining for Functional Movement Disorder: Predictors of a Favorable Short-Term Response. *Mov Disord Clin Pract*. 2023 Sep; 10 (9):1377-1387 Epub 2023 Aug 04 PMID: 37772308 PMCID: PMC10525056 DOI: 10.1002/mdc3.13844.

Dunlap PM, Alradady FA, Costa CM, Delitto A, Terhorst L, Sparto PJ, Furman JM, Marchetti GF, Staab JP, Chueh J, Whitney SL. The Psychometric Properties of the 9-Item Vestibular Activities Avoidance Instrument. *Phys Ther*. 2023 Dec 6; 103 (12) PMID: 37459243 DOI: 10.1093/ptj/pzad094.

Duque L, Garza I, Cascino GD, Staab JP. Functional neurological seizures and migraine: A systematic review and case series. *Epilepsy Behav*. 2023 Oct; 147:109437 Epub 2023 Sept 15 PMID: 37717461 DOI: 10.1016/j.yebeh.2023.109437.

Eggers SDZ, Staab JP. Vestibular migraine and persistent postural perceptual dizziness. *Handb Clin Neurol*. 2024; 199:389-411 PMID: 38307659 DOI: 10.1016/B978-0-12-823357-3.00028-8.

Ehlers SL, Gudenkauf LM, Kacel EL, Hanna SM, Sinicrope PS, Patten CA, Morrison EL, Snuggerud J, Bevis D, Kirsch JL, Staab JP, Price KAR, Wahner-Hendrickson AE, Ruddy KJ. Real-World Implementation of Best-Evidence Cancer Distress Management: Truly Comprehensive Cancer Care. *J Natl Compr Canc Netw*. 2023 Jun; 21 (6):627-635 PMID: 37308123 DOI: 10.6004/jnccn.2023.7009.

Gentry MT, Somers K, Hendricks J, Staab JP. A Multi-aim Redesign of the Residency Training Experience in Outpatient Psychiatry. *Acad Psychiatry*. 2024 Oct; 48 (5):436-440 Epub 2024 Mar 19 PMID: 38504055 DOI: 10.1007/s40596-024-01951-5.

Liou H, Gentry MT, Leung JG, Mara KC, Staab JP, Rummans TA. Trends in Stimulant and Sedative/Hypnotic Dispensing: An Exploratory Study. *J Atten Disord*. 2023 Nov; 27 (13):1512-1519 Epub 2023 July 27 PMID: 37496458 DOI: 10.1177/10870547231187167

Park JH, Sarwar S, Hassett LC, Staab JP, Fipps DC. Clinical Characterization, Course, and Treatment of Othello Syndrome: A Case Series and Systematic Review of the Literature. *J Acad Consult Liaison Psychiatry*. 2024 Jan-Feb; 65 (1):89-105 Epub 2023 Oct 11 PMID: 37832650 DOI: 10.1016/j.jaclp.2023.09.006.

Quimby AE, Brant JA, Staab JP, Ruckenstein MJ. Development and Initial Validation of a Meniere's Disease Quality of Life Instrument: The MenQOL. *Laryngoscope*. 2024 Oct; 134 (10):4351-4357 Epub 2024 Apr 30 PMID: 38689521 DOI: 10.1002/lary.31478.

Romero-Brufau S, Macielak RJ, Staab JP, Eggers SDZ, Driscoll CLW, Shepard NT, Totten DJ, Albertson SM, Pasupathy KS, McCaslin DL. Development of an Automated Triage System for Longstanding Dizzy Patients Using Artificial Intelligence. *OTO Open*. 2024 Jul-Sep; 8 (3):e70006 Epub 2024 Sept 27 PMID: 39345332 PMCID: PMC11427795 DOI: 10.1002/oto2.70006.

Shah M, Staab J, Anderson A, Eggers SD, Lohse C, McCaslin DL. Outcomes and Patient Experience in Individuals With Longstanding Dizziness. *Am J Audiol*. 2023 Nov; 32(3S):721-729. Epub 2023 Apr 20. PMID: 37079889 DOI: 10.1044/2023_AJA-22-00152.

Staab JP. Persistent Postural-Perceptual Dizziness: Review and Update on Key Mechanisms of the Most Common Functional Neuro-otologic Disorder. *Neurol Clin*. 2023 Nov; 41 (4):647-664 Epub 2023 June 01 PMID: 37775196 DOI: 10.1016/j.ncl.2023.04.003.

Trinidad A, Cabreira V, Goebel JA, Staab JP, Kaski D, Stone J. Predictors of persistent postural-perceptual dizziness (PPPD) and similar forms of chronic dizziness precipitated by peripheral vestibular disorders: a systematic review. *J Neurol Neurosurg Psychiatry*. 2023 Nov; 94 (11):904-915 Epub 2023 Mar 20 PMID: 36941047 DOI: 10.1136/jnnp-2022-330196.

Varma R, Staab JP, Matey ET, Wright JA, Deb B, Lazaridis KN, Szarka LA, Bailey KR, Bharucha AE. Most patients with disorders of gut-brain interaction receive pharmacotherapy with major or moderate drug-gene interactions. *Neurogastroenterol Motil*. 2024 Feb; 36 (2):e14722 Epub 2023 Dec 10 PMID: 38072827 DOI: 10.1111/nmo.14722.

Ming-Fen Ho, Ph.D.

Dr. Ho's research program, supported by NIH funding, is centered around the utilization of multi-omics to identify biomarkers that are associated with individual variation in response to drugs used to treat substance use disorders, and to determine the underlying molecular mechanism(s). It should be emphasized that Dr. Ho's Addiction Research Team has created a unique environment, collaborative infrastructure, and strong leadership to make those studies possible and successful.



GRANTS

Funded by NIH/NIAAA. (K01 AAA28050-5) Acamprosate Pharmacogenomics: iPSC Based Model of Alcohol Use Disorder. 09/2019-11/2024. PI: Ming-Fen Ho, Ph.D.

Funded by NIH/NIDA (R01 DA57928-2) Single Cell Multi-Omics of iPSC-Derived Brain Organoids From Patients With Opioid Use Disorder: Synthetic Opioids as Molecular Probes. 07/2023-05/2028. PI: Ming-Fen Ho, Ph.D.

Funded by Mayo Center for Individualized Medicine Pharmacogenomics Program. Generation of Induced Pluripotent Stem Cells For Use in Neuropsychiatric Research. 10/2023-09/2028. MPI: Ming-Fen Ho, Ph.D./Richard Weinshilboum, M.D.

Funded by Brain & Behavior Research Foundation. (31329) Precision Medicine and Acamprosate Treatment Response in Patients with Alcohol Use Disorder: A Multi Omics Study. 01/2024-01/2026. PI: Ming-Fen Ho, Ph.D.

AWARDS

NARSAD Young Investigator Award, Brain & Behavior Research Foundation. Awarded project: Precision Medicine and Acamprosate Treatment Response in Patients with Alcohol Use Disorder: A Multi-omics Study.

KEY RECENT PUBLICATIONS

Gao H, Wei L, Indulkar S, Nguyen TTL, Liu D, Ho MF, Zhang C, Li H, Weinshilboum RM, Ingle JN, Wang L. Androgen receptor-mediated pharmacogenomic expression quantitative trait loci: implications for breast cancer response to AR-targeting therapy. *Breast Cancer Res.* 2024 Jul 4; 26 (1):111 Epub 2024 July 04 PMID: 38965614 PMCID: 11225427 DOI: 10.1186/s13058-024-01861-2

Ho, M.-F., Zhang, C., Moon, I., et al. (2023). Epigenetic regulation of GABA catabolism in iPSC-derived neurons: the molecular links between FGF21 and histone methylation. *Molecular Metabolism*, 101798. doi:10.1016/j.molmet.2023.101798

Ho MF, Zhang C, Moon I, Zhu X, Coombes BJ, Biernacka J, Skime M, Oesterle TS, Karpyak VM, Schmidt K, Gliske K, Ngo Q, Skillon C, Seppala MD, Li H, Weinshilboum RM. Single cell transcriptomics reveals distinct transcriptional responses to oxycodone and buprenorphine by iPSC-derived brain organoids from patients with opioid use disorder. *Mol Psychiatry*. 2022 Oct 27 [Epub ahead of print] PMID: 36302966 PMCID: 10588459 DOI: 10.1038/s41380-022-01837-8

Ho, M.-F., Zhang, C., Cohan, J. S., et al. (2024). IL17RB genetic variants are associated with acamprosate treatment response in patients with alcohol use disorder: A proteomics-informed genomics study. *Brain, Behavior, and Immunity*, 120, 304-314. doi:https://doi.org/10.1016/j.bbi.2024.06.007

Ho, M.-F., Zhang, C., Moon, I., et al. (2024). Molecular mechanisms involved in alcohol craving, IRF3, and endoplasmic reticulum stress: a multi-omics study. *Translational Psychiatry*, 14(1), 165. doi:10.1038/s41398-024-02880-5

Karpyak VM, Coombes BJ, Geske JR, Pazdernik VM, Schneekloth T, Kolla BP, Oesterle T, Loukianova LL, Skime MK, Ho AM, Ngo Q, Skillon C, Ho MF, Weinshilboum R, Biernacka JM. Corrigendum to "Genetic predisposition to major depressive disorder differentially impacts alcohol consumption and high-risk drinking situations in men and women with alcohol use disorder" [*Drug Alcohol Depend.* 243 (2023) 109753]. *Drug Alcohol Depend.* 2023 Sep 1; 250:110888 Epub 2023 July 11 PMID: 37438244 PMCID: 10530382 DOI: 10.1016/j.drugalcdep.2023.110888

Karpyak, V. M., Coombes, B. J., Geske, J. R., et al. (2023). Genetic predisposition to major depressive disorder differentially impacts alcohol consumption and high-risk drinking situations in men and women with alcohol use disorder. *Drug Alcohol Depend.* 243, 109753. doi:10.1016/j.drugalcdep.2022.109753

Zhang L, Sarangi V, Liu D, Ho MF, Grassi AR, Wei L, Moon I, Vierkant RA, Larson NB, Lazaridis KN, Athreya AP, Wang L, Weinshilboum R. ACE2 and TMPRSS2 SARS-CoV-2 infectivity genes: deep mutational scanning and characterization of missense variants. *Hum Mol Genet.* 2022 Dec 16; 31 (24):4183-4192 PMID: 35861636 PMCID: 9759330 DOI: 10.1093/hmg/ddac157

LEADERSHIP ROLES

Internal

- Member: The Center for Clinical and Translational Science's (CCaTS) Pilot Award Review Committee. 01/30/2024-01/30/2027

External

- ASCP Early Career Committee member: 06/01/2022-06/01/2026
- Associate Member, American College of Neuropsychopharmacology.



Victor M. Karpyak, M.D., Ph.D.

Dr. Karpyak is a Professor of Psychiatry and Associate Professor of Pharmacology who is board certified in General Psychiatry and Addiction Psychiatry and holds positions of consultant and clinician investigator in the Department of Psychiatry and Psychology at Mayo Clinic Rochester, Minnesota. His research focuses on developing novel, biomarker-based, personalized approaches to diagnosis and treatment of alcohol use disorders. He has a long track record of successful partnership with the clinicians, statistical geneticists and basic researchers within Mayo Clinic as well as in the United States and internationally who share interest in his area of research. Dr. Karpyak has conducted several large-scale clinical trials investigating the role of genomic, metabolomics, and other biomarkers in alcoholism treatment response. His most current funding from the National Institute of Alcoholism and Alcohol Abuse (NIAAA) is aimed to discover genomic, metabolomics, and mRNA expression patterns associated with treatment response to acamprosate and placebo in adults with alcohol use disorder. Dr. Karpyak is also funded by NIAAA to investigate the role of sex-related hormone levels in the risk of developing alcohol use disorders and related phenotypes in men and women. Dr. Karpyak serves a research leader in the Division of Addiction, Department of Psychiatry and Psychology, and is a mentor to numerous trainees and junior faculty in research.

"I was fortunate to have several mentors, including Drs. David Mrazek and John Black. Now that I have a track record of successful research I am mentoring new investigators. Examples of my successful mentorship include Clinician- Investigators Drs. Oesterle, Wu and Bormann as well as Researchers Drs. Ming-Fen Ho and Ada Ho." ~Victor Karpyak, M.D., Ph.D.

GRANTS

National Institute on Alcohol Abuse and Alcoholism. AA30273-01. Genomics of Alcohol Withdrawal and Treatment Response to Benzodiazepines 2023-2027. PI: Victor Karpyak, M.D., Ph.D., Co-PI: Joanna Biernacka, Ph.D.

National Institute on Alcohol Abuse and Alcoholism. IMPACT OF SEX-RELATED HORMONE LEVELS AND GENETIC VARIATION ON ALCOHOL USE DISORDERS AND RELATED PHENOTYPES IN MALES AND FEMALES. Please make lower case so Impact of Sex-related Hormone.... 08/2018– 08/2023. Co-PI: Victor Karpyak, M.D., Ph.D. and Stacey Winham, Ph.D.

