



2022-2023 Research Report

Psychiatry and Psychology



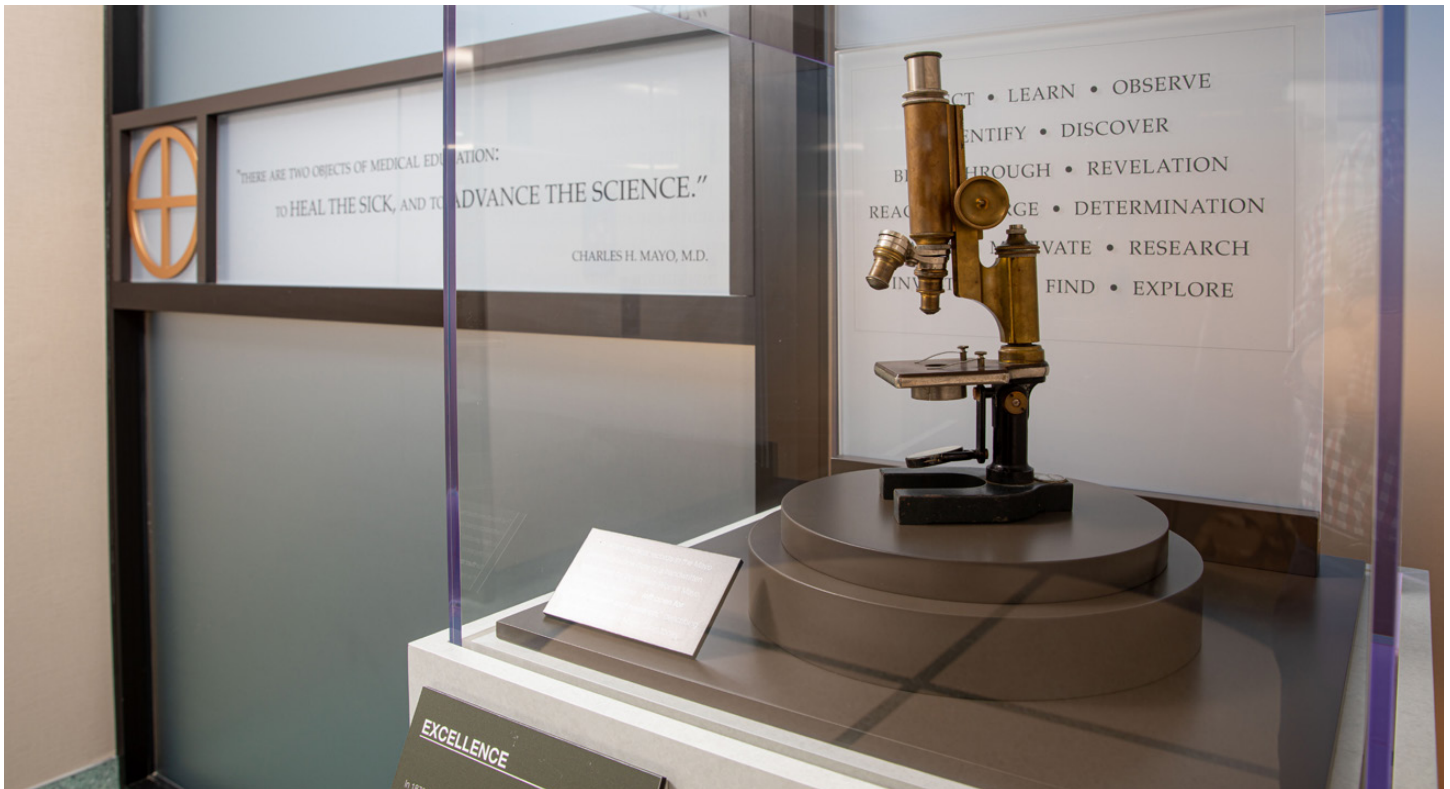


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Department Chairs



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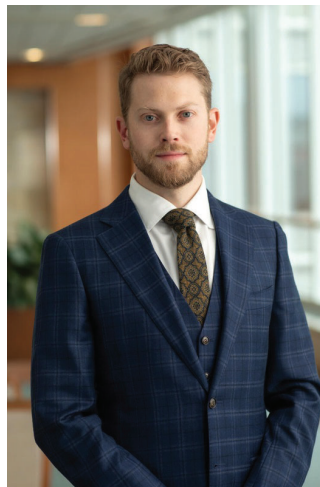
2022-2023 Department of Psychiatry and Psychology Annual Research Report

Underserved Populations

Dr. Christi Patten's Behavioral Health Research Program (BHRP) focuses on community-based participatory research to culturally adapt and evaluate behavioral health promotion interventions among populations underserved. Dr. Patten is one of the Principal Investigators of a new P50 Center grant from the National Institute of Minority Health Disparities (NIMHD) with the University of Minnesota. The Center for Chronic Disease Reduction and Equity Promotion across Minnesota (C2DREAM) focuses on addressing racism and other social determinants of health as key causes of cardiovascular disease among Black, Indigenous and People of Color (BIPOC). The Center will evaluate culturally relevant, community-engaged, multi-level, health promotion interventions to address cardiovascular disease and related chronic conditions including hypertension and obesity. In 2022, the BHRP team was also funded by a Mayo Clinic Clinical Trials Innovation award to develop and evaluate interventions addressing digital equity to enhance access to evidence-based care among Midwest rural patients. The BHRP team has long-standing relationships with Indigenous communities including Alaska Native people. The team received a new R01 from NIDA to culturally adapt and implement in a randomized controlled trial an Alaska Native family-based financial incentive intervention for smoking cessation that will be delivered virtually statewide in Alaska. The team also recently published outcomes of a digital, remotely delivered social media intervention to reach Alaska Native people who smoke in Alaska statewide. Their experience in delivering social digital addiction interventions was integral to forming a new local Minnesota partnership to address opioid use recovery among American Indian women. With funding from the NIDA Clinical Trials Network, the team is developing and will evaluate a culturally relevant Facebook group intervention to support Native women in recovery from illicit opioid use.



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Digital Health and Platform Medicine

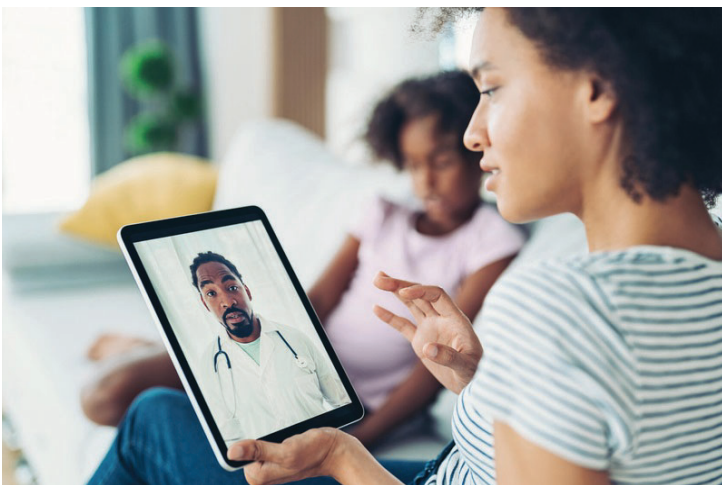
The Department of Psychiatry and Psychology has recently established the Digital Health and Platform Medicine Committee (DHPMC) to improve mental health services and care through the use of technology. The DHPMC serves to accelerate the development of novel digital applications, connect clinical investigators with technological resources, and facilitate research into the intersection of technology and mental health. The overarching goal is to contribute substantially to research in the digital mental health domain, by bringing Mayo Clinic's diverse and deep clinical expertise to the development, implementation, and rigorous evaluation of digital tools and clinical interventions. To date the DHPMC has facilitated three primary projects.