KEY RECENT PUBLICATIONS

Bormann NL, Oesterle TS, Arndt S, Karpyak VM, Croarkin PE. Systematic review and meta-analysis: Combining transcranial magnetic stimulation or direct current stimulation with pharmacotherapy for treatment of substance use disorders. *Am J Addict*. 2024 May; 33 (3):269-282 Epub 2024 Jan 25 PMID: 38273429 DOI: 10.1111/ajad.13517

Coombes, B. Oesterle, T. Jennings, M. Fennessy, B. Pazdernik, V. Batzler, A. Frank, J. Karpyak, V. Ruiz, JAS. Ryu, E. Charney, A. Sanchez-Roige, S. Biernacka, J. A multi-prs approach to predicting substance use disorders and associated comorbidities. *European Neuropsychopharmacology*. 2023 Oct; 75(Suppl 1): S9-S10 [Abstract].

Ho MF, et al., "IL17RB genetic variants are associated with acamprosate treatment response in patients with alcohol use disorder: A proteomics-informed genomics study" *Brain behavior and Immunity*, (in revision).

Ho MF, et al. "Molecular mechanisms involved in alcohol craving, IRF3, and endoplasmic reticulum stress: a multi-omics study" *Translational Psychiatry*, March 2024.

Ho MF, et al. "Epigenetic regulation of GABA catabolism in iPSC-derived neurons: The molecular links between FGF21 and histone methylation." *Molecular Metabolomics* 2023 Sep 7:101798. doi: 10.1016/j.molmet.2023.101798. Epub ahead of print. PMID: 37689244.

Ho, Ada Man-Choi, et al. "Associations of sex-related steroid hormones and proteins with alcohol dependence: A United Kingdom Biobank study." *Drug and alcohol dependence* vol. 244 (2023): 109781. doi:10.1016/j.drugalcdep.2023.109781.

Karpyak, Victor M et al. "Genetic predisposition to major depressive disorder differentially impacts alcohol consumption and high-risk drinking situations in men and women with alcohol use disorder." *Drug and alcohol dependence* vol. 243 (2023): 109753. doi:10.1016/j.drugalcdep.2022.109753.

Ozel F, Di Criscio M, Lupu DI, Sarkisyan D, Hlady RA, Robertson KD, Bakalkin G, Liu Y, Biernacka JM, Karpyak VM, Ekstrom TJ, Ruegg J. DNA methylation at DLGAP2 and risk for relapse in alcohol dependence during acamprosate treatment. *Drug Alcohol Depend*. 2024 Mar 1; 256:111116 Epub 2024 Feb 03 PMID: 38364647 DOI: 10.1016/j.drugalcdep.2024.111116

PRESENTATION

Karpyak, Victor, et al., Poster presentation "Sex-related Hormone and Protein Levels in Alcohol Dependent Males and Females in Early Recovery" CINP Tokyo Congress, May 2024.

LEADERSHIP ROLES

Associate Professor of Pharmacology, Mayo Clinic College of Medicine and Science, Rochester, MN 2022 – Present

Professor of Psychiatry, Mayo Clinic College of Medicine, Rochester, MN 2019 – Present

Christi A. Patten, Ph.D.

Dr. Patten serves as MPI of a P50 Center grant from NIMHD called C2DREAM, which focuses on multi-level interventions to address interpersonal and structural racism as fundamental causes of cardiovascular health disparities among BIPOC rural and urban populations in Minnesota. She has substantial expertise in community-based participatory research (CBPR) and long-standing research partnerships among Indigenous populations, including Alaska Native peoples. Dr. Patten's work focuses broadly on developing and evaluating culturally aligned behavioral health promotion interventions and enhancing their reach among diverse populations. She has led as PI or Co-PI several NIH R01-funded grants utilizing large randomized controlled clinical trials of novel behavioral smoking cessation interventions including those leveraging social networks. Much of her work has involved delivering interventions through digital technology-assisted platforms. Currently, Dr. Patten serves as lead of a NIDA CTN-funded project to develop and pilot a social media (Facebook) intervention to support opioid use recovery among American Indian women in Minnesota and PI of an R01 NIDA-funded grant to adapt a mobile phone-based financial incentive smoking cessation intervention for Alaska Native families. She is also site PI of an NCI-R01 funded grant to address equity in lung cancer screening in rural populations.



"I was fortunate to have several mentors, including Drs. Barbara Bruce and Richard Hurt. Now that I have a track record of successful research I am mentoring new investigators. Examples of my successful mentorship include Drs. LaPrincess Brewer and Pravesh Sharma."
~Christi Patten, Ph.D.

GRANTS

Funded by National Institute on Minority Health and Health Disparities. (P50 MD017342-01) Center for Chronic Disease Reduction and Equity Promotion Across Minnesota (C2DREAM). 09/2021-06/2026. Other Significant Contributor: Christi Patten, Ph.D.

Funded by National Institute on Minority Health and Health Disparities. (P50 MD017342-01-S1) Techquity by FAITH!: A cluster randomized controlled trial to assess the efficacy of a community-informed, CV health promotion mobile health intervention with digital health advocate support. 09/2023-06/2026. Co-PI: Christi Patten, Ph.D.

Funded by National Center for Advancing Translational Sciences. (UL1 TR02377-07) Mayo Clinic Center for Clinical and Translational Science (Community and Collaboration - Community Engagement). 07/2022-04/2027. Co-PI and Director: Christi Patten, Ph.D.

Funded by National Institute on Drug Abuse. (R01 DA 56469-02) Alaska Native Family-Based, Financial Incentives Intervention for Smoking Cessation: an RCT. 05/2022-04/2027. PI: Christi Patten, Ph.D.

Funded by National Institute on Drug Abuse. (DA 40316-08) NorthStar Node of the Clinical Trials Network: Facebook intervention for preventing opioid relapse among American Indian Women. 04/2021-02/2025. PI and Project Lead: Christi Patten, Ph.D.

Funded by National Cancer Institute. (CA269832-01) Promoting Equity of Cancer Screening and Follow-up for Lung Cancer. 06/2023-05/2028. Mayo Site PI: Christi Patten, Ph.D.

Funded by National Institute of General Medical Sciences. (1 S06 GM142122-03) Nicotine Metabolism-Informed Pharmacological Treatment for Alaska Native Smokers. 09/2021-07/2025. Project Co-Lead: Christi Patten, Ph.D.

Funded by National Heart, Lung, and Blood Institute. (R01 HL 160619-02) Disrupted Sleep in Somali Americans – Implications for Hypertension Risk. 06/2022-05/2026. Co-PI: Christi Patten, Ph.D.

Funded by Administration for Community Living. (90DPTB0031-01-00) Mayo Clinic Traumatic Brain Injury Model System. 09/2022-08/2027. Co-PI: Christi Patten, Ph.D.

KEY PUBLICATIONS

Roche AI, Young A, Sabaque C, Kelpin SS, Sinicrope P, Pham C, Marsch LA, Campbell ANC, Venner K, Baker-DeKrey L, Wyatt T, WhiteHawk S, Nord T, Resnicow K, Young C, Brown A, Bart G, Patten C.

Wiidookaage'win: Beta-test of a Facebook group intervention for Native women to support opioid use recovery. J Subst Use Addict Treat. 2024 May 15;163:209396. doi: 10.1016/j.josat.2024.209396. Epub ahead of print. PMID: 38759734.

Sharma P, Tranby B, Kamath C, Brockman T, Roche A, Hammond C, Brewer L, Sinicrope P, Lenhart N, Quade B, Abuan N, Halom M, Staples J, Patten CA. Faith-Based Facebook Intervention for Smoking Cessation in Rural Communities (FAITH-CORE): Protocol for a Community Participatory Development Study. JMIR Res Protoc 2023;12:e52398. DOI: 10.2196/52398

Young A, Sinicrope P, Kelpin S...Patten CA. Wiidookaage'Win: A Community-Based Qualitative Approach to Developing a Facebook Group Intervention for Native Women to Support Recovery from Opioid Use. American Journal of Health Promotion. 2024;38(2):205-218.

LEADERSHIP ROLES

Director of our NIH-funded CTSA Rural Health Core and coordinate our Midwest rural community advisory board.



Laura Suarez Pardo, M.D.

Dr. Suarez Pardo is an Assistant Professor of Psychiatry, board-certified in both general and consultation-liaison psychiatry. Her clinical practice primarily focuses on treating patients with concurrent medical and psychiatric conditions, especially those related to cardiovascular disease (CVD). Her research is centered on psychocardiology, exploring the interplay between mental health and cardiovascular health. She began her research career at the Cardiac Psychiatry Research Program at Massachusetts General Hospital, contributing to studies on depression, anxiety, and psychological constructs like optimism within cardiovascular contexts. These studies also assessed the efficacy of collaborative care models and psychological interventions including positive psychology in managing mental illnesses and enhancing cardiovascular health recovery.

In recent years, Dr. Suarez Pardo has dedicated her efforts to better understand the roles and impacts of psychiatric comorbidities and psychological distress in individuals with CVD. Her qualitative study on heart failure patients helped identify significant knowledge gaps in Psychocardiology, particularly concerning the predominance of non-Hispanic white, male study participants, highlighting the need for research on minoritized populations. Driven by her cultural background and identity, she has a keen interest in the experiences of Latinx/Hispanic women. This focus led her to secure a pilot grant from the Center for Chronic Disease Reduction and Equity Promotion Across Minnesota (C2DREAM), supported by the National Institute for Minority Health and Health Disparities (NIMHD). This grant allows her to investigate the effects of discrimination,

acculturation, and familism on cardiac psychological distress in Latinx women with cardiovascular conditions and risk factors. This work is supported by her department through mentorship and allocated research time.

Additionally, Dr. Suarez Pardo is engaged in other funded research exploring how psychiatric disorders affect the progression and recovery of CVD. She is also actively involved in Community-Based Participatory Research with the Rochester Healthy Community Partnerships (RHCP), focusing on developing stress management interventions for Somali and Latinx communities. Dr. Suarez Pardo's research and clinical work is focused on enhancing the understanding of the distinct features of depression, anxiety, and traumatic distress in CVD. Her research aims to develop precise measurements and tailored interventions that take into account gender and cultural differences, ultimately seeking to improve both cardiovascular and mental health outcomes.

GRANTS

Cardiac distress in Latinx/Hispanic women with cardiovascular disease and risk factors: examining its prevalence and the role of discrimination and acculturation experiences. 04/2022–06/2025. Funded by C2DREAM is supported by NIMHD grant P50MD017342. Principal Investigator: Laura Suarez Pardo, MD. Mentors: Jeffrey Staab, MD, and Matthew Clark, PhD.

Developing a Technology-Assisted Intervention to Reduce Stress among Immigrant Women. Rochester Healthy Community Partnership (RHCP). Funded by Mayo Clinic CcaTS. Principal Investigator: Laura Suarez Pardo, MD. Mentors/Co-Investigators: Matthew Clark, PhD, Christi Patten, PhD, Mark Wieland, MD, MPH, and Irene Sia, MD, MS.

Evaluation of Voice Analysis Technology in Detecting and Managing Depression and Anxiety in Patients undergoing Cardiac Rehabilitation. Funded by Mayo Clinic Cardiovascular Research Center. Co-Principal Investigators: Amir Lerman, MD; Virend Somers, MD, PhD; Eric St Louis, MD. Co-Investigators: Laura Suarez Pardo, MD, Jeffrey Staab, MD.

The Weight of Cardiovascular Disease: A Prospective Pilot Study of Obese Adults with Cardiovascular Disease Evaluated in a Novel Cardiometabolic Clinic. 08/2023–08/2024. Investigators: Kyla Lara-Breitinger (Principal Investigator), Francisco Lopez-Jimenez (Co-Investigator), Charanjit Rihal (Co-Investigator), Laura Suarez Pardo (Co-Investigator), Haitham Abu Lebdeh (Co-Investigator). Institutional Funding.

KEY RECENT PUBLICATIONS

Amonoo HL, Khandai AC, Boardman AC, Ernst CL, Fernandez-Robles C, Suarez L, Bradley MV, Forrester AK, Dale C, Lee K, Vaughn R, Mittal L. Annual Meeting Content Analysis: Leveraging Annual Meetings to Promote Diversity, Equity, Inclusion, and Belonging in the Academy of Consultation-Liaison Psychiatry. *J Acad Consult Liaison Psychiatry*. Feb 22 2024;doi:10.1016/j.jaclp.2024.02.003.

Janowski JPB, Suarez L, Allen ND, Sampson SM. A Case Series of 11 Patients with Subacute Serotonin Syndrome. *J Acad Consult Liaison Psychiatry*. Nov 1 2023; doi:10.1016/j.jaclp.2023.10.004.

Tranby BN, Sia IG, Clark MM, Novotny PJ, Lohr AM, Suarez L, Patten CA, Itghete SO, Zeratsky KA, Rieck TM, Molina L, Porraz Capetillo G, Ahmed Y, Drie H, Wieland M. Negative mood is associated with sociobehavioral factors contributing to cardiovascular risk in an immigrant population. *BMC Public Health* 24, 1911 (2024). <https://doi.org/10.1186/s12889-024-19402-z>.