In our inaugural year, the DHPMC launched the Digital Pipeline Initiative to fund three clinicians to develop and competitively pitch product concepts with a digital development company. The chosen investigator, Dr. Shawna Ehlers, then received outside consultation to pursue pilot funding for her project to provide digital mental health support for cancer patients.

The DHPMC has also facilitated the development of a digital child mental health platform to enhance the delivery of evidence-based child mental health services. Through support from generous benefactors and partnership with a digital development consultancy we anticipate the release of a pilot version in late 2022 demonstrating the ability to integrate assessment, connection with referrals, and treatment education.

In each of our first two years, the DHPMC has supported the development of a digital platform for a collaborative care-based addiction program in primary care. The first year of funding supported the development of a robust product plan that led to building and testing of a prototype in year two. In turn, this initial development support from DHPMC has been crucial to gain ongoing support from external funding sources.

Additional work to date has included review studies, policy-oriented commentary, prospective trials, and prototyping of a digital solution to support adult patients with schizophrenia. In the coming years, the DHPMC aims to build a more robust infrastructure to foster new ideas, rapidly build testable prototypes, and connect validated clinical tools and products with the resources to integrate into the next generation of mental health care. As its central mission, the DHPMC will continue to anticipate and strategically respond to emerging digital healthcare trends to cultivate a departmental pipeline of digital products with clinical applications that will cure, connect, and transform patient care consistent with the Mayo 2030 Vision.



Telehealth

INVESTIGATORS

Scott A. Breiting M.D., Melanie T. Gentry M.D., Alastair J. McKean, M.D., & Tyler S. Oesterle., M.D., M.P.H.

This research team works to understand the current and future role of telehealth clinical services to better meet mental health needs of our patients and communities. Telehealth has been a vital component of mental health care delivery during the COVID-19 pandemic. Telehealth has been an effective means of treatment for many during the pandemic, although access to technology continues to present challenges to many individuals, particularly those in rural areas. Our research team has focused on implementation, service delivery and education related to video and audio only services. This team has been a notable leader within this innovative field as evidenced by this article in the Mayo Clinic Proceedings “Barriers to Use of Telepsychiatry: Clinicians as Gatekeepers” being recognized as within the top 1% of Clinical Medicine articles cited for 2021. The team continues to explore projects to expand the reach of telehealth for Mayo Clinic patients and for patients receiving health care nationwide.

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Mayo Clinic Depression Center



INVESTIGATORS

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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 21 leading clinical and academic Centers of Excellence in the U.S. working to transform the field of depressive illness and related mood disorders.

GRANTS AND AWARDS

Funded by AssureRx. A Pharmacokinetic/pharmacodynamic Genetic Variation Treatment Algorithm versus Treatment As Usual for Management of Depression. 05/2014 – 12/2021. PI: Mark Frye, M.D., Co-Investigator: Marin Veldic, M.D.

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Individualized Medicine and Biobank for Bipolar Disorder



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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 2,300 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 for bipolar disorder is often delayed by more than a decade from the time of onset. Additionally, identification of pharmacogenomic predictors of treatment response could provide increased selectivity to treatment recommendations, as well as help prevent adverse events such as treatment emergent mania.

GRANT

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

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Taylor-Desir MJ, Balls-Berry JE, McElroy SL, Bond DJ, Vallender EJ, Ladner M, Coombes BJ, Jackson L, Arceo D, Caples FV, Colby C, Patten CA, Biernacka JM, Frye MA. Comparison of Demographic and Clinical Features of Bipolar Disorder in Persons of African and European Ancestry. *J Racial Ethn Health Disparities*. 2022 Jan 21. doi: 10.1007/s40615-022-01228-3. Epub ahead of print. PMID: 35064520

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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

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

INVESTIGATORS

Kelly B. Ahern, B.S., Arjun Athreya, Ph.D., Irena G. Balzekas, Paul E. Croarkin, D.O., M.S., Deniz Doruk Camsari, M.D., Mark A. Frye, M.D., Juan Garzon, M.D., Simon Kung, M.D., Ming-Fen Ho, Ph.D., Emily K. Johnson, A.P.R.N., C.N.P., Rakesh Kumar, M.D., Maria I. Lapid, M.D., Brian N. Lundstrom, M.D., Ph.D., Keith G. Rasmussen, M.D., Magdalena Romanowicz M.D., Can Ozger, B.S., Matej Markota, M.D.; Debra A. Ryan, R.N., Julia Shekunov, M.D., Shirlene M. Sampson, M.D., M.S., Samantha Scaletty, B.S., Balwinder Singh, M.D., M.S., Jennifer L. Vande Voort, M.D., Jeremy M. Weiss, B.S., Gregory A. Worrell, M.D., Ph.D., & Deniz Yuruk, M.D. (Mayo Clinic Rochester)



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 rTMS to improve cognition in Mild Cognitive Impairment (MCI), funded by small grants and Foundations. Drs. Croarkin, Shekunov, and Vande Voort are leading an NIH-funded dose finding study of 1 Hz vs 20 Hz TMS for adolescents with depression and 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 recently launched a study that will inform 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 in adolescents and adults. This includes partnerships with data, preclinical, and biomedical engineer scientists to develop predictive models, high throughput dose finding platforms and closed loop approaches to dosing transcranial magnetic stimulation. A planned international collaboration will launch clinical trials of novel noninvasive brain stimulation modalities for children with ADHD, ASD, and disruptive behaviors. Current initiatives with DBS will 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 AND AWARDS

National Institute of Mental Health. R01 MH113700: Glutamatergic and GABAergic Biomarkers in rTMS for Adolescent Depression. 08/2017 – 11/2022. PI: Paul Croarkin, D.O., M.S.

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.

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 – 5/2023. PI: Maria I. Lapid, M.D.

KEY RECENT PUBLICATIONS

Allen ND, Allison CL, Golebiowski R, Janowski JPB, LeMahieu AM, Geske JR, Rasmussen KG. Factors Associated With Postictal Agitation After Electroconvulsive Therapy. *J ECT*. 2022 Mar 1; 38 (1):60-61 PMID: 34739422 DOI: 10.1097/YCT.0000000000000807

Collins AR, Cheung J, Croarkin PE, Kolla BP, Kung S. Effects of transcranial magnetic stimulation on sleep quality and mood in patients with major depressive disorder. *J Clin Sleep Med*. 2022 May 1; 18 (5):1297-1305 PMID: 34931606 PMID: 9059593 DOI: 10.5664/jcsm.9846

Elmaghraby R, Sun Q, Ozger C, Shekunov J, Romanowicz M, Croarkin PE. A Systematic Review of the Safety and Tolerability of Theta Burst Stimulation in Children and Adolescents. *Neuromodulation*. 2022 Jun; 25 (4):494-503 Epub 2022 Feb 02 PMID: 35670061 DOI: 10.1111/ner.13455

Fong TG, Hshieh TT, Tabloski PA, Metzger ED, Arias F, Heintz HL, Patrick RE, Lapid MI, Schmitt EM, Harper DG, Forester BP, Inouye SK. Identifying Delirium in Persons With Moderate or Severe Dementia: Review of Challenges and an Illustrative Approach. *Am J Geriatr Psychiatry*. 2022 Apr 21:S1064-7481(22)00388-8. doi: 10.1016/j.jagp.2022.04.003. Epub ahead of print. PMID: 35581117