KEY PRESENTATIONS

Poster accepted, My favorite part is to help the community: A longitudinal qualitative analysis of hispanic/Latino and somali immigrant health promoters' experience in a social network intervention. APHA Annual Meeting. Lohr A PhD, October 2024

Poster accepted, Cardioimmunology meeting at the Banz monastery (near Würzburg, Germany): The Occurrence of and Risk Factors for Clinically Significant Depression in Myocarditis Survivors: Results from an Electronic, Cross-sectional Survey. Jean Marrero-Polanco, Laura Suarez Pardo, Candace C. Moose, Arjun P. Athreya, William V. Bobo, Leslie T. Cooper

The Role of Mental Health and Illness in Cardiac Rehabilitation. Prevention and Cardiopulmonary Rehabilitation. May 15-17, 2024 | Cochabamba, Bolivia; English and Spanish.

The Role of Mental Health and Illness in Cardiac Rehabilitation. MNACVPR Spring Conference, April 11-12 2024.

LEADERSHIP ROLES

Member and co-chair of Academy of Consultation-Liaison Psychiatry (ACLP) Hispano-American Special Interest Group.

Jocelyn R. Lebow, Ph.D., L.P., A.B.P.P.

The path to Dr. Lebow's recent NIH funding began with forming a strong mentorship team which included Drs. Leslie Sim and Matthew Clark from Psychology, as well as Dr. Robert Jacobson from Pediatrics and Drs. Sean Phelan and Felicity Enders from the Kern Center. In addition to the guidance from these individuals, she has been fortunate enough to have had strong multidisciplinary collaborations since the start of her career. Support from primary care leadership and stakeholders including Drs. Sarah Crane, Marcie Billings, Angela Mattke, Paige Partain, and David Soma was crucial to my ability to collect needs assessment data around primary care providers' attitudes and barriers in eating disorder care. This data served as the basis for Dr. Lebow's competitive application for the Junior Faculty .20 FTE Research award, focused on creating a primary care-based intervention for adolescent eating disorders. She used this work in her application for the Kern Health Care Delivery Scholar Program. As part of this 3-year program she received training and support in evaluating the feasibility and establishing proof-of-concept for her primary care-based eating disorder intervention, Family-Based Treatment for Primary Care. The next step was to receive NIMH funding to evaluate the intervention through a small clinical trial in the Mayo Clinic Health System. Dr. Lebow believes her research has advanced through the relationships she has made with multidisciplinary researchers and clinicians who have generously provided advice, guidance, and support along the way. More than anything else, Dr. Lebow states, she owes her successes in this area to these partnerships and collaborations. Research is truly a relational endeavor and she has been extremely fortunate in the network of colleagues, co-investigators, and mentors she has been lucky enough to find here at the Mayo Clinic.



GRANTS AND AWARD

Funded by National Institute of Mental Health. (R34 MH 128296) Evaluating the feasibility of a primary care-based treatment for restrictive eating disorders in children and adolescents. 02/2023-01/2026. PI: Jocelyn Lebow, Ph.D., L.P., A.B.P.P.

Funded by Mayo Clinic Department of Psychiatry and Psychology Digital Development Pipeline Initiative: 2023. The Eating Disorder Playbook: a digital platform for primary care providers managing adolescent eating disorders. PI: Jocelyn Lebow, Ph.D., L.P., A.B.P.P.

2024 Mayo Clinic Distinguished Pediatric Investigator Award

KEY RECENT PUBLICATIONS

Lebow, J., Billings, M., Mattke, A., Partain, P., Gewirtz O'Brien, J., Narr, C., Breland, R., Jacobson, R., Loeb, K. & Sim, L. (in press). Does embedding pediatric eating disorder treatment in primary care bridge the access gap? *Eating Disorders: The Journal of Treatment and Prevention*.

Lebow, J., Sim, L., Redmond, S., Billings, M., Mattke, A., Gewirtz O'Brien, J., Partain, P. Narr, C., Breland, R., Soma, D., Schmit, T., Magill, S., Leonard, A., Crane, S., Le Grange, D., Loeb, K., Clark, M., Phelan, S., Jacobson, R., Enders, F., Lyster-Mensh, L. & Leppin, A. (in press). Adapting behavioral treatment for primary care using a theory-based framework: the case of adolescent eating disorders. *Academic Pediatrics*.

Lebow, J., Sim, L., Wonderlich, S. & Peterson, C. (in press). Adapting Integrative Cognitive-Affective Therapy for adolescents with bulimia nervosa: A feasibility study. *European Eating Disorders Review*

Partain, P., Sim, L., Mattke, A., Billings, M., Jacobson, R., Le Grange, D. & Lebow, J. (in press). The role of primary care in bridging adolescents awaiting eating disorder treatment. *Pediatrics*.

Witte, M., Harbeck Weber, C., Lebow, J., LeMahieu, A., Geske, J., Witte, N., Whiteside, S., Loth, K. & Sim, L. (in press). Lifetime prevalence of psychiatric disorders in adolescents with unexplained low weight or appetite. *Journal of Developmental and Behavioral Pediatrics*.



Tyler S. Oesterle, M.D., M.P.H.

Tyler S. Oesterle, M.D., M.P.H., is Co-Chair of the Division of Addiction, Transplant, and Chronic Pain Psychiatry. He is the Medical Director of the Mayo Clinic Intensive Addiction Program (I.A.P.) and Outpatient Addiction Services. As a Kern Center Scholar, Dr. Oesterle researches interventions with real-world value to current patients. He pursues translational research that combines digital and biological data with novel tools to allow optimal substance use disorder (SUD) care where and when needed. He has assisted in developing an app-based research platform called Senyo Health to study the utilization of digital therapeutics and wearable devices for patients with SUD. As the Medical Director of Mayo Clinic's Opioid and Multi-Addictions (OMA) biobank, Dr. Oesterle is pursuing a better understanding of the interplay between genetics, environment, mental health, and SUD. As an Associate Director in Mayo Clinic's neuro-engineering and precision surgery lab, Dr. Oesterle researches the utilization of neuromodulation, like deep brain stimulation, to treat patients with SUD.

"The path to my recent NIH funding began with forming a solid mentorship team, which included Victor M. Karpyak, M.D., Ph.D., Maggie Paul, Ph.D., Richard Weinshilboum, M.D., Ph.D., and Mark Frye, M.D. These mentors each helped with my research goals in unique ways. With their support, I applied for and was awarded a Departmental Small Grant titled *Discovering Digital Biomarkers Linked to Opioid Use Disorder*. This project provided the background information for a Junior Faculty .20 FTE Research award focused on wearable devices and digital therapeutics. With these grants, I was able to gather data that supported successfully receiving a multiyear R18 NIH grant entitled *Connecting Primary Care to Substance Use Disorder Treatment Using a Telehealth Collaborative Care Platform*" ~Tyler Oesterle, M.D., M.P.H.

GRANTS

Mayo Clinic Kern Center for the Science of Health Care Delivery. Connecting Primary Care to Substance Use Disorder Treatment Using a Telehealth Collaborative Care Platform 12/2023-11/2027. PI: Tyler Oesterle, M.D., M.P.H.

Terrance and Bette Noble Foundation. Opiate and Multi-Addictions Biorepository. 06/2020-05/2025. PI: Tyler Oesterle, M.D., M.P.H.

Funded by Agency for Healthcare Research and Quality. (R18 HS 29774) Connecting Primary Care to Substance Use Disorder Treatment Using a Telehealth Collaborative Care Platform. 09/2023-07/2027. PI: Tyler Oesterle, M.D., M.P.H.

Funded by National Institute on Alcohol Abuse and Alcoholism. (U01 AA 27487) Pharmacogenomics of Acamprosate Treatment Outcome. 09/2018-08/2024. Co-PI: Tyler Oesterle, M.D., M.P.H.

Funded by National Institute on Drug Abuse. (R01 DA 57928) Single cell multi-omics of iPSC-derived brain organoids from patients with opioid use disorder: synthetic opioids as molecular probes. 07/2023-05/2028. Co-PI: Tyler Oesterle, M.D., M.P.H.

Funded by Food and Drug Administration. (FD 05938) Yale-Mayo Center for Excellence in Regulatory Science and Innovation (CERSI): RESEARCH. 09/2023-08/2028. Co-PI: Tyler Oesterle, M.D., M.P.H.

KEY RECENT PUBLICATIONS

Bormann NL, Oesterle TS, Arndt S, Karpyak VM, Croarkin PE. Systematic review and meta-analysis: Combining transcranial magnetic stimulation or direct current stimulation with pharmacotherapy for treatment of substance use disorders. *Am J Addict*. 2024 May;33(3):269-282. doi: 10.1111/ajad.13517. Epub 2024 Jan 25. PMID: 38273429.

Fipps DC, Oesterle TS, Kolla BP. Opioid Maintenance Therapy: A Review of Methadone, Buprenorphine, and Naltrexone Treatments for Opioid Use Disorder. *Semin Neurol*. 2024 Jun 7. doi: 10.1055/s-0044-1787571. Epub ahead of print. PMID: 38848746.

Ho MF, Zhang C, Cohan JS, Tuncuturk M, Heider RM, Coombes BJ, Biernacka J, Moon I, Skime M, Ho AM, Ngo Q, Skillon C, Croarkin PE, Oesterle TS, Karpyak VM, Li H, Weinshilboum RM. IL17RB genetic variants are associated with acamprosate treatment response in patients with alcohol use disorder: A proteomics-informed genomics study. *Brain Behav Immun*. 2024 Jun 8;120:304-314. doi: 10.1016/j.bbi.2024.06.007. Epub ahead of print. PMID: 38852760.

Ho MF, Zhang C, Moon I, Biernacka J, Coombes B, Ngo Q, Skillon C, Skime M, Oesterle T, Croarkin PE, Karpyak VM, Li H, Weinshilboum RM. Epigenetic regulation of GABA catabolism in iPSC-derived neurons: The molecular links between FGF21 and histone methylation. *Mol Metab*. 2023 Nov;77:101798. doi: 10.1016/j.molmet.2023.101798. Epub 2023 Sep 7. PMID: 37689244; PMCID: PMC10514449.

Ho MF, Zhang C, Moon I, Tuncuturk M, Coombes BJ, Biernacka J, Skime M, Oesterle TS, Karpyak VM, Li H, Weinshilboum R. Molecular mechanisms involved in alcohol craving, IRF3, and endoplasmic reticulum stress: a multi-omics study. *Transl Psychiatry*. 2024 Mar 26;14(1):165. doi: 10.1038/s41398-024-02880-5. PMID: 38531832; PMCID: PMC10965952.

Lai B, Oesterle T, Kelpin S, Morrison E, Elegbede A, Warner N. Chronic pain and opioid use disorder workshop for medical students: a biopsychosocial and multidisciplinary approach. *Pain Med*. 2024 Apr 3;25(4):306-309. doi: 10.1093/pm/pnad151. PMID: 37951592.

Oesterle TS, Bormann NL, Ochal DA, Arndt S, Breiting SA. Transitioning Virtual-Only Group Therapy for Substance Use Disorder Patients to a Hybrid Model. *Subst Abuse Rehabil*. 2024 Apr 23;15:73-78. doi: 10.2147/SAR.S460024. PMID: 38681859; PMCID: PMC11055515.

Oesterle TS, Hall-Flavin DK, Bormann NL, Loukianova LL, Fipps DC, Breiting SA, Gilliam WP, Wu T, da Costa SC, Arndt S, Karpyak VM. Therapeutic Content of Mobile Phone Applications for Substance Use Disorders: An Umbrella Review. *Mayo Clin Proc Digit Health*. 2024 Jun;2(2):192-206. doi: 10.1016/j.mcpdig.2024.03.004. Epub 2024 Apr 11. PMID: 38983444; PMCID: PMC11232654.

Rojas Cabrera JM, Oesterle TS, Rusheen AE, Goyal A, Scheitler KM, Mandybur I, Blaha CD, Bennet KE, Heien ML, Jang DP, Lee KH, Oh Y, Shin H. Techniques for Measurement of Serotonin: Implications in Neuropsychiatric Disorders and Advances in Absolute Value Recording Methods. *ACS Chem Neurosci*. 2023 Dec 20;14(24):4264-4273. doi: 10.1021/acscchemneuro.3c00618. Epub 2023 Nov 29. PMID: 38019166; PMCID: PMC10739614.

Nikki H. Stricker, Ph.D., L.P., A.B.P.P.

Dr. Stricker is a board-certified clinical neuropsychologist and Associate Professor of Psychology. Her research focuses on identification of early cognitive markers of Alzheimer's disease (AD) and other neurodegenerative disorders. She aims to increase access to cognitive assessment through digital cognitive assessment tools, with an emphasis on self-administered measures that can be completed outside traditional clinic settings (i.e., remotely). Dr. Stricker's team has developed a web-based Mayo Clinic Cognitive Testing Platform, Mayo Test Drive (MTD): Test Development through Rapid Iteration, Validation and Expansion (DRIVE). The MTD platform is optimized for unsupervised self-administration of cognitive measures and is compatible with smartphones, tablets, and personal computers. MTD includes a novel computer adaptive digital word list memory test, the Stricker Learning Span, and a measure of processing speed/executive functioning, the Symbols Test. Dr. Stricker and her collaborators are examining the acceptability and efficiency of MTD across several populations and are investigating the validity of MTD measures across multiple contexts of use by examining (1) cross-sectional diagnostic accuracy (cognitively unimpaired vs mild cognitive impairment; individuals with vs without Alzheimer's disease biomarkers), (2) sensitivity to amyloid-related longitudinal cognitive decline, (3) ability to predict clinical progression over time, and (4) associations of MTD and traditional in-person neuropsychological measures with plasma AD biomarkers. Most participants complete these tests at home. Dr. Stricker's team is working to increase representation of individuals from under-represented groups by adding recruitment at Mayo Clinic in Jacksonville, FL and the University of Mississippi Medical Center in Jackson, MS.