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Medeiros GC, Gould TD, Prueitt WL, Nanavati J, Grunebaum MF, Farber NB, Singh B, Selvaraj S, Machado-Vieira R, Achtyes ED, Parikh SV, Frye MA, Zarate CA Jr, Goes FS. Blood-based biomarkers of antidepressant response to ketamine and esketamine: A systematic review and meta-analysis. *Mol Psychiatry*. 2022 Jun 27 Epub 2022 June 27 PMID: 35760879 DOI: 10.1038/s41380-022-01652-1

Parikh TK, Strawn JR, Walkup JT, Croarkin PE. Repetitive Transcranial Magnetic Stimulation for Generalized Anxiety Disorder: A Systematic Literature Review and Meta-Analysis. *Int J Neuropsychopharmacol*. 2022 Feb 11; 25 (2):144-146 PMID: 34791241 PMCID: 8832221 DOI: 10.1093/ijnp/pyab077

Seewoo BJ, Hennessy LA, Jaeschke LA, Mackie LA, Etherington SJ, Dunlop SA, Croarkin PE, Rodger J. A Preclinical Study of Standard Versus Accelerated Transcranial Magnetic Stimulation for Depression in Adolescents. *J Child Adolesc Psychopharmacol*. 2022 Apr; 32 (3):187-193 Epub 2021 Dec 31 PMID: 34978846 PMCID: 9057889 DOI: 10.1089/cap.2021.0100

Seewoo BJ, Rodger J, Demitrack MA, Heart KL, Port JD, Strawn JR, Croarkin PE. Neurostructural differences in adolescents with treatment resistant depression and treatment effects of transcranial magnetic stimulation. *Int J Neuropsychopharmacol*. 2022 Jan 28 [Epub ahead of print] PMID: 35089358 DOI: 10.1093/ijnp/pyac007

Sigrist C, Vockel J, MacMaster FP, Farzan F, Croarkin PE, Galletly C, Kaess M, Bender S, Koenig J. Transcranial magnetic stimulation in the treatment of adolescent depression: a systematic review and meta-analysis of aggregated and individual-patient data from uncontrolled studies. *Eur Child Adolesc Psychiatry*. 2022 Jun 24 Epub 2022 June 24 PMID: 35751003 DOI: 10.1007/s00787-022-02021-7

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LEADERSHIP ROLES

Paul Croarkin, M.D.

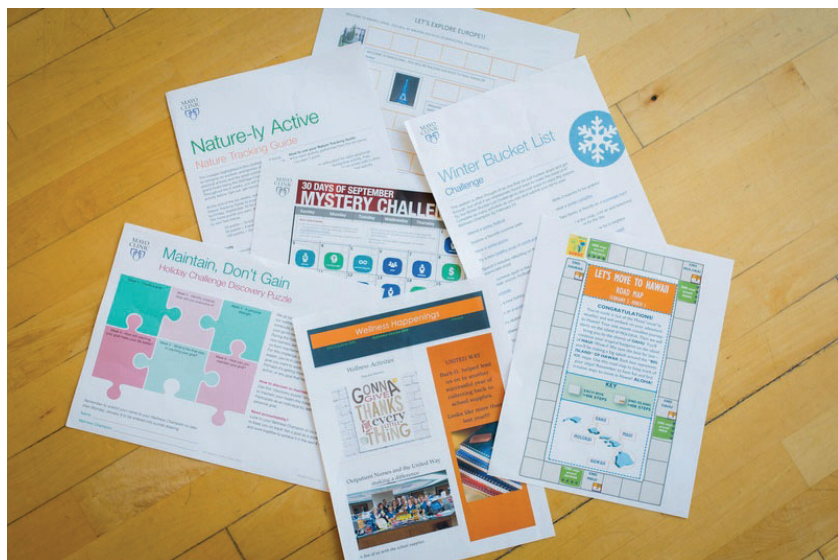
-NIH Center for Scientific Review Emphasis Panel ZRG1 ETTN-A (91) Special Topics: Noninvasive Neuromodulation and Neuroimaging (Chair) July 2021

-Clinical TMS Society Clinical Standards Committee Member 2020-Current

Maria Lapid, M.D.

-Chair, ECT-AD Publications Committee

Wellness Coaching and Resiliency



INVESTIGATORS

Matthew M. Clark, Ph.D., L.P., Sheila G. Jowsey-Gregoire, M.D., Sandra J. Rackley, M.D., M.A.Ed.H.D., & Kristin S. Vickers, Ph.D., L.P.
(Mayo Clinic Rochester)

Cynthia M. Stonnington, M.D., Robert P. Bright, M.D., & Neeta N. Jain, M.D.
(Mayo Clinic Arizona)

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 provide programs for aerobic fitness, healthy nutrition, weight management, health and wellness coaching, and resiliency for over 14,000 employee members. Mayo Clinic has also developed an evidence-based patient wellness center, The Healthy Living Program. Dr. Vickers helped create, design, and implement the Mayo Clinic Health and Wellness Coaching Certification Program and trains healthcare providers from across the country in coaching communication and self-management education approaches for medical settings. Dr. Rackley is the Director of Trainee Well-Being for the Mayo Clinic School of Graduate Medical Education. In this role, she 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 wellness. 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. She 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, a randomized control trial comparing in-person versus smartphone-delivered resiliency interventions for healthcare workers, and examining the outcomes from participating in a 12-week health and wellness coaching program.

GRANT

National Heart, Lung, and Blood Institute. K24 HL 138150: Mechanistic Effects of Health Coaching to reduce COPD Hospitalizations. 05/2018 - 04/2023. PI: Roberto P. Benzo, M.D.; Other Significant Contributor: Matthew M. Clark, Ph.D.

KEY RECENT PUBLICATIONS

Benzo, R, Houlst, J, McEvoy, C, Clark, MM, Benzo, M, Johnson, M, Novotny. Promoting COPD wellness through remote monitoring and health coaching: A randomized study. *American Journal of Respiratory and Critical Care Medicine*, in press.

Chatterjee K, Edmonds VS, Girardo ME, Vickers KS, Hathaway JC, Stonnington CM. Medical students describe their wellness and how to preserve it. *BMC Med Educ*. 2022 Jun 28; 22 (1):510 Epub 2022 Jun 28 PMID: 35764972 PMCID: 9241274 DOI: 10.1186/s12909-022-03552-y

Chesak SS, Morin KH, Cutshall S, Carlson M, Joswiak ME, Ridgeway JL, Vickers KS, Sood A. Stress Management and Resiliency Training in a Nurse Residency Program: Findings From Participant Focus Groups. *J Nurses Prof Dev*. 2019 Nov/Dec; 35 (6):337-343 PMID: 31651555 DOI: 10.1097/NND.0000000000000589

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

Gergelis KR, Anand US, Rian JS, Roberts KW, Quinones PJ, Olivier KR, Corbin KS, Stonnington CM. Integrating a Grassroots Well-Being Curriculum into a Radiation Oncology Residency Program. *Adv Radiat Oncol*. 2022 Jan-Feb; 7 (1):100837 Epub 2021 Oct 27 PMID: 34934867 PMCID: 8654639 DOI: 10.1016/j.adro.2021.100837

Karnatovskaia LV, Varga K, Niven AS, Schulte PJ, Mujic M, Gajic O, Bauer BA, Clark MM, Benzo RP, Philbrick KL. A pilot study of trained ICU doulas providing early psychological support to critically ill patients. *Crit Care*. 2021 Dec 20; 25 (1):446 PMID: 34930440 PMCID: 8691072 DOI: 10.1186/s13054-021-03856-3

Kraus MB, Reynolds EG, Maloney JA, Buckner-Petty SA, Files JA, Hayes SN, Stonnington CM, Vallow LA, Strand NH. Parental leave policy information during residency interviews. *BMC Med Educ*. 2021 Dec 18; 21 (1):623 PMID: 34922524 PMCID: 8684616 DOI: 10.1186/s12909-021-03067-y

Kraus MB, Talbott JMV, Melikian R, Merrill SA, Stonnington CM, Hayes SN, Files JA, Kouloumberis PE. Current Parental Leave Policies for Medical Students at U.S. Medical Schools: A Comparative Study. *Acad Med*. 2021 Sep 1; 96 (9):1315-1318 PMID: 33769337 DOI: 10.1097/ACM.0000000000004074

Liou H, Stonnington CM, Shah AA, Buckner-Petty SA, Locke DEC. Compensatory and Lifestyle-Based Brain Health Program for Subjective Cognitive Decline: Self-Implementation versus Coaching. *Brain Sci*. 2021 Sep 30; 11 (10) Epub 2021 Sept 30 PMID: 34679371 PMCID: 8534077 DOI: 10.3390/brainsci11101306

Stonnington CM, Jones K, Leighton JA. How to Infuse Joy in Your Practice: Our Journey to Sustainable Well-being. *Am J Gastroenterology*. 2022, in press

Worley LLM, Stonnington CM. A model of maintaining well-being and preventing burnout for psychiatrists. In: LoboPrabhu S, Summers RF, Moffic HS, editor(s). *Combating Physician Burnout: A Guide for Psychiatrists*. American Psychiatric Association Publishing; 2020

LEADERSHIP ROLES

Matthew M. Clark, PhD

-Member, Scientific Advisory Council, Institute of Coaching, Harvard University.

Cynthia M. Stonnington, MD

-Director of Research, IGNITEmed (a national nonprofit organization that provides coaching, education, and research to explore issues that are encountered by women in training and throughout a career in medicine)

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. Over the past two years we have completed a comprehensive meta-analysis documenting the essential nature of exposure in the treatment of childhood anxiety disorders. This team also published the first demonstration of the effectiveness of worry exposures in children through the use of virtual reality and standard paper and pencil methods. While our work continues to identify the gap between clinical practice and evidence-based recommendations, we were able to successfully use technology to increase the use of exposure by community-based clinicians. Finally, in response to the COVID-19 pandemic, we rapidly built a publicly available website to provide education about treatment for childhood anxiety disorders, disruptive behavior, and strategies for coping with stress.

Our ongoing work set for completion in the next year represents the culmination of lines of research we have been pursuing over the years. First, in the fall of 2022 we anticipate completing data collection for a randomized controlled trial comparing our Parent-Coach Exposure Therapy to current gold-standard cognitive behavioral therapy. Second, through the generosity of benefactors we are enhancing our digital child anxiety assessment and treatment tools and integrating them into a comprehensive child mental health digital platform. Third, recruitment for our second grant-funded examination of virtual reality-based exposure therapy will conclude in 2023.

GRANTS

Development of a Child Mental Health Digital Platform. 7/21-1/23. Benefactor Gift to Mayo Clinic. Principal Investigator: Stephen Whiteside, Ph.D., L.P.

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

Canavera, K. E., Ollendick, T. H., Farrell, L. J. & Whiteside, S. P. H. (2022) A Five-Day Intensive Treatment for Pediatric Obsessive-Compulsive Disorder: A Multiple Baseline Design Pilot Study, Evidence-Based Practice in Child and Adolescent Mental Health, DOI: 10.1080/23794925.2022.2034553

Sattler, A. F., Leffler, J. M., Harrison, N. L., Bieber, E. D., Kosmach, J. J., Sim, L. A., Whiteside, S. P.H. (2019). The Quality of Assessments for Childhood Psychopathology within a Regional Medical Center. Psychological Services, 16, 596-604

Simon, E., de Hullu, E., Bögels, S., Verboon, P., Butler, P. van Groeninge, W., Slot, W., Craske, M., Whiteside, S., & van Lankveld, J. (2020). Development of 'learn to dare!': An online assessment and intervention platform for anxious children. BMC Psychiatry 20, 60. <https://doi.org/10.1186/s12888-020-2462-3>

Whiteside, S. P. H., Biggs, B. K., Dammann, J. E., Tiede, M. S., Hofschulte, D., & Brennan, E. (2022). Community therapist response to technology-assisted training in exposure therapy for childhood anxiety disorders. Behavior Modification, 46, 628-650. DOI: 10.1177/0145445520982966

Whiteside, S. P. H., Biggs, B. K., Ollendick, T. H., Dammann, J. E., Tiede, M. S., Hofschulte, D., Reneson-Feeder, S., Cunningham, M., Sawchuk, N. R., Geske, J. S., & Brennan, E. (2022). Using technology to promote therapist use of exposure therapy for childhood anxiety disorders: A randomized pilot study. Behavior Therapy, 53, 642-655. <https://doi.org/10.1016/j.beth.2022.01.010>

Whiteside, S. P. H., Biggs, B. K., Tiede, M. S., Dammann, J. E., Hathaway, J. C., Blasi, M. E., Hofschulte, D., & Vickers, K. (2019). An online- and mobile-application to facilitate exposure for childhood anxiety disorders. Cognitive and Behavioral Practice, 26, 478-491

Whiteside, S. P. H., Brennan, E., Biggs, B. K., Sawchuk, N., Hofschulte, D. R., & Tiede, M. S. (2022). Quantifying Session Content in the Delivery of Parent Coached Exposure Therapy. Evidence-Based Practice in Child & Adolescent Mental Health, online pre-publication. DOI: 10.1080/23794925.2021.1931986

Whiteside, S. P., Riemann, B. R., & McCarthy, D. M. (2022). Using the Child Sheehan Disability Scale to Differentiate Severity Level in Youth with Anxiety Disorders and Obsessive Compulsive Disorder. Assessment, online pre-publication. DOI: 10.1177/10731911221077232

Whiteside, S. P., Sim, L. A., Olsen, M. W., & Hord, M. K. (2019). The Five-Year Course of Medication Treatment in Childhood Anxiety Disorders. *Journal of Clinical Psychiatry*, 80, e1-e6

Whiteside, S. P.H., O'Dell, S. M., Baker, A. M., Leffler, J. M., Sim, L. A., Harrison, N. L., Bieber, E. D., Kosmach, J. J., & Geske, J. R. (2021). From the Laboratory to the Office: Implementation and Sequencing of Evidence-based Treatment Components for Newly Diagnosed Childhood Psychiatric Disorders in a Large Health System. *Professional Psychology: Research and Practice*, 52, 156-164. <https://doi.org/10.1037/pro0000376>

Whiteside, S. P.H., Brennan, E., Biggs, B.K., Vickers, K., Hathaway, J., Seifert, S. J., Kramer, K. M., & Hofschulte, D. R. (2020). The feasibility of verbal and virtual reality exposure for youth with academic performance worry. *Journal of Anxiety Disorders*, 76, 102298. Doi: <https://doi.org/10.1016/j.janxdis.2020.102298>