"The path to my recent NIH funding began with following my passion for research that has direct clinical impact and with forming a strong multidisciplinary mentorship team which included Mary Machulda, Ph.D., Ron Petersen, M.D., Ph.D., and Michelle Mielke, Ph.D. I initially was awarded a Departmental Senior Associate Consultant research award that supported submission of an Alzheimer's Association Research Grant; this project made use of existing data collected within the Mayo Clinic Study of Aging focused on the Cogstate Brief Battery (computerized cognitive assessment). I then obtained an internal Mayo Clinic Alzheimer's Disease Research Center Development award that supported creation of normative data based on existing datasets. I am grateful to mentors, the continued expertise, skill and support of my spouse and co-investigator John Stricker, Ph.D. and the entire Neurology AI Program, new collaborators in Jacksonville, FL and Jackson, MS, and several past fellows (Eva Alden, Ph.D., Shehroo Pudumjee, Ph.D., Aimee Karstens, Ph.D., Jay Patel, Ph.D., Liz Boots, Ph.D., Nick Corriveau-Lecavalier, Ph.D.) whose numerous contributions led to our current R01 focused on expanded validation of Mayo Test Drive in early Alzheimer's disease." ~Nikki Stricker, Ph.D., L.P., A.B.P.P.

GRANTS

National Institute on Aging. R01 AG81955-01A1. Validation of the Mayo Test Drive Screening Battery Composite and Stricker Learning Span for Early Detection and Monitoring of Cognitive Decline in Preclinical and Prodromal Alzheimer's Disease. 12/2023 – 11/2028. Principal Investigator: Nikki Stricker, Ph.D.

National Institute on Aging. R21AG073967. Stricker Learning Span: A Computer Adaptive Word List Memory Test Optimized for Remote Assessment. 08/2021 – 05/2024. Principal Investigator: Nikki Stricker, Ph.D.

National Institute on Aging RF1AG 69052. "What is N?" Towards Operationalizing Neurodegeneration in Alzheimer's and Related Dementias. 04/2021 – 03/2026. Principal Investigator: Jonathan Graff-Radford, M.D.; Co-Investigator: Nikki Stricker, Ph.D.

National Institute on Aging R21AG 73726. Influence of Exercise Training and Intensity on Cerebral Blood Flow Regulation and Cognitive Function in Mid-Life Adults with Cardiovascular Disease. 04/2022 – 05/2024. Principal Investigator: Jenna-Lee (Jenna) Taylor, Ph.D.; Co-Investigator: Nikki Stricker, Ph.D.

National Institute of Diabetes and Digestive and Kidney Diseases. R03DK 132121. Impact of Abnormal Steroid Metabolome on Cellular Senescence, Frailty and Cognition. 04/2022 – 03/2024. Principal Investigator: Irina Bancos, M.D.; Co-Investigator: Nikki Stricker Ph.D.

KEY PUBLICATIONS

Boots, E. A., Frank, R. D., Fan, W. Z., Christianson, T. J., Kremers, W. K., Stricker, J. L., Machulda, M. M., Fields, J. A., Hassenstab, J., Graff-Radford, J., Vemuri, P., Jack, C. R., Knopman, D., Petersen, R. C., Stricker, N. H. (2024). Continuous Associations Between Remote Self-Administered Cognitive Measures and Imaging Biomarkers of Alzheimer's Disease. *Journal of Prevention of Alzheimer's Disease*. <http://dx.doi.org/10.14283/jpad.2024.99>

Karstens AJ, Christianson TJ, Lundt ES, Machulda MM, Mielke MM, Fields JA, Kremers WK, Graff-Radford J, Vemuri P, Jack CR Jr, Knopman DS, Petersen RC, Stricker NH. Mayo normative studies: regression-based normative data for ages 30-91 years with a focus on the Boston Naming Test, Trail Making Test and Category Fluency. *J Int Neuropsychol Soc*. 2024 May; 30 (4):389-401 Epub 2023 Nov 28 PMID: 38014536 PMCID: 11014770 DOI: 10.1017/S1355617723000760

Stricker N.H., Stricker J.L., Frank R.D., Fan W.Z., Christianson T.J., Patel J.S., Karstens A.J., Kremers W.K., Machulda M.M., Fields J.A., Graff-Radford J., Jack C.R., Jr., Knopman D.S., Mielke M.M., & Petersen R.C. (2024) Stricker Learning Span criterion validity: a remote self-administered multi-device compatible digital word list memory measure shows similar ability to differentiate amyloid and tau PET-defined biomarker groups as in-person Auditory Verbal Learning Test. *Journal of the International Neuropsychological Society*, 30(2), 138-151, <https://doi.org/10.1017/S1355617723000322>

Stricker NH, Christianson TJ, Pudumjee SB, Polsinelli AJ, Lundt ES, Frank RD, Kremers WK, Machulda MM, Fields JA, Jack CR Jr, Knopman DS, Graff-Radford J, Vemuri P, Mielke MM, Petersen RC (2024). Mayo Normative Studies: amyloid and neurodegeneration negative normative data for the Auditory Verbal Learning Test and sex-specific sensitivity to Mild Cognitive Impairment/Dementia. *Journal of Alzheimer's Disease*, 100(3). <https://dx.doi.org/10.3233/JAD-240081>

Yao X, Attia ZI, Behnken EM, Hart MS, Inselman SA, Weber KC, Li F, Stricker NH, Stricker JL, Friedman PA, Noseworthy PA. Realtime Diagnosis from Electrocardiogram Artificial Intelligence-Guided Screening for Atrial Fibrillation with Long Follow-Up (REGAL): Rationale and design of a pragmatic, decentralized, randomized controlled trial. *Am Heart J*. 2024 Jan; 267:62-69 Epub 2023 Oct 30 PMID: 37913853 DOI: 10.1016/j.ahj.2023.10.005

LEADERSHIP ROLES

- Associate Editor, *Journal of Alzheimer's Disease*, 2021 – present
- Selected delegate for the Minnesota 2022 Conference to Update Education and Training Guidelines in Clinical Neuropsychology
- NIH Grant Reviewer, 2022/10 CNN Study Section (Early Career Reviewer Program)



Balwinder Singh, M.D., M.S.

Dr. Balwinder Singh is a Consultant in the Department of Psychiatry and Psychology, an Assistant Professor at the Mayo Clinic College of Medicine and Science, and the Associate Program Director of the Mayo Clinic Mood Fellowship Program. Dr. Singh received his medical degree from Goa Medical College in India, completed a post-doctoral fellowship at the Mayo Clinic Alzheimer's Disease Research Center, and earned a Master's degree in Clinical and Translational Science. He then pursued psychiatry residency training, including Chief Residency at the University of North Dakota School of Medicine and Health Sciences. Dr. Singh is board-certified in psychiatry, a recipient of the Alpha Omega Alpha Award, and a Fellow of the American Psychiatric Association. Joining the Mayo Clinic College of Medicine & Science faculty in 2017, he is based in the Mayo Clinic Depression Center. His research interests include the neurobiology of mood disorders, novel treatments for mood disorders—particularly ketamine—and biomarkers for individualized treatment of treatment-resistant depression. Dr. Singh has received several accolades, including the Department of Psychiatry and Psychology's 0.2 FTE SAC Award (2018), the Early Career Investigator Award (2019), Small Grant Awards (2019, 2022, and 2024), the Teacher of the Year Award (2023-24), and the Mayo Clinic Clinical and Translational Science (CCaTS) KL2 TR002379 from the National

Center for Advancing Translational Science (NCATS). Dr. Singh is the Principal Investigator leading the BD² (Breakthrough Discoveries for Thriving with Bipolar Disorder) Integrated Network study at Mayo Clinic, a groundbreaking initiative involving six nationally selected institutions. This study aims to integrate clinical, behavioral, and biological data to enhance understanding of bipolar disorder and improve treatment options. Over five years, Dr. Singh and his team will monitor 100 participants with bipolar I disorder, utilizing clinical records, neuroimaging, cognitive assessments, and physiological markers. This grant will support the development of a Longitudinal Research Project within a Learning Health Network, focused on improving care and deepening insights into bipolar disorder.

The journey to securing my recent NIH (National Institutes of Health) funding began with forming a strong mentorship team, including Dr. Mark Frye, Dr. John Port, and Dr. Rima Kaddurah-Daouk at Duke University. Early career awards and grants, such as the Junior Faculty 0.20 FTE Research Award and the Early Career Investigator Award from the Department of Psychiatry at Mayo Clinic, laid the groundwork by establishing infrastructure and gathering essential pilot data. Progress continued with a Departmental Small Grant focused on metabolomic biomarkers associated with intravenous racemic ketamine for treatment-resistant depression. My participation in the Department of Medicine's "Sapere Aude: K-Award Boot Camp" further bolstered my application. Ultimately, I was awarded the KL2 Mentored Career Development Program funded by the NIH and Mayo Clinic's CCaTS. This achievement underscores the importance of persistence, exceptional mentorship, and supportive leadership in advancing my research.

GRANTS AND AWARD

NIH and Mayo Clinic's CCaTS KL2 Mentored Career Development Award. Central and Peripheral GABA and Glutamate Modulation with Intravenous Ketamine for Treatment-Resistant Depression (G2K): A Randomized, Double-Blind, Placebo-Controlled Study. 07/2024-06/2027 Principal Investigator: Balwinder Singh MD

BD2 Integrated Health Network Site. Funded by Breakthrough Discoveries for Thriving with Bipolar Disorder. 08/2023 - 06/2028. Principal Investigator: Balwinder Singh MD

National Network of Depression Centers. Metabolomic Biomarkers of Treatment Response Associated with Intravenous Racemic Ketamine for Treatment-Resistant Depression: The Bio-K Multicenter Trial. 07/2023 - 06/2025. Principal Investigator: Balwinder Singh MD

2024 Teacher of the Year Award (Psychiatry)

KEY RECENT PUBLICATIONS

Patarroyo-Rodriguez L, Cavalcanti S, Vande Voort JL, Singh B. The Use of Ketamine for the Treatment of Anhedonia in Depression. *CNS Drugs*. 2024 Jun 23 Epub 2024 June 23 PMID: 38910222 PMCID: 7947 DOI: 10.1007/s40263-024-01099-8.

Patarroyo-Rodriguez L, Pazdernik V, Vande Voort JL, Kung S, Singh B. Hypersomnia as a predictor of response to intravenous ketamine/intranasal esketamine in treatment resistant depression. *J Affect Disord*. 2024 Mar 15; 349:272-276 Epub 2024 Jan 08 PMID: 38199421 DOI: 10.1016/j.jad.2024.01.003.

Seshadri A, Prokop LJ, Singh B. Efficacy of intravenous ketamine and intranasal esketamine with dose escalation for Major depression: A systematic review and meta-analysis. *J Affect Disord*. 2024 Jul 1; 356:379-384 Epub 2024 Mar 26 PMID: 38537759 DOI: 10.1016/j.jad.2024.03.137.

Singh B, Kung S, Poppe KA, et al. Partial wake therapy and luminotherapy as an adjunct to usual care in hospitalized patients with depression - a pilot study. *Psychiatry Res* 2024 Jul; 337:115921 Epub 2024 Apr 25 PMID: 38688120 DOI: 10.1016/j.psychres.2024.115921

Singh B, Kung S, Vande Voort JL. Intravenous (IV) ketamine versus intranasal esketamine for depression- Advantage IV ketamine? *J Affect Disord* 2024 Jul 1; 356:564-567 Epub 2024 Apr 22 PMID: 38657763 DOI: 10.1016/j.jad.2024.04.088

Singh B, Parikh SV, Voort JLV, et al. Change in neurocognitive functioning in patients with treatment-resistant depression with serial intravenous ketamine infusions: The Bio-K multicenter trial. *Psychiatry Res*. 2024 May; 335:115829 Epub 2024 Feb 28 PMID: 38479192 DOI: 10.1016/j.psychres.2024.115829

Singh B, Vande Voort JL, Pazdernik VK, et al. Treatment-resistant depression patients with baseline suicidal ideation required more treatments to achieve therapeutic response with ketamine/esketamine. *J Affect Disord*. 2024 Apr 15; 351:534-540 Epub 2024 Jan 30 PMID: 38302067 DOI: 10.1016/j.jad.2024.01.262

LEADERSHIP ROLES

- Associate Program Director, Mood Fellowship
- New Investigator Award (NIA) Mentor – American Society of Clinical Psychopharmacology 2024
- Member: The International Society of Bipolar Disorders (ISBD) Early Mid-Career Committee (EMCC)
- Member: The ISBD Task Force on "Role of Lithium in Bipolar Disorders"
- Member: The ISBD Task Force on "Treatment-resistant bipolar depression"
- Member: Global Bipolar Cohort (GBC) collaborative
- Editorial Board Member: *Journal of Integrative Neuroscience*
- Guest Editor: *Brain Sciences*, Special Issue on Clinical Research on Mood Disorders: Opportunities and Challenges
- Guest Editor: *Frontiers in Psychiatry* on, Special Issue on Perspectives on new fast-acting antidepressants

Mark A. Frye, M.D.