Whiteside, S. P.H., Leffler, J. M., Hord, M. K., Sim, L. A., Schmidt, M. M., & Geske, J. R., (2020). The Compatibility of Clinical Child Mental Health Treatment and Evidence-Based Treatment Protocols. *Psychological Services*, 17, 25-32. doi: 10.1037/ser0000267

Whiteside, S.P.H., Sim, L.A., Morrow A.S., Farah W.H., Hilliker, D.R., Murad M.H., & Wang, Z. (2020). A meta-analysis to guide the enhancement of CBT for childhood anxiety: Exposure over Anxiety Management. *Clinical Child and Family Psychology Review*, 23 (1), 102-121. DOI 10.1007/s10567-019-00303-2



Pediatric Psychology

INVESTIGATORS

Bridget K. Biggs, Ph.D., L.P., Cynthia Harbeck-Weber, Ph.D., L.P., Daniel R. Hilliker, Ph.D., L.P., Sarah R. McCarthy, Ph.D., M.P.H., L.P., & Emily McTate, Ph.D., L.P.
(Mayo Clinic Rochester)

The primary goal of the pediatric psychology research team is to improve the quality of life of children and their families dealing with acute and chronic medical conditions. This work utilizes psychological science and multidisciplinary collaboration to better understand the interplay of psychological, interpersonal, contextual, and medical factors in pediatric illness. Dr. McCarthy has funding from the Agency for Healthcare Research and Quality (AHRQ) to examine the development and implementation of systematic distress screening programs for children with serious medical illnesses and their families. Dr. McCarthy also has ongoing research collaborations in the areas of shared decision making, healthcare communication, and pediatric palliative care. Drs. Biggs, Harbeck-Weber, and Hilliker conduct research and scholarly reviews on applying the biopsychosocial model to understanding distress and impairment related to autonomic dysfunction and functional symptoms in adolescence. Dr. McTate's primary research focus historically has been improving psychological care for patients with Sickle Cell Disease and their families. She is very interested in health equity and the role psychologists can play in anti-racism within academic medicine. More recently, she has been funded for a project aimed at training pediatric psychologists in responding to racism as active bystanders. As a whole, our research team has numerous scientific publications, presentations at national and international conferences, and professional leadership positions.

GRANTS

Agency for Healthcare Research and Quality. K12-HS26379: Minnesota Learning Health System Mentored Career Development Program (MN-LHS). 09/30/2018–09/29/2023. Principal Investigator: Felicity Enders, Ph.D.; Scholar: Sarah R.B. McCarthy, Ph.D., L.P.

The Society of Pediatric Psychology Anti-Racism Grant, Developing a Community of Practice to Advance Anti-Racism, Equity, and Inclusion. Entire Project Period: 03/21-03/22. Co-Investigator: Emily McTate, Ph.D., L.P.

KEY RECENT PUBLICATIONS

Brand McCarthy S, Tarquini SJ, Metcalf B, Lucy Pickard Pickard, Greenzang KA, Mack J. "What Matters to Me": What pediatric stem cell transplant patients want their providers to know. *J Psychosoc Oncol.* 2021; 39 (4):586-593 Epub 2021 Apr 26 PMID: 33900895 DOI: 10.1080/07347332.2021.1906376

Crosby, L. E., Joffe, N. E., Kidwell, K. M., Harry, O., McTate, E. A., Nwankwo, C., & Hood, A. M. (2021). Perceptions of a self-management intervention for adolescents with sickle cell disease. *Clinical Practice in Pediatric Psychology*

Feraco AM, McCarthy SR, Revette AC, Stevens SE, Das PJ, Al-Sayegh H, Ma C, Tulsy JA, Wolfe J. Feasibility and acceptability of the "Day 100 Talk": An interdisciplinary communication intervention during the first six months of childhood cancer treatment. *Cancer.* 2021 Apr 1; 127 (7):1134-1145 Epub 2020 Dec 15 PMID: 33320337 DOI: 10.1002/cncr.33362

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McCarthy SRB, Schiltz B. Masks, Empathy, and a Pediatric Cancer Diagnosis During COVID-19. *Pediatrics.* 2021 Nov; 148 (5) Epub 2021 Oct 07 PMID: 34620726 DOI: 10.1542/peds.2021-051696

McCarthy S, Tarquini SJ, Metcalf B, Lucy Pickard Pickard, Greenzang KA, Mack J. "What Matters to Me": What pediatric stem cell transplant patients want their providers to know. *J Psychosoc Oncol.* 2021; 39 (4):586-593 Epub 2021 Apr 26 PMID: 33900895 DOI: 10.1080/07347332.2021.1906376

McCarthy SR, Golembiewski EH, Gravholt DL, Clark JE, Clark J, Fischer C, Mulholland H, Babcock K, Montori VM, Jones A. Documentation of Psychosocial Distress and Its Antecedents in Children with Rare or Life-Limiting Chronic Conditions. *Children (Basel).* 2022 May 5; 9 (5) Epub 2022 May 05 PMID: 35626841 PMID: 9139272 DOI: 10.3390/children9050664

McTate, E.A., Szulczewski, L., Joffe, N., Chan, S., & Pai, A. (2020). Implementation of the Psychosocial Standards for Caregiver Mental Health within a Pediatric Hematology/Oncology Program. *Journal of Clinical Psychology in Medical Settings*. PMID: 32328955

Sunde KE., Hilliker DR, Fischer PR. Understanding and managing adolescents with conversion and functional disorders. *Pediatrics in Review* 41.12 (2020): 630-641

LEADERSHIP ROLES

Sarah McCarthy, PhD

-Medical Advisory Board Member. Rett's Roost: A Sanctuary for Cancer Families

-Medical Advisory Board Member. Team IMPACT

Addictions

INVESTIGATORS

Joanna M. Biernacka, Ph.D.; Mark A. Frye, M.D.; Daniel K. Hall-Flavin, M.D., M.S.; 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.
(Mayo Clinic Rochester)

Terry D. Schneekloth, M.D. (Mayo Clinic Arizona)

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.

Hazelden Betty Ford Foundation

Cedric Skillon, M.D., Quyen Ngo, Ph.D., Mike Parks, Ph.D.

Samuel C. Johnson Genomics of Addiction Program

The Samuel C. Johnson Genomics of Addiction Program was designed to bring a multidisciplinary, integrated group of clinicians and scientists together to work synergistically to better understand molecular mechanisms and to identify biomarkers associated with drug responses in alcoholism. Mayo Clinic S.C. Johnson investigators have published more than 200 peer-reviewed articles in major journals during the last five years in the fields of addiction, neuroscience, genetics, and psychiatry.

The main focus of our research is to increase our knowledge to improve treatment outcomes in patients with alcohol and other substance use disorders such as opioid use disorder, to make discoveries in the genetics, metabolomics, proteomics, biomarkers, and phenotypes of alcohol and substance use, and to learn more about the differences in patient's response to the substances and the medications used to treat these illnesses.

GRANTS

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 Pharmacometabolomics-informed Pharmacogenomics. 09/2018 – 05/2023. Richard Weinshilboum, M.D.

National Institute on Alcohol Abuse and Alcoholism. R21AA 26875-2. Impact of Sex-Related Hormone Levels and Genetic Variation on Alcohol Use Disorders and Related Phenotypes in Males and Females. 09/2019 – 02/2022. PI: Stacey Winham, Ph.D., Co-Investigator: Victor Karpyak, M.D., Ph.D.

KEY RECENT PUBLICATIONS

Biernacka JM, Coombes BJ, Batzler A, et al. Genetic contributions to alcohol use disorder treatment outcomes: a genome-wide pharmacogenomics study. *Neuropsychopharmacology*. 2021;46(12):2132-2139. doi:10.1038/s41386-021-01097-0



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Ho MF, Zhang C, Wei L, et al. Genetic variants associated with acamprosate treatment response in alcohol use disorder patients: A multiple omics study. *Br J Pharmacol*. 2022;179(13):3330-3345. doi:10.1111/bph.15795

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Kolla BP, Biernacka JM, Mansukhani MP, Colby C, Coombes BJ. Prevalence of insomnia symptoms and associated risk factors in UK Biobank participants with hazardous alcohol use and major depression. *Drug Alcohol Depend.* 2021;229(Pt A):109128. doi:10.1016/j.drugalcdep.2021.109128

Kolla BP, Mansukhani MP, Biernacka J, Chakravorty S, Karpyak VM. Sleep disturbances in early alcohol recovery: Prevalence and associations with clinical characteristics and severity of alcohol consumption. *Drug Alcohol Depend.* 2020;206:107655. doi:10.1016/j.drugalcdep.2019.107655

Meng W, Sjöholm LK, Kononenko O, et al. Genotype-dependent epigenetic regulation of DLGAP2 in alcohol use and dependence. *Mol Psychiatry.* 2021;26(8):4367-4382. doi:10.1038/s41380-019-0588-9

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Oesterle, TS, Kolla, B, Risma, CJ, Breitingner, SA, Rakocevic, DB, Loukianova, LL, Hall-Flavin, DK, Gentry, MT, Rummans, TA, Chauhan, M, Gold, MS. Substance use disorders and telehealth in the Covid-19 pandemic era: a new outlook. *Mayo Clinic Proceedings.* 2020 Dec; 95(12): 2709-18

Oesterle, TS, Kolla, BP, Rummans, TA, Gold, MS. Medication-assisted therapies for opioid use disorders in patients with chronic pain. *Journal of the Neurological Sciences.* 2020 Apr 15; 411(): 116728

Peeraphatdit TB, Kamath PS, Karpyak VM, et al. Alcohol Rehabilitation Within 30 Days of Hospital Discharge Is Associated With Reduced Readmission, Relapse, and Death in Patients With Alcoholic Hepatitis. *Clin Gastroenterol Hepatol.* 2020;18(2):477-485.e5. doi:10.1016/j.cgh.2019.04.048

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Starski P, Hong SI, Peyton L, et al. Ethanol induces maladaptive impulse control and decreased seeking behaviors in mice. *Addict Biol.* 2020;25(3):e12754. doi:10.1111/adb.12754

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Atiq, M, Zhang, C, Moon, I, Coombes, B, Biernacka, JM, Skime, MK, Choi, DS, Frye, MA, Oesterle, T, Karpyak, V, Schmidt, K, Gliske, K, Ngo, Q, Skillon, C, Seppala, M, Li, H, Ho, MF, Weinshilboum, R. Trail protein levels are associated with response to acamprosate therapy in alcohol use disorder: a proteomics-based approach. *Biological Psychiatry.* 2022 May 1; 91(9): S109-10 [Meeting Abstract]

Coombes, BJ, Biernacka, JM, Batzler, A, Geske, JR, Ho, AM, Frank, J, Hodgkinson, C, Skime, M, Gueorguieva, R, Goldman, D, Ho, MF, Weinshilboum, R, Kiefer, F, Rietschel, M, O'Malley, S, Mann, K, Anton, R, Karpyak, VM. Polygenic influence on aud treatment response in clinical trials of acamprosate and naltrexone. *Alcoholism-clinical And Experimental Research.* 2021 Jun; 45(): 62A [Meeting Abstract]

Ho, MC, Geske, JR, Pozsonyiova, S, Waller, TC, Winham, SJ, Karpyak, VM. Associations of sex hormones with alcohol dependence and broad depression in UK biobank. *Biological Psychiatry.* 2021 May 1; 89(9): S141-2 [Meeting Abstract]

Ho, MC, Geske, J, Waller, C, Pozsonyiova, S, Winham, S, Karpyak, V. Associations between sex hormone levels, alcohol dependence and depression related phenotypes in UK biobank. *Neuropsychopharmacology.* 2021 Dec; 46(Suppl 1): 481 [Meeting Abstract]

Ho, AMC, Pozsonyiova, S, Waller, TC, Geske, JR, Karpyak, VM, Winham, SJ. Associations of steroid sex hormones and related proteins with alcohol dependence in UK biobank. *Alcoholism-Clinical and Experimental Research.* 2022 Jun; 46(): 89A [Meeting Abstract]

Ho, MF, Zhang, C, Moon, I, Coombes, BJ, Biernacka, J, Skime, MK, Oesterle, T, Karpyak, V, Schmidt, K, Gliske, K, Ngo, Q, Skillon, C, Seppala, M, Li, H, Weinshilboum, R. Single cell transcriptomics reveals distinct transcriptional response to oxycodone and buprenorphine by ipsc-derived brain organoids from patients with opioid use disorder. *Biological Psychiatry.* 2022 May 1; 91(9): S89 [Meeting Abstract]

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Ho, MF, Zhang, C, Zhang, L, Moon, I, Geske, J, Choi, DS, Biernacka, J, Oesterle, T, Frye, M, Seppala, M, Li, H, Karpyak, V, Weinshilboum, R. Acamprosate-an anti-craving drug for alcohol use disorder (aud) pharmacotherapy: plasma metabolomics signatures are associated with alcohol craving intensity and acamprosate treatment response. *Biological Psychiatry.* 2021 May 1; 89(9): S139-40 [Meeting Abstract]

Ho, M, Zhang, C, Zhang, L, Moon, I, Geske, J, Choi, D, Biernacka, J, Oesterle, T, Frye, M, Seppala, M, Li, H, Karpyak, V, Weinshilboum, R. Acamprosate-an anti-craving drug for alcohol use disorder (aud) pharmacotherapy: plasma metabolomics signatures are associated with alcohol craving intensity and acamprosate treatment response. *Clinical Pharmacology & Therapeutics.* 2021 Mar; 109(): S18 [Meeting Abstract]

Karpyak, V, Ho, A, Waller, TC, Geske, J, Winham, S. Sex hormone levels in alcohol dependent men and women. *European Neuropsychopharmacology.* 2021 Dec; 53(): S4 [Meeting Abstract]

Kolla, BP, Coombes, B, Mansukhani, M, Biernacka, J. Differences in the prevalence of sleep disturbance and associated risk factors in alcohol use disorders and major depression. *Sleep.* 2021 May; 44(): A290 [Meeting Abstract]

LEADERSHIP ROLES

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-Area Director for the American Academy of Addiction Psychiatry



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Psychiatric Genomics and Pharmacogenomics (PGaP)



INVESTIGATORS

Arjun P. Athreya, Ph.D., M.S., Anthony Batzler, B.S., Joanna M. Biernacka, Ph.D., Colin Colby, B.S., Brandon Coombes, Ph.D., Paul E. Croarkin, D.O., M.S., Jennifer R. Geske, M.S., Mark A. Frye, M.D., Ada Ho, Ph.D., Gregory Jenkins, M.S., Victor M. Karpyak, M.D., Ph.D., Duan Liu, Ph.D., Nicolas Nunez, M.D., Aysegul Ozerdem, M.D., Ph.D., Euijung Ryu, Ph.D., Michelle K. Skime, M.S., AMA-CPM., Jennifer L. Vande Voort, M.D., Marin Veldic, M.D., Yanshan Wang, Ph.D., Richard Weinshilboum, M.D., & Stacey Winham, Ph.D. (Mayo Clinic Rochester)

The primary objectives of this research program 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 Science Foundation. 2041339. FW-HTF-RM: Introducing Patient-Specific Therapy Profiles in Electronic Health Records for Guiding Treatment Selection in the Era of Genomic Medicine. 09/2020 – 08/2024. PI: Arjun Athreya, Ph.D., M.S., Co-Investigator: Paul Croarkin, D.O., M.S., & William Bobo, M.D., M.P.H.