Dr. Frye is the inaugural Director of the Mayo Clinic Depression Center. He led efforts to bring novel drug and device therapy to the Depression Center. Given his clinical expertise in mood disorders and biomarker development, he is recognized with the distinction of the Stephen & Shelley Jackson Family Professorship in Individualized Medicine at Mayo Clinic. The focus of his translational research has been the neurobiology of mood disorders with a goal of providing greater diagnostic precision and more effectively guiding treatment interventions for bipolar and major depressive disorders and their comorbid conditions. Dr. Frye's grant portfolio has focused on functional brain imaging to quantify disease burden and elucidate drug mechanism of action including glutamate as a marker for cravings for alcohol and subsequent acamprosate treatment response and magnetic resonance (MR) spectroscopic glutamate and treatment of bipolar depression with lamotrigine. In 2009, along with Joanna M. Biernacka Ph.D. as co-principal investigator, he established the Mayo Clinic Bipolar Disorder Biobank, initiating innovative research focused on disease risk and pharmacogenomic treatment response. The key aspect of their work focuses on increasing power of genomic studies through narrower phenotypic classification or consideration of relevant covariates in analyses and risk factor interactions. They have also used Electronic Health Records data in our research to search for pleiotropic effects of bipolar risk loci and polygenic risk score analyses of bipolar sub-phenotypes. This bipolar biomarker work aligns with Dr. Frye's earlier collaborative work with the Stanley Foundation Bipolar Network and ongoing collaborations with NIMH mentor Dr. Robert Post and the Bipolar Collaborative Network.



"I was fortunate to have several mentors, along the way and I am grateful to Lori Altshuler, M.D. (UCLA), Robert Post, M.D. (NIMH), and David Mrazek, M.D. Richard Weinshilboum, M.D. and Robert Frye, M.D. (Mayo Clinic) who all underscored the importance of developing and continuing to maintain gold standard clinical expertise, nurturing curiosity, identifying clinical care gaps, and harness the emerging power of translational psychiatry. The success of our translational work developing new care models is a highly collaborative work in a team science approach, what Mayo does best, partnering with Joanna Biernacka, Ph.D. and members of the Mayo Clinic Depression Center. I have actively engaged and developed the next generation of translational neuroscientists and clinicians engaged in mood and addictive disorders research. While at Mayo Clinic, my mentees have successfully procured funding from NIMH (Croarkin K23 PI: Glutamatergic Probes of Adolescent Depression; Croarkin R01 PI: Glutamatergic and GABAergic Biomarkers in rTMS for Adolescent Depression), NIH KL2 (Abulseoud PI: Preclinical Models of Alcoholism Utilizing Deep Brain Stimulation), MN Mayo Partnership Foundation Grant (Tye PI: Animal Models of Treatment-Resistant Depression), Chilean government (Prieto PI: Cardiovascular Comorbidity in Bipolar Disorder), Mayo Clinic Center for Individualized Medicine (Veldic PI: Epigenetic Regulation of Bipolar Disorder and Addiction), and most recently NIH KL2 (Singh PI: Central and Peripheral GABA and Glutamate Modulation with Intravenous Ketamine for Treatment-Resistant Depression (G2K): A Randomized, Double-Blind, Placebo-Controlled Study." ~Mark Frye, M.D.

GRANTS

National Heart, Lung, and Blood Institute. (R01 HL 149409) Using mHealth to Improve Adherence and Reduce Blood Pressure in Individuals with Hypertension and Bipolar Disorder. 05/2023-04/2025. Principal Investigator: Mark A. Frye, M.D.

Baszucki Family Foundation. 16-Week Ketogenic Intervention for Bipolar Depression: Roadmap Clinical Trial Driving Clinical Implementation. 07/2024-06/2027. Principal Investigator: Mark A. Frye, M.D.

Breakthrough Discoveries for Thriving with Bipolar Disorder. BD2 Integrated Network SSC Chair. 10/2022-06/2025. Principal Investigator: Mark A. Frye, M.D.

National Institute of Mental Health. (R01 MH 137213) 6/7 PsycheMERGE: Advancing Precision Psychiatry. 09/2024-05/2029. Principal Investigator: Joanna M. Biernacka, Ph.D.

National Institute of Mental Health. (R01 MH 121924) 2/4: Leveraging EHR-linked biobanks for deep phenotyping, polygenic risk score modeling, and outcomes analysis in psychiatric disorders. 09/2019-05/2025. Co-PI: Mark Frye, M.D.

KEY RECENT PUBLICATIONS

Altimus CM, Baxi EG, Frye MA, Nestler EJ, Pham DL, Burdick KE. Supercharging collaboration for bipolar research-Breakthrough discoveries for thriving with bipolar disorder (BD2). *Bipolar Disord.* 2023 Dec;25(8):619-623. doi: 10.1111/bdi.13398. Erratum in: *Bipolar Disord.* 2024 Jan 29. doi: 10.1111/bdi.13407. PMID: 38127002.

Ercis M, Ozerdem A, Veldic M, Singh B, Coombes BJ, Biernacka JM, Lazaridis KN, Frye MA. Measuring the exposome in bipolar disorder. *Bipolar Disord.* 2024 May 1. doi: 10.1111/bdi.13443. Epub ahead of print. PMID: 38693064.

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Núñez NA, Coombes BJ, Melhuish Beaupre L, Romo-Nava F, Gardea-Resendez M, Ozerdem A, Veldic M, Singh B, Sanchez Ruiz JA, Cuellar-Barboza A, Leung JG, Prieto ML, McElroy SL, Biernacka JM, Frye MA. Antidepressant-Associated Treatment Emergent Mania: A Meta-Analysis to Guide Risk Modeling Pharmacogenomic Targets of Potential Clinical Value. *J Clin Psychopharmacol.* 2023 Sep-Oct 01;43(5):428-433. doi: 10.1097/JCP.0000000000001747. PMID: 37683232; PMCID: PMC10476595.

LEADERSHIP ROLES

- Scientific Director for Breakthrough Discoveries for Thriving with Bipolar Disorder (BD2)
- President of the National Network of Depression Centers (NNDC)
- President of the Minnesota Psychiatric Society
- Scientific Director for the Depression and Bipolar Support Alliance (DBSA)



John A. Lucas, Ph.D.

Dr. John A. Lucas is a Professor of Psychology at Mayo Clinic Florida, where he previously served as Division Chair and Department Vice Chair. He is a board-certified clinical neuropsychologist with expertise in aging and dementia. His early research focused on normative neuropsychology, with emphasis on clinical utility of test norms in older African Americans. He was fortunate to learn from Drs. Robert Ivnik and Neill Graff Radford, applying the approach Dr. Ivnik developed for Mayo's Older Americans Normative Studies (MOANS) to new scientific inquiries in the Jacksonville cohort of Mayo's Alzheimer's Disease Research Center (ADRC). He was mentored by Dr. Glenn Smith, Angela Lunde, and Francine Parfitt in community engagement methods and he currently serves as Director of Outreach, Recruitment and Engagement for the Mayo ADRC. In this role, he created an infrastructure to promote healthy brain aging, provide caregiver support, and study the science of diverse recruitment in the Jacksonville African American community. These efforts have succeeded through ongoing partnerships with community organizations, advisors, and volunteer networks that have been supported in part by Donald C. and Lucy J. Dayton Professorship funds granted by Dr. Teresa Rummans. Currently, Dr. Lucas is collaborating with Drs. Paula Aduen (Psychology), Minerva Carrasquillo (Neuroscience), and Christian Lachner (Neurology) to develop similar outreach networks in the Jacksonville Hispanic/Latino community. Professionally, Dr. Lucas is past-President of the American Board of Clinical Neuropsychology (ABCN) and currently serves as Chair of the ABCN Examinations Committee.

GRANTS

Core Leader. Outreach, Recruitment, Engagement (Core E). Co-Investigator. Clinical Core (Core B). Mayo Clinic Alzheimer's Disease Research Center. (PI: Petersen) National Institute on Aging (NIA 2P30AG062677). 2024-2029.

Co-investigator. Analytics Core. Centrally-linked longitudinal peripheral biomarkers of AD in multi-ethnic populations (PI: Taner) National Institute on Aging (NIA U19AG074879). 2023-2028.

Principal Investigator. Identification and measurement of influences on brain donation decision making in African Americans. National Institute on Aging (NIA AG016574). 2022-2024.

Principal Investigator. Advancing Diverse AHEAD Recruitment at Mayo Clinic Florida. Alzheimer's Association/AITC Foundation Grant. 2022-2024.

KEY RECENT PUBLICATIONS

Bergeron CD, Robinson MT, Willis FB, Albertie ML, Wainwright JD, Fudge MR, Parfitt FC, Lucas JA Creating a Dementia Friendly Community in an African American Neighborhood: Perspectives of People Living with Dementia, Care Partners, Stakeholders, and Community Residents. *J Appl Gerontol*. 2023 Feb; 42 (2):280-289.

Bergeron CD, Robinson MT, Willis FB, Albertie ML, Wainwright JD, Fudge MR, Parfitt FC, Crook JE, Ball CT, Lucas JA. Testing an Alzheimer's Disease Educational Approach in Two African American Neighborhoods in Florida. *J Racial Ethn Health Disparities*. 2022 Dec; 9 (6):2283-2290.

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Lachner C, Craver EC, Babulal GM, Lucas JA, Ferman TJ, White RO, Graff-Radford NR, Day GS. Disparate Dementia Risk Factors Are Associated with Cognitive Impairment and Rates of Decline in African Americans. *Ann Neurol*. 2024 Mar; 95 (3):518-529 Epub 2024 Jan 09.

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Ramanan VK, Graff-Radford J, Syrjanen J, Shir D, Algeciras-Schimnich A, Lucas J, Martens YA, Carrasquillo MM, Day GS, Ertekin-Taner N, Lachner C, Willis FB, Knopman DS, Jack CR Jr, Petersen RC, Vemuri P, Graff-Radford N, Mielke MM. Association of Plasma Biomarkers of Alzheimer Disease With Cognition and Medical Comorbidities in a Biracial Cohort. *Neurology*. 2023 Oct 3; 101 (14):e1402-e1411.

Osama A. Abulseoud, M.D.

Dr. Osama A. Abulseoud is a professor of psychiatry and neuroscience. He is a triple-board-certified psychiatrist at Mayo Clinic Arizona and has received extensive clinical and research training at USC, UCLA, Mayo Clinic Rochester, and NIH. His journey began under the guidance of Dr. George M. Simpson, the inventor of the Simpson Angus Scale for Akathisia, and continued with a two-year fellowship at Brian D. Ross's Spectroscopy laboratory, learning the neurochemistry of the glutamate-glutamine cycle. Dr. Ross, a former student of Professor Hans Krebs at the University of Sheffield, UK, further enriched his knowledge about how to utilize brain imaging to probe specific cellular processes. Dr. Abulseoud's mentorship from world authorities such as Mark A. Frye, M.D., Doo-Sup Choi, Ph.D., Kendall Lee, M.D., Ph.D., and Elliot Stein, Ph.D., has been instrumental in his understanding of bipolar disorders, addiction biology, deep brain stimulation, and functional brain imaging. These experiences have led to his significant contributions to psychiatry and neurobiology. His current research, which focuses on identifying the neuropathological and molecular mechanisms of the post-COVID syndrome, is of utmost importance in the current global health crisis.



GRANTS

Clinician Engaged in Research (CER) 2022-2025: Ferroptosis as an underlying mechanism for post-COVID neuropsychiatric manifestations.

Robert D. and Patricia E. Kern Center for the Society of Health Care Delivery: Improving patient and staff safety through early identification and suggesting pharmacological interventions for altered mental status and alcohol withdrawal. June 2023 - December 2024.

Breakthrough discoveries for thriving with bipolar disorder. Milken Foundation August 2023 - July 2028 (Co-Investigator).

KEY RECENT PUBLICATIONS

Abulseoud OA, Caparelli EC, Krell-Roesch J, Geda YE, Ross TJ, Yang Y. Sex-difference in the association between social drinking, structural brain aging and cognitive function in older individuals free of cognitive impairment. *Frontiers in psychiatry*. 2024 Apr 8;15:1235171.

Abulseoud OA, Chan B, Rivera-Chiauzzi EY, Egol CJ, Nettem VN, Van Ligten MJ, Griffin TN, Aly M, Sinha S, Schneekloth TD. Psychiatric disorders during pregnancy in asymptomatic and mildly symptomatic SARS-CoV-2 positive women: Prevalence and effect on outcome. *Psychiatry Res*. 2023 Aug; 326:115313. Epub 2023 Jun 16. PMID: 37336168 PMCID: 10273774 DOI: 10.1016/j.psychres.2023.115313.