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 – 05/2024. PI: Joanna Biernacka, Ph.D.

National Institute on Alcohol Abuse and Alcoholism. R21 AA26875-02. The impact of sex-related hormone levels and genetic variation on alcohol use disorders and related phenotypes in males and females. 09/2019 – 02/2022. Co-PI: Stacey Winham, Ph.D., Victor Karpyak, M.D., Ph.D.

National Institute on Alcohol Abuse and Alcoholism. U01 AA027487-04. Pharmacogenomics of Acamprosate Treatment Outcome. 08/2018 – 08/2023. Co-PI: Victor Karpyak, M.D., Ph.D., Joanna Biernacka, Ph.D.

National Institute on Alcohol Abuse and Alcoholism. R01 AA27486-05. Alcohol Use Disorder: Acamprosate Pharmacometabolomics-informed Pharmacogenomics. PI: Richard Weinshilboum, M.D.,

Dauten Family Foundation. Pharmacogenomics of Bipolar Disorder Treatment Response- Statistics. 10/2018 – 09/2022. Co-PI: Joanna Biernacka, Ph.D., Mark Frye, M.D.

KEY RECENT PUBLICATIONS

Athreya AP, Vande Voort JL, Shekunov J, Rackley SJ, Leffler JM, McKean AJ, Romanowicz M, Kennard BD, Emslie GJ, Mayes T, Trivedi M, Wang L, Weinshilboum RM, Bobo WV, Croarkin PE. Evidence for machine learning guided early prediction of acute outcomes in the treatment of depressed children and adolescents with antidepressants. *J Child Psychol Psychiatry*. 2022 Mar 15. doi: 10.1111/jcpp.13580. Online ahead of print. PMID: 35288932 DOI: 10.1111/jcpp.13580

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LEADERSHIP ROLES

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

- Standing Study Section Member (2022-2026) Child Psychopathology and Developmental Disabilities Study Section (CPDD), Biobehavioral and Behavioral Processes Integrated Review Group (BBBP), Center for Scientific Review (CSR)

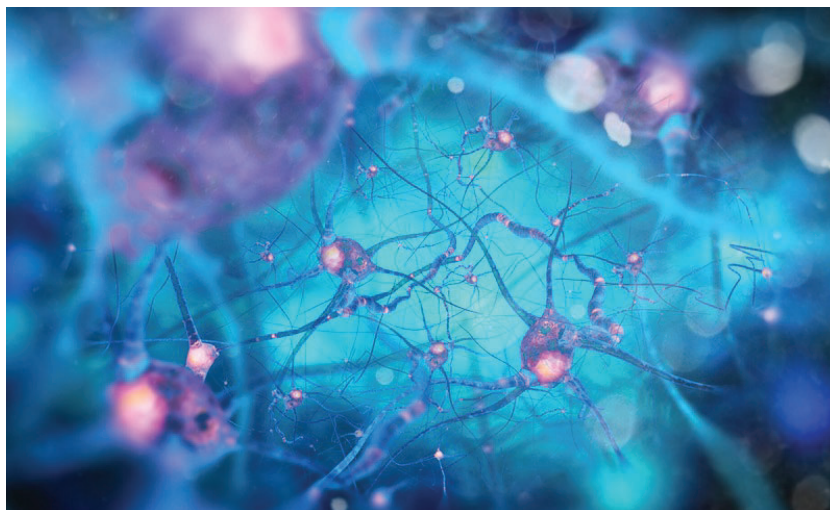
Mark Frye, M.D.

- National Network of Depression Centers (NNDC) President & Executive Board Member
- Board of Directors, International Society of Affective Disorders
- Vice-Chair Scientific Advisory Board, Depression Bipolar Support Alliance, 2022-present

Brain Rehabilitation

INVESTIGATORS

Thomas F. Bergquist, Ph.D., L.P., Allen W. Brown, M.D., Dmitry Esterov, D.O., Nicole L. Dernbach, C.C.R.P., Cynthia (Cindy) A. Kallis, & Anne M. Moessner, A.P.R.N., M.S., R.N.
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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 2022. 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 18,000 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 capitalizes on long-standing relationships with the Minnesota Brain Injury Alliance and the Minnesota Department of Health in a community-based pragmatic clinical trial to address the ineffective connection of individuals with TBI and their families to specialized medical and community resources after hospital-based care, limited access to TBI experts, and variable knowledge by primary care providers about TBI. This trial tested a behavioral intervention to determine whether outcomes and costs are improved in a group receiving an integrated telemedicine model of care. Collaborators include Mayo Clinic's Social Media Network, Center for the Science of Health Care Delivery, and Center for Connected Care. 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. 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

Administration for Community Living. 90DPTB0012-01-00. Mayo Clinic Traumatic Brain Injury Model System (2017-2022). 09/2017–09/2022. Co-PI: Allen Brown, M.D., Thomas Bergquist, Ph.D., L.P.

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: Allen Brown, M.D.

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

U.S. Army Medical Research Acquisition Activity. W81XWH-18-1-0760. Advancing Rehabilitation: Physiological, Psychological, and Neuroimaging Measures of Factors That Predispose, Promote, and Perpetuate Post-Traumatic Dizziness. 09/2018–09/2022. PI: Jeffrey Staab, M.D.

Impact of Adverse Childhood Events on Long Term Psychiatric Outcomes after Childhood Traumatic Brain Injury, 09/2021-10/31/2022. Foundation for Physical Medicine and Rehabilitation-Early Career Award, PI D. Esterov

KEY RECENT PUBLICATIONS

Bergquist T, Moessner A, Mandrekar J, Ransom J, Dernbach N, Kendall K, Brown AW (2022). CONNECT: A pragmatic clinical trial testing a remotely provided linkage to service coordination after hospitalization for TBI, Brain Injury. *Brain Injury*, 36, 147-155

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Fisher, L. B., Curtiss, J. E., Klyce, D. W., Perrin, P. B., Juengst, S. B., Gary, K. W., Niemeier, J. P., Hammond, F. M., Bergquist, T. F., Wagner, A. K., Rabinowitz, A. R., Giacino, J. T., & Zafonte, R. D. (2022). Using Machine Learning to Examine Suicidal Ideation After TBI: A TBI Model Systems National Database Study. *American Journal of Physical Medicine & Rehabilitation*

Klyce DW, Perrin PB, Fisher LB, Hammond FM, Juengst SB, Bergquist TF, Rabinowitz AR, Wagner AK, Bombardier CH, Niemeier JP, Gary KW, Giacino JT, Zafonte RD (2022). Identifying group-based patterns of suicidal ideation over the first 10 years after moderate-to-severe TBI. *Journal of Clinical Psychology*, 78, 877-891

Kumar RG, Esterov D, Adams RS, Corrigan JD, Juengst SB, et al (2022). Changes in alcohol use and mood during the COVID-19 pandemic among individuals with traumatic brain injury: A difference-in-difference study. *PLOS ONE*, 17

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Novack TA, Zhang Y, Kennedy R, Rapport LJ, Watanabe TK, Monden KR, Dreer LE, Bergquist T, Bombardier C, Brunner R, Goldin Y, Marwitz J, Niemeier JP (2021). Return to Driving After Moderate-to-Severe Traumatic Brain Injury: A Traumatic Brain Injury Model System Study. *Archives of Physical Medicine and Rehabilitation*, 102, 1568-1575

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Sperl MA, Esterov D, Ransom JE, Mielke MM, Witkowski JE, Brown AW (2022). Long-Term Risk of Stroke after Traumatic Brain Injury: A Population-Based Medical Record Review Study. *Neuroepidemiology*. in press

LEADERSHIP ROLES

Allen W. Brown, M.D.