Abulseoud OA, Yehia A, Egol CJ, Nettem VN, Aly M, Qu Y, Skolnik AB, Grill MF, Sen A, Schneekloth TD. Attenuated initial serum ferritin concentration in critically ill coronavirus disease 2019 geriatric patients with comorbid psychiatric conditions. *Front Psychiatry*. 2022; 13:1035986. Epub 2022 Nov 09. PMID: 36440432 PMCID: 9681793 DOI: 10.3389/fpsyt.2022.1035986.

Rydberg A, Dodoo CA, Schneekloth TD, Abulseoud OA. No difference in COVID-19 treatment outcomes among current methamphetamine, cannabis and alcohol users. *J Cannabis Res*. 2023 Jun 19; 5 (1):23 Epub 2023 June 19 PMID: 37337275 PMCID: 10280862 DOI: 10.1186/s42238-023-00193-w.

Unlu H, Macaron MM, Ayraller Taner H, Kaba D, Akin Sari B, Schneekloth TD, Leggio L, Abulseoud OA. Sex difference in alcohol withdrawal syndrome: a scoping review of clinical studies. *Front Psychiatry*. 2023; 14:1266424 Epub 2023 Sept 22 PMID: 37810604 PMCID: 10556532 DOI: 10.3389/fpsyt.2023.1266424.

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Unlu H, Yehia A, Manji K, Manji N, Trevino-Alvarez AM, Cabeza De Baca T, Frye MA, Thomas LF, Abulseoud OA. Bidirectional Negative Relationship Between Thyrotropin and Kidney Function During Alcohol Intoxication in Males. *Frontiers in Nephrology*; 2024 May, 4:1322791.

Yehia A, Abulseoud OA. Melatonin: a ferroptosis inhibitor with potential therapeutic efficacy for the post-COVID-19 trajectory of accelerated brain aging and neurodegeneration. *Molecular Neurodegeneration*. 2024 Apr 19;19(1):36.

Yehia A, Sousa RA, Abulseoud OA. Sex difference in the association between blood alcohol concentration and serum ferritin. *Frontiers in Psychiatry*. 2023 Jul 21;14:1230406.

Research Training Program



The department established a Research Training Program in 2019 for the recruitment and training of Research Temporary Professionals (RTPs) to support Department Consultant staff with their research programs. These include senior research fellows, research fellows, visiting research fellows, collaborators, associates, research affiliates, trainees, visiting scientists, graduate students, visiting graduate students, and other categories of RTPs.

This does not replace or supersede individual consultant's recruitment of RTPs or their primary role to oversee the RTPs training and work in their program. The purpose is to assist with recruitment, develop policies and programs, and provide training structure and resources for the RTPs, such that this strengthens the consultant's research program and enhances the research training experience. The program is integrated with existing broader Mayo resources for RTPs and with Department of Psychiatry and Psychology overall education and training efforts.

Roles

The Program is led by Dr. Marin Veldic with a Research Training Committee (RTC) comprised of Department of Psychiatry and Psychology consulting staff. The Program has administrative support from the research operations manager (Nanci Hawley) and research program manager (Michelle Skime).

Goals

The goals of the program are as following:

- Attract and recruit highly competitive research talent.
- Create an optimal research training environment; dynamic, highly integrated, interactive.
- Provide a department "home" for RTPs so that they are connected and interact with other RTPs.
- Strengthen Department consultant research programs by providing support for their RTPs.
- Support RTPs to achieve timely advances in their research, provide details about research resources and research career opportunities.
- Support RTPs to advance towards independent investigator.
 - o Present work at conferences
 - o Publish peer-reviewed scientific articles
 - o Apply and obtain intra- and extramural training grant awards and/or research grants
- Provide certificate of training in the RTP's area of research.

Organization

The training program is overseen by a Research Training Committee (RTC) comprised of the Program Director Marin Veldic, MD, and department consultant staff members. Paul Croarkin, DO, MS, provides guidance on publications, Marin Veldic, MD, provides support for recruitment efforts. Andrea Huebner, PhD, LP helps with mentoring plans. Fiona Fonseca, MD provides guidance on equity, inclusion and diversity topics. Rylee Leverentz from the Office of Postdoctoral Affairs and Research Training provides direct supervision for the RTPs. The program services and operations are provided by research program manager, Michelle Skime, MS. This committee reports to the Department Research Committee.

Summary of Research Temporary Professionals Program

Research Temporary Professionals	2019	2020	2021	2022	2023	2024
Research Affiliates	9	10	5	4	3	4
Research Associates	2	2	2	2	3	1
Research Fellows	2	2	4	4	8	5
Research Collaborators	10	16	17	16	14	17
Research Trainees	2	1	4	3	3	4
Visiting Research Fellow				1	2	3
TOTAL	25	31	27	30	33	34

KEY RECENT PUBLICATIONS

Ercis, M., Ozerdem, A., & Singh, B. When and How to Use Lithium Augmentation for Treating Major Depressive Disorder. *J Clin Psychiatry*, 2023, 84(2). <https://doi.org/10.4088/JCP.23ac14813>

Ercis, M., Ozerdem, A., Veldic, M., Singh, B., Coombes, B. J., Biernacka, J. M., Lazaridis, K. N., & Frye, M. A. Measuring the exposome in bipolar disorder. *Bipolar Disord*, 2024. <https://doi.org/10.1111/bdi.13443>

Ercis, M., Sanchez-Ruiz, J. A., Webb, L. M., Solares-Bravo, M., Betcher, H. K., Moore, K. M., Frye, M. A., Veldic, M., & Ozerdem, A. Sex differences in effectiveness and adverse effects of mood stabilizers and antipsychotics: A systematic review. *J Affect Disord*, 2024, 352, 171-192. <https://doi.org/10.1016/j.jad.2024.02.038>

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Ghafari, M., Correa da Costa, S., Zare Dehnavi, A., Gold, M. S., & Rummans, T. A. Treatments for Cannabis Use Disorder across the Lifespan: A Systematic Review. *Brain Sci*, 2024, 14(3). <https://doi.org/10.3390/brainsci14030227>

Ghafari, M., Duque, L., Rodriguez, L. P., Philbrick, K. L., Savica, R., Pazdernik, V. K., Port, J. D., Rummans, T. A., & Singh, B. Identifying clinical predictors for considering brain FDG-PET imaging in patients with catatonia: A case-control study. *Schizophr Res*, 2024, 267, 138-140. <https://doi.org/10.1016/j.schres.2024.03.009>

Miola, A., Gardea-Resendez, M., Ortiz-Orendain, J., Nunez, N. A., Ercis, M., Coombes, B. J., Salgado, M. F., Gruhlke, P. M., Michel, I., Bostwick, J. M., McKean, A. J., Ozerdem, A., & Frye, M. A. Factors associated with suicide attempts in the antecedent illness trajectory of bipolar disorder and schizophrenia. *Int J Bipolar Disord*, 2023, 11(1), 38. <https://doi.org/10.1186/s40345-023-00318-3>

Núñez, N. A., Coombes, B. J., Beaupre, L. M., Ozerdem, A., Resendez, M. G., Romo-Nava, F., Bond, D. J., Veldic, M., Singh, B., Moore, K. M., Betcher, H. K., Kung, S., Prieto, M. L., Fuentes, M., Ercis, M., Miola, A., Sanchez Ruiz, J. A., Jenkins, G., Batzler, A., Leung, J. G., Cuellar-Barboza, A., Tye, S. J., McElroy, S. L., Biernacka, J. M., Frye, M. A. Pharmacogenomic overlap between antidepressant treatment response in major depression & antidepressant associated treatment emergent mania in bipolar disorder. *Transl Psychiatry*, 2024, 14(1), 93. <https://doi.org/10.1038/s41398-024-02798-y>

Sanchez Ruiz, J. A., Coombes, B. J., Pendegraft, R. S., Ozerdem, A., McElroy, S. L., Cuellar-Barboza, A. B., Prieto, M. L., Frye, M. A., Winham, S. J., & Biernacka, J. M. Pharmacotherapy exposure as a marker of disease complexity in bipolar disorder: Associations with clinical & genetic risk factors. *Psychiatry Res*, 2023, 323, 115174. <https://doi.org/10.1016/j.psychres.2023.115174>

Sanchez-Ruiz, J. A., Coombes, B. J., Pazdernik, V. M., Melhuish Beaupre, L. M., Jenkins, G. D., Pendegraft, R. S., Batzler, A., Ozerdem, A., McElroy, S. L., Gardea-Resendez, M. A., Cuellar-Barboza, A. B., Prieto, M. L., Frye, M. A., & Biernacka, J. M. Clinical and genetic contributions to medical comorbidity in bipolar disorder: a study using electronic health records-linked biobank data. *Mol Psychiatry*, 2024. <https://doi.org/10.1038/s41380-024-02530-8>

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Sanchez-Ruiz, J. A., Treviño-Alvarez, A. M., Zambrano-Lucio, M., Lozano Díaz, S. T., Wang, N., Biernacka, J. M., Tye, S. J., & Cuellar-Barboza, A. B. The Wnt signaling pathway in major depressive disorder: A systematic review of human studies. *Psychiatry Res*, 2024, 339, 115983. <https://doi.org/10.1016/j.psychres.2024.115983>

Psychiatry Resident Researchers

Majd Al-Soleiti, M.D., PGY-3- Psychiatry Resident

Mentors: Balwinder Singh, M.D., M.S.; J. Michael Bostwick, M.D., MFA

Dr. Al-Soleiti's research project aims at studying the literacy, stigma, and attitudes towards suicide in high-acuity suicidal patients across two different cultures (United States and Jordan). It also explores the potential correlation between these variables, and suicide-specific outcomes prospectively. This project includes experts from our Department's Mood Disorders Program and our Suicide Prevention Team, and continues our Department's collaboration with International colleagues in mental health.



Jacob Ellis, M.D., PGY-4 – Psychiatry Resident

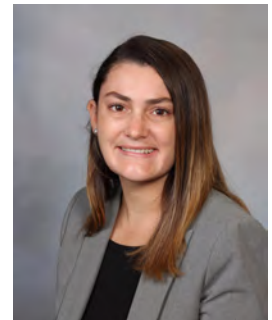
Mentor: Simon Kung, M.D.

Jacob Ellis is conducting an observational study using time to discontinuation as an outcome measure for patients with treatment-resistant depression (TRD) who received IV ketamine or intranasal (IN) esketamine at the Mayo Clinic Depression Center from August 2017 to May 2024. This study aims to investigate the long-term comparative efficacy between IV and IN ketamine with an exploration of the reasons for discontinuation of treatment. This work has the potential to provide meaningful information when discussing outcomes with patients and can help inform individualized treatment planning and future research study designs.

Casey Gilman, M.D., PGY-3 – Psychiatry Resident

Mentors: Monica Taylor- Desir, M.D., M.P.H.; Magdalena Romanowicz, M.D.; Sandra Rackley, M.D., M.S.

Casey Gilman will perform a retrospective study to elucidate the sociodemographic trends of youth in the emergency department, with a particular interest on patients with history of out of home placement. This work could enable future efforts in identifying additional training needs for culturally appropriate de-escalation techniques, in educating clinicians and allied health care professionals to address bias and health disparities, and in disseminating information to the larger scientific community for delivery of equitable and culturally aware psychiatric care.



Alison Kor, M.D., PGY-3 – Psychiatry Resident

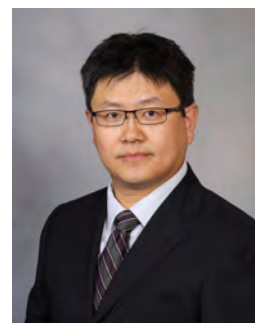
Mentor: Nicholas Allen, M.D.

Dr. Kor's project aims to identify modifiable risk factors for mortality in patients discharged to community care following acute crisis stabilization. The project focuses on the patient populations receiving care in the Mayo Clinic Rochester Complex Intervention Unit (CIU) compared to the inpatient Psychiatric Acute Care Program. Modifiable factors (for example, length of stay, involuntary treatment, disposition, insurance status, housing status, etc.) will be identified and hazard ratios will describe how the risk of mortality changes related to these predictors. In the future, these factors could be modified to minimize all-cause mortality.

John Li, M.D., Ph.D., PGY-3 – Psychiatry Resident

Mentor: Maria Lapid, M.D.

The aim of Dr. Li's project is to assess the feasibility and acceptability of transcranial direct current stimulation (tDCS) treatment in adult patients hospitalized for treatment resistant depression (TRD). Long-term goal is to improve the treatment outcome of acutely hospitalized TRD patients and to investigate the response to tDCS by measuring peak alpha frequency of the brain and cerebral hemodynamics using electroencephalogram (EEG) and functional near-infrared spectroscopy (fNIRS) techniques, respectively.



Terence J. Meyerhoefer, M.D., M.S., PGY-3 – Psychiatry Resident

Mentor: Matej Markota, M.D.

Dr. Meyerhoefer's project aims to investigate a novel diagnostic biomarker for schizophrenia that combines the power of artificial intelligence with optical coherence tomography images of the retina. Given the lack of current reliable tests to diagnose schizophrenia, this work has the potential to develop the first biomarker for schizophrenia, which could help to reduce the current two-year average delay between the onset of symptoms and treatment.

Liliana Patarroyo-Rodriguez, M.D., M.S., PGY-4- Psychiatry Resident

Mentor: Balwinder Singh, M.D., M.S

Dr. Patarroyo-Rodriguez is conducting a mirror image study to assess the effectiveness of IV ketamine and IN esketamine in reducing suicide-related urgent visits among patients with treatment-resistant depression (TRD). This study aims to provide crucial insights into how mental health services utilization for suicide concerns changes following treatment with IV ketamine or IN esketamine, offering an indirect measure of the treatment's impact on suicidality in TRD patients.



Kiersten Utter, M.D., PGY-4 – Psychiatry Resident

Mentors: Hannah Betcher, M.D.; Katherine Moore, M.D.

Kiersten Utter will perform a single-institution study of pregnancy outcomes in patients with bipolar disorder. For many years, Drs. Betcher and Moore have seen patients referred from OBGYN to identify and treat mental health disorders in pregnant women and to provide follow-care both pre- and post-delivery. This multidisciplinary team has presented their research at scientific conferences and published their findings in medical journals.

Medical Psychology Fellows

Kristin S. Vickers, Ph.D., L.P., Director, Medical Psychology Fellowship Program

Allegra Campagna, Ph.D.

Clinical Child Psychology

Research Mentors: Leslie Sim, Ph.D., L.P., A.B.P.P., Adam Cassidy, Ph.D., L.P., A.B.P.P.,
Cynthia Harbeck-Weber, Ph.D., L.P., A.B.P.P.

Dr. Campagna's research centers on child development, parental factors, and pediatric psychology in the context of cardiac disease and chronic pain. Her focus is on psychosocial determinants of health to optimize pediatric cardiac care, improving multidisciplinary interventions for chronic pain, and implementation of routine psychosocial screening to support mental health care access. Dr. Campagna's research is guided by principles of multidisciplinary collaboration, shared decision-making, and improving functional outcomes and psychological well-being of pediatric patients and their families.



Nick Corriveau-Lecavalier, Ph.D.

Adult Neuropsychology Fellow

Research Mentor: David T. Jones, MD.



Dr. Corriveau-Lecavalier is a clinical adult neuropsychology fellow and an early-career researcher in the field of Alzheimer's Disease and Related Disorders (ADRD). He conducts translational research at the intersection of clinical neurology, neuropsychology, multimodal imaging, and artificial intelligence (AI). The central theme of his research revolves around the comprehensive phenotyping of neurodegenerative dementia syndromes. A major and longstanding line of his research focuses on the use of task-based and task-free functional MRI to characterize functional brain network dynamics across the AD spectrum, spanning its asymptomatic and symptomatic phases, as well as its typical and atypical clinical variants. The overarching objectives of his work are to inform disease models from a complex systems perspective and to develop therapeutic interventions incorporating or aimed at the functional pathophysiology of AD. Additionally, he is a member of the Neurology Artificial Intelligence Program (NAIP) at Mayo Clinic, which is a highly innovative translational research team spanning clinical practice, operations, data science, software engineering, and information technology. NAIP aims to transform neurological care with equitable, high-quality, and widely accessible care models through validated institutional and departmental technology platforms. His role within NAIP is to support the clinical and scientific validation of AI algorithms aimed at enhancing clinical decision-making at the point of care at Mayo Clinic. Most of his work stems from firm collaborative ties with the Alzheimer's Disease Research Center (ADRC), Mayo Clinic Study of Aging (MCSA), Neurodegeneration Research Group (NRG), Human Connectome Project-Aging (HCP-A), and ARTFL-LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD).

Lilianne M. Gloe, Ph.D.

Clinical Child Psychology Fellow

Research Mentors: Stephen Whiteside, Ph.D., A.B.P.P., Bridget Biggs, Ph.D., A.B.P.P.,
Leslie Sim, Ph.D., A.B.P.P.

Dr. Lilianne Gloe has a passion for improving the assessment, treatment and understanding of childhood anxiety disorders. At Mayo Clinic, she has primarily conducted research with Dr. Stephen Whiteside in the Pediatric Anxiety Disorders clinic. Her work at Mayo Clinic has focused on establishing the reliability, validity and utility of a novel assessment for childhood mental health problems and examining the effectiveness and efficiency of a novel monotherapy for childhood anxiety disorders, parent-coached exposure therapy. She also trained and led a team of medical students and residents on coding recordings of therapy sessions for therapy techniques/skills. Additionally, Dr. Gloe has collaborated on projects related to mental health in youth with chronic health conditions, as well as related to diversity, equity and inclusion in research.



Grace Hanvey, Ph.D.

Clinical Health Psychology Fellow

Research Mentor: Shawna L. Ehlers, Ph.D., A.B.P.P., L.P.



Dr. Hanvey's research interests focus on cancer health inequities that disproportionately impact marginalized populations across social, economic, and medical domains. Their work to date has primarily investigated patterns of underrepresentation in both tumor-directed and supportive care cancer clinical trials, particularly among racial, ethnic, sexual, and gender minorities; older adults; and patients with fewer socioeconomic resources, of rural origin, or with comorbid disabilities. Dr. Hanvey's research prioritizes better understanding of barriers to equitable representation in cancer research among these underserved populations through a socioecological perspective that adequately centers the upstream effects of interlocking forms of systemic marginalization, and in turn, social determinants of health. Through this perspective, Dr. Hanvey seeks to collaboratively develop solutions to dismantling these patterns of underrepresentation, and thus, cancer health inequities among the underserved across quality of life, treatment, and survival outcomes. Overall, Dr. Hanvey's research explores relationships among minoritized social identities, economic strain, and medical complexity in predicting various cancer outcomes, mechanisms that underpin these relationships, and future directions for achieving more equitable cancer care.

Kyle A. Schofield, Ph.D.

Clinical Health Psychology Fellow

Research Mentors: Craig Sawchuk, Ph.D., ABPP, Leo Candelario Perez, Ph.D.

Dr. Kyle Schofield's research interests are primarily focused on sexual and gender minority mental health and resiliency factors. He seeks to improve awareness of how minority stress affects LGBTQ patients and their families, including diagnostic bias, limitations in access to competent health care, sociopolitical stressors, and associated poor health outcomes. He is interested in opportunities to lower barriers to care for transgender people, reducing LGBTQ bias among health care providers, and outcomes of interprofessional communication and education to improve care for these vulnerable populations.



Eric S. Semmel, Ph.D.

Clinical Pediatric Neuropsychology Fellow

Research Mentors: Adam R. Cassidy, PhD, LP, ABPP & Andrea R. S. Huebner, PhD, LP, ABPP



Dr. Semmel's research interests are related to predicting neuropsychological outcomes in children with complex medical conditions, using cognitive testing and neuroimaging methods, as well as understanding relationships with moderating factors such as socioeconomic status. Most recently, his research has focused on neurodevelopmental and functional outcomes in children with congenital heart disease. Specifically, Dr. Semmel has collaborated with researchers at Boston Children's Hospital and Harvard Medical School and utilized data from the Boston Circulatory Arrest Study to study long-term outcomes in individuals born with d-transposition of the great arteries. Dr. Semmel also has an interest in neuro-oncology, with much of his graduate school research having focused on long-term outcomes for pediatric brain tumor survivors utilizing functional and structural brain imaging and neuropsychological testing. His hope is that his research contributes to our understanding of risk factors for poor outcomes in these patient populations in order to identify at-risk individuals in need of intervention.

Resident and Fellow Awards

Kristin S. Vickers, Ph.D., L.P.,
and Bhanuprakash Kolla, M.D.



Jin Hong Park, M.D.

Top-Trainee Poster Award, 14th NUBE Conference, American Association for Emergency Psychiatry, 2023
Trainee Editorial Fellowship, Academic Psychiatry, 2023
William Webb Fellowship, Academy of Consult Liaison Psychiatry, 2023

Lili Gloe, Ph.D.

2024 Alies Muskin Career Development Leadership Program (Clinical Track), Anxiety & Depression Association of America, 2024

Liliana Patarroyo, M.D.

Accepted to participate in the 2024 APA Research Colloquium, 2024

Michelle Linke Shafa, M.D.

Trainee/Resident, Women in Child and Adolescent Psychiatry Committee, American Academy of Child and Adolescent Psychiatry, 2023-2024

Terence Meyerhoefer, M.D.

Best Poster Award for “Resident Psychiatric Outreach in Rochester, MN: A Multipronged Approach,” co-authors Mohammad Ghafouri, M.D., Casimir Klim, M.D., Monica Taylor-Desir, M.D., MPH, 2023

Lauren Eide, M.D.

Mentor to Hanin Ali, M.D., awardee for “Take With Food: A Case of Psychiatric Decompensation Following Bariatric Surgery,” 2023
Co-authors: Jonathan Leung, PharmD, RPh, Matej Markota, M.D.

Vanessa Dang, M.D.

Best Poster Award, European Association of Psychosomatic Medicine, Lausanne, Switzerland, 2023

Casey Gilman, M.D.

Accepted to the Child and Adolescent Psychiatry Research Institute (CAPRI) Research Colloquium for Early Career Investigators, American Academy of Child and Adolescent Psychiatry, 2023-2025

Liz Boots, Ph.D.

Society for Clinical Neuropsychology Student Poster Award: Translational Neuropsychology Award, American Psychological Association, 2024

Jeremiah Joyce, M.D.

Young Psychiatrist Investigator Award, Departmental Research Committee, \$1,500 to support research on Delirium Severity Measurement in the ICU, 2023

Psychiatry and Psychology Research Team

Michelle K. Skime, M.S., AMA-CMP

PERSONNEL

Aya Abdelrahman Siddig, Ashley Brown, Danielle M. Cox, Kristina C. Dammen, Toby Halladay, Jennifer R. Geske, M.S., Barbara A. Hall, Laura N. Harper, Deanna R. Hofschulte, C.C.R.P., Charlie R. Hoth, Sheila Iteghete, Rene C. Kelly-Jambor, Sarah Jenö, Angie Lam, M.S., Allison M. LeMahieu, M.S., Karin M. Lindstrom, Jared D. Masrud, Audrey McGuinness, Eric Mehus, Vanessa Pazdernik, Katherine M. Piderman, Ph.D., Nicole Reinicke, Michelle K. Skime, M.S., Lori L. Solmonson, Cynthia J. Stoppel, C.C.R.P., Brianna Tranby, Kelsey Tuen, & Sarah M. Williams
(Mayo Clinic Rochester)



The primary role of the Departmental Research Team is to provide administrative and protocol support services for all departmental faculty who have an interest in engaging in research. The scope of expertise includes administration of both pre- and post-grant submission related activities, budget and protocol development, regulatory documentation and management, manuscript submission, and preparation for national and international scientific educational sessions. This research team provides support for patient care projects, clinical trials research, and basic science research.

To support the department's growth of research activities related to clinical trials, Michelle Skime, MS, Program Manager, and Sarah Williams, Clinical Research Coordinator-Supervisor, lead teams of well-trained certified, associate, and clinical research coordinators. On average, 15 dedicated clinical coordinators support over 80 active clinical research protocols throughout the department including, but not limited to, the Pain Rehabilitation Program, Addiction Program, and Mood Disorders Program in both adult and adolescent populations. The team also includes Barbara Hall (Senior Research Protocol Specialist), Sheila Iteghete (Research Protocol Specialist), Cindy Stoppel and Angie Lam (Senior Program Coordinators for Addictions and Mood respectively), Rene Kelly-Jambor and Lori Solmonson (Research Administrative Assistants), Stephanie Swift (Manager-Administrative Office) and Hope Edgar (Medical Administrative Assistant Supervisor), who support the administrative functions of the department's research mission.

A second group, dedicated to Community Health Education Outreach, is the Behavioral Health Research Program led by Dr. Christi Patten. Their research focuses on developing behavioral interventions for tobacco cessation for underserved populations and reducing cancer health disparities. Their current research provides tailored programs for Native Americans, pregnant women, smokers with psychiatric comorbidity, and the social network of smokers. This team includes Brianna Tranby (Senior Program Coordinator) and 3 clinical research coordinators.

We have a formal Research Training Professional Committee, chaired by Dr. Veldic, and supported by Ms. Michelle Skime, that tracks and coordinates the training and mentoring for approximately 40 research temporary professionals from a variety of countries, at varying levels of training from research trainees to research collaborators. The training program includes monthly research round tables, which include an educational presentation and an opportunity for networking with other researchers.

International Research Collaborators

Mayo Clinic Collaborators: Matthew Clark, Ph.D., L.P., Shawna Ehlers, Ph.D., L.P., Mark Frye, M.D., & Marin Veldic, M.D.

Alfredo B. Cuéllar-Barboza, M.D. Universidad Autónoma de Nuevo León, Monterrey, México

Mayo Clinic Collaborators: Mark A. Frye, M.D., & Marin Veldic, M.D.



Dr. Cuellar-Barboza is a mood psychiatrist focused on studying bipolar disorder genetics. He is a Professor of Psychiatry and Vice-Chair of Education and Director of the Affective Health Center, at the Universidad Autonoma de Nuevo Leon, Monterrey, Mexico. He has been a Research Collaborator with the Department of Psychiatry at Mayo Clinic since 2018. Through his collaboration with the Individualized Medicine Biobank for Bipolar Disorder, Dr. Cuellar-Barboza has contributed to the understanding of bipolar disorder genetic risk and its interactions with obesity and eating behaviors. He has led CONACYT (Mexico NIH equivalent) Grants of pharmacogenomics and major depression. Together with Mayo Clinic researchers, he investigates the genomics of bipolar disorder subphenotypes and diversity in genomic research. He is an active collaborator of the Psychiatric Genomics Consortium and the Consortium of Lithium Genetics and is Co-Chair of the Bipolar Group of the Latin American Genomics Consortium. Dr. Cuellar-Barboza is a recipient of several awards such as the Eli-Lilly Fellowship on Bipolar Disorder and the Samuel Gershon Junior Investigator Award.

Delali Fiagbe, M.B.Ch.B., M.W.A.C.P, F.G.C.P.S Neuropsychiatrist at the University of Ghana Medical School, Accra, Ghana

Mayo Clinic Collaborator: Marin Veldic, M.D.

Dr. Delali Fiagbe is a senior lecturer and neuropsychiatrist dedicated to advancing psychiatric care and education in Ghana. He holds several key positions:

- President of the Psychiatric Association of Ghana
- Head of the Department of Psychiatry at the University of Ghana Medical School
- Head of Psychiatry at Korle-Bu Teaching Hospital
- Training Coordinator for the Faculty of Psychiatry, Ghana College of Physicians and Surgeons

Dr. Fiagbe has contributed to various research projects, notably collaborating with Dr. Marin Veldic on a mixed-methods systematic review of transcultural perceptions of bipolar disorder in the West African sub-region. This study aims to enhance understanding of cultural influences on bipolar disorder diagnosis and treatment in West Africa, potentially improving patient care and outcomes. Other research interests span neurocognitive dysfunction in Patients with Schizophrenia and HIV/AIDS, neuropsychological changes in tuberculosis patients, ethical dilemmas in psychiatric practice, digital-palmar dermatoglyphics characteristics of patients living with schizophrenia in Ghana. Dr. Fiagbe's work has been published in a number of peer-reviewed journals. Beyond his professional achievements, Dr. Fiagbe is also an accomplished jazz pianist.



Sophie Erhardt, Ph.D. Professor of Experimental Psychiatry, Academic Coordinator, KI-Mayo Collaboration, President, Scandinavian College of Neuropharmacology, Karolinska Institutet, Stockholm, Sweden Mayo Clinic Collaborators: Mark A. Frye, M.D.



Dr. Erhardt's role within the Mayo Clinic and Karolinska Institutet (KI) collaboration is to support the continuation and growth of joint initiatives that bridge research and education. As the partnership celebrates its 30th year in 2024, she has actively contributed to sustaining the collaborative spirit that drives innovation and shared successes between these two leading institutions. For more than a decade, neuroscientists, psychiatrists, psychiatric statistical geneticists, educators and students from Mayo and KI have met to design research projects focused on genomics and clinical phenotyping of mental illness, as well as investigating biologically based mechanisms of disease pathology and treatment response. Students are actively involved in the mentored opportunities. Dr. Erhardt, Professor of Experimental Psychiatry and research group leader for Neuropsychimmunology at the Department of Physiology and Pharmacology, has led efforts in joint publications focused on Bioenergetics and synaptic plasticity as potential targets for individualizing treatment for depression and proteomic signatures associated with symptom severity of first-episode of psychosis.

Dr. Gardea-Resendez is a mood psychiatrist focused on exploring the intricate relationship between nutrition, metabolism, and bipolar disorder, as well as the importance of shared decision-making in bipolar treatment plans. He is a professor of psychiatry, researcher, and vice-chair of outpatient consultation at the Universidad Autónoma de Nuevo León (UANL) in Monterrey, Mexico. Through his collaboration with the Mayo Clinic Bipolar Disorder Biobank, Dr. Gardea-Resendez has studied the impact of diet quality and metabolic disturbances in bipolar disorder severity and the role of mitochondrial dysfunction in bipolar disorder. He is currently pursuing a doctoral degree at UANL, where, in collaboration with Mayo Clinic, he is conducting a genome wide association study of diet quality. He is the lead investigator of an epidemiological study examining the link between diet, central adiposity, and psychiatric disorders in the Mexican population. Before returning to Mexico, Dr. Gardea-Resendez completed a Mood Fellowship at the Mayo Clinic Depression Center in Rochester, Minnesota, under the mentorship of Dr. Mark A. Frye. Dr. Gardea-Resendez is member of the National Researcher System from Mexico's National Council of Science and Technology (CONHACYT) and has received numerous awards including the New Investigator Award from the American Society of Clinical Psychopharmacology (ASCP) and the Community Psychiatry Scholarship from the Minnesota Psychiatry Society.



Alessandro Miola, M.D., Ph.D., Psychiatrist at the Department of Neuroscience, University of Padova, Padua, Italy

Mayo Clinic Collaborator: Mark A. Frye, M.D.

Dr. Miola is a MD, PhD, psychiatrist focused on mood disorders. He is currently working as a researcher at the Department of Neuroscience, University of Padova, Padua, Italy. He has held the position of research fellow at the Department of Psychiatry and Psychology at Mayo Clinic (Rochester, MN, USA) under the mentorship of Dr. Mark A. Frye.

Currently, he serves as a research collaborator at the Department of Psychiatry and Psychology at Mayo Clinic under the supervision of Dr. Marin Veldic and Dr. Mark A. Frye, and as co-investigator at the International Consortium for Mood & Psychotic Disorders Research, Mailman Research Center, McLean Hospital (Belmont, MA, USA).

He has contributed to the understanding of clinical correlates of bipolar disorder prodrome utilizing data from the Rochester Epidemiology Project. In addition, Dr. Miola has also investigated the cardiometabolic burden in bipolar disorders, with emphasis on insulin resistance and obesity, through his collaboration with the Individualized Medicine Biobank for Bipolar Disorder.

Dr. Miola had received several awards, including the SOBP Travel Fellowship Award (Society of Biological Psychiatry), the APPA Scholarship Award (American Psychopathological Association), and the ASCP New Investigator Award (American Society of Clinical Psychopharmacology).



Lise Solberg Nes, Ph.D. Oslo University Hospital, Oslo, Norway Mayo Clinic Collaborators: Matthew M.

Clark, Ph.D., L.P., Shawna L. Ehlers, Ph.D., L.P., Eleshia J. Morrison, Ph.D., L.P., & Karen E. Weiss, Ph.D., L.P.

Dr. Solberg Nes is Head of Department for the Department of Digital Health Research, Division of Medicine, Oslo University Hospital, Norway. She is also Professor, Institute of Clinical Medicine, Faculty of Medicine, University of Oslo, and an Adjunct Associate Professor of Psychology in the Department of Psychiatry and Psychology, Mayo Clinic College of Medicine and Science. Dr. Solberg Nes has several clinical trials funded by the Norwegian Research Council (R01 equivalent) and the Norwegian Cancer Society. Her research currently focuses on using digital health to help patients utilize self-management strategies for coping with medical conditions such as cancer and chronic pain, and support health behavior changes for example to facilitate weight maintenance after weight loss for people with obesity. Dr. Solberg Nes has published her findings in numerous scientific journals including Cancer, Lung Cancer, Cancer Medicine, Pain, Pain Reports, Psychological Science, Annals of Behavioral Medicine and Journal of Medical Internet Research.



Research Operations Administration

Nanci Hawley, R.N., N.P.

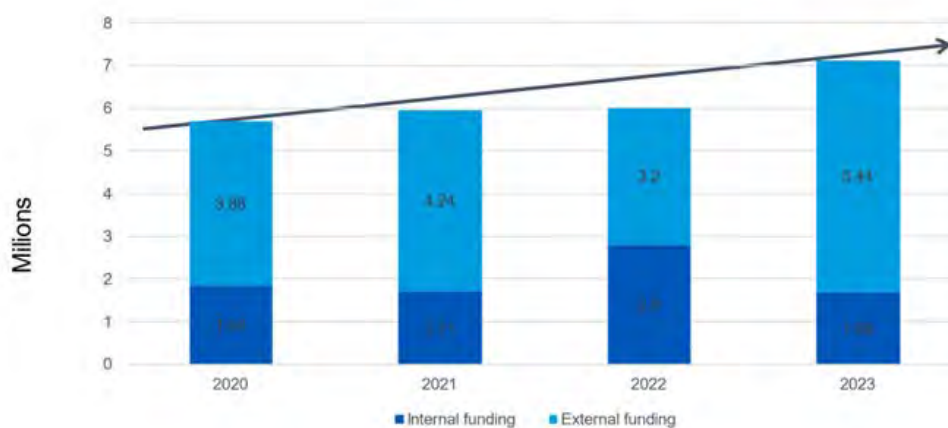
The Mayo Clinic's research support covers a wide range of services detailed in this report. They help secure research space and equipment, handle administrative tasks like grant submissions and publication, provide statistical support, manage finances and legal matters, assist with patent applications and commercialization, develop protocols, recruit patients, and support ethical review processes. The department's own research unit also plays a significant role in these efforts.

Additionally, Mayo Clinic assigns an operations administrative partner to oversee and advocate for the department's research initiatives. This administrator supports faculty and allied health staff in planning future research opportunities, securing funding and resources, and ensuring efficient use of support services to advance medical and scientific goals, ultimately benefiting patient care.

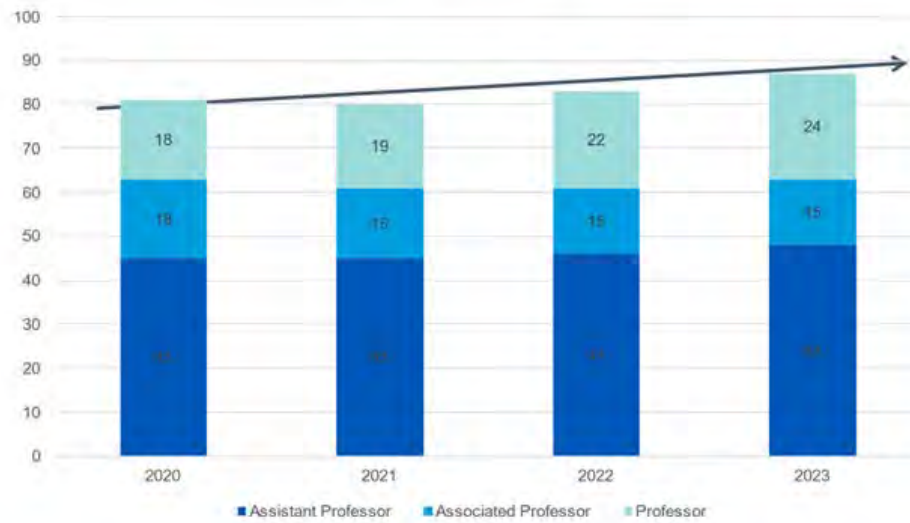
The graphs in this report illustrate the collective achievements of the department's faculty, trainees, and staff in research. Positive trends in publications and grant funding demonstrate the department's growing investment in research, leading to advancements in understanding and treating mental health disorders, as highlighted throughout the report. The department plans to continue enhancing its research support to further bolster its capabilities and support its staff.



Grant Funding

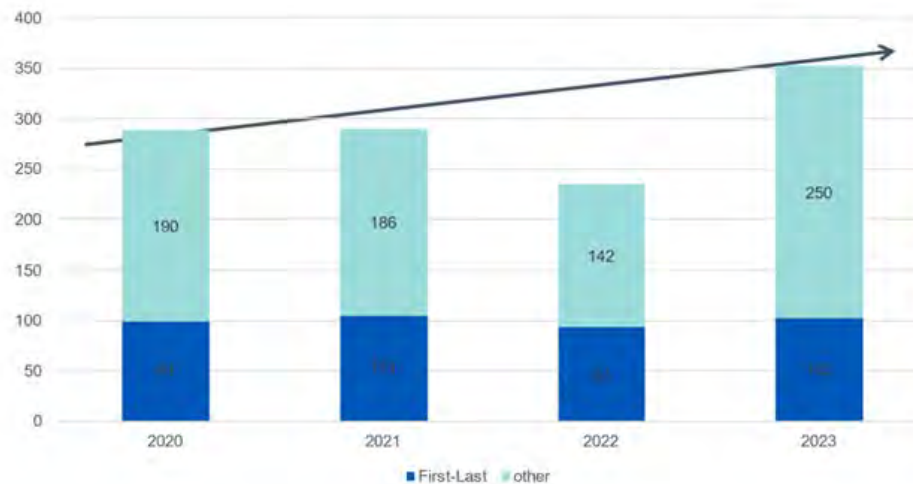


Academic Rank



KEY PUBLICATIONS

Publications



Department of Psychiatry and Psychology Researchers



Osama A. Abulseoud, M.D.
Mayo Clinic Arizona



Eva C. Alden, Ph.D., L.P.
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