- Epilepsy Bioinformatics Study for Antiepileptogenic Therapy (EpiBioS4Rx), Public Engagement Core, TBI Model Systems Representative

- International League Against Epilepsy, Task Force on Anti-epileptogenesis following TBI Task Force Member

Thomas Bergquist, Ph.D., L.P.

- Chair, Brain Injury – Interdisciplinary Special Interest Group (BI-ISIG) - American Congress of Rehabilitation Medicine

- Co-chair, Cognitive Rehabilitation Task Force - American Congress of Rehabilitation Medicine

- Member, Board of Governors, American Congress of Rehabilitation Medicine

Dmitry Esterov, D.O.

- Member, Brain Injury Rehabilitation Research Fund Task Force; Foundation for PM&R

- Member, MN Department of Health TBI Advisory Committee

- Member of the International Brain Injury Association Group, "Severe TBI / DOC"

Pain Rehabilitation Center



INVESTIGATORS

Julie L. Cunningham, Pharm.D., R.Ph., Keith Gascho, L.P.C.C., Wesley P. Gilliam, Ph.D., L.P., Michele M. Evans, A.P.R.N., C.N.S., Cynthia Harbeck-Weber, Ph.D., L.P., Tracy E. Harrison, M.D., Eleshia J. Morrison, Ph.D., L.P., Matthew E. Schumann, Ph.D., L.P., Leslie A. Sim, Ph.D., L.P., Bruce Sutor, M.D., & Karen E. Weiss, Ph.D., L.P.
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(Mayo Clinic Arizona)

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 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, Morrison and Schumann in Rochester are examining the extent to which functional restoration treatment not only contributes to improvement in pain-related distress and disability, but also confers salutary effects on symptomatology specific to commonly comorbid conditions such as posttraumatic stress disorder (PTSD) and depression. Also, examination of transdiagnostic process variables that mediate improvement in both pain outcome and PTSD and depression symptomatology are also an area of research emphasis. 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.

KEY RECENT PUBLICATIONS

Benjamin J, Sim L, Owens MT, Schwichtenberg A, Harrison T, Harbeck-Weber C. Postural Orthostatic Tachycardia Syndrome and Disordered Eating: Clarifying the Overlap. *J Dev Behav Pediatr.* 2021 May 1; 42 (4):291-298 PMID: 33181565 DOI: 10.1097/DBP.0000000000000886

Bostrom K, Varsi C, Eide H, Borosund E, Kristjansdottir OB, Schreurs KMG, Waxenberg LB, Weiss KE, Morrison EJ, Nordang EF, Stubhaug A, Nes LS. Engaging with EPIO, a digital pain self-management program: a qualitative study. *BMC Health Serv Res.* 2022 Apr 29; 22 (1):577 PMID: 35488295 PMCID: 9052507 DOI: 10.1186/s12913-022-07963-x

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Klaas, K. M., Fischer, P. R., Segner, S., Tsai Owens, M., Fahrenkamp, A., Geske, J., Hofschulte, D., Farrell, M., Harbeck-Weber, C., & Biggs, B. K. (2022). Excessive Postural Tachycardia and Postural Orthostatic Tachycardia Syndrome in Youth: Associations With Distress, Impairment, Health Behaviors, and Medication Recommendations. *Journal of Child Neurology*, 37(7), 599-608. <https://doi.org/10.1177/08830738221078410>

Schumann, M. E., Coombes, B. J., Gascho, K. E., Geske, J. R., McDermott, M. C., Morrison, E. J., Reynolds, A. L., Bernau, J. L., & Gilliam, W. P. (2022). Pain catastrophizing and pain self-efficacy mediate interdisciplinary pain rehabilitation program outcomes at posttreatment and follow-up. *Pain Medicine*, 23(4), 697–706. <https://doi.org/10.1093/pm/pnab271>

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Varsi C, Ledel Solem IK, Eide H, Borosund E, Kristjansdottir OB, Haldal K, Waxenberg LB, Weiss KE, Schreurs KMG, Morrison EJ, Stubhaug A, Solberg Nes L. Health care providers' experiences of pain management and attitudes towards digitally supported self-management interventions for chronic pain: a qualitative study. *BMC Health Serv Res*. 2021 Mar 25; 21 (1):275 PMID: 33766028 PMCID: 7992849 DOI: 10.1186/s12913-021-06278-7

Weiss KE, Steinman KJ, Kodish I, Sim L, Yurs S, Steggall C, Fobian AD. Functional Neurological Symptom Disorder in Children and Adolescents within Medical Settings. *J Clin Psychol Med Settings*. 2021 Mar; 28 (1):90-101 PMID: 32743729 DOI: 10.1007/s10880-020-09736-2

Zavaleta KW, Philpot LM, Cunningham JL, Gazelka HM, Geyer HL, Rismeyer DL, Stitz AM, Clements CM. Why we still prescribe so many opioids: A qualitative study on -barriers and facilitators to prescribing guideline implementation. *J Opioid Manag*. 2021 Mar-Apr; 17 (2):115-124 PMID: 33890275 DOI: 10.5055/jom.2021.0622

Behavioral Medicine

INVESTIGATORS

Nicholas D. Allen, M.D., Shawna L. Ehlers, Ph.D., L.P., Janae Kirsch, Ph.D., Sarah McCarthy, Ph.D., M.P.H., L.P., Emily McTate, Ph.D., L.P., Eleshia Morrison, Ph.D., L.P., Shirlene Sampson, M.D., M.S., Jeffrey P. Staab, M.D., M.S., & Laura Suarez, M.D.
(Mayo Clinic Rochester)

Andrea V. Cuc, L.C.S.W., Shweta Kapoor, M.D. Ph.D., Kari A. Martin, M.D., & Cynthia M. Stonnington, M.D.
(Mayo Clinic Arizona)



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 AND AWARDS

Funded by Department of Defense. (W81XWH-19-1-0021) Novel Tinnitus Implant System for the Treatment of Chronic Severe Tinnitus: An Early Feasibility Study. 09/2019–09/2023. Significant contributor: Jeffery 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. 09/2018–09/2022. PI: Jeffery 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. 01/2022–01/2023. Developing a Cancer Distress Management Program for Liver and Biliary Cancer within a Specialized Program of Research Excellence (SPORE). PI: Shawna L. Ehlers, Ph.D., L.P.

NCI Enhanced.. EHR-facilitated Cancer Symptom Control (E2C2) Pragmatic Clinical Trial. 11/2018-10/2022. PI: Cheville. Co-investigator: Shawna L. Ehlers, Ph.D., L.P.

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. Khosla, Warner (Co-PIs), Co-investigator Shawna L. Ehlers, Ph.D., L.P.

Shawna L. Ehlers, Ph.D.
-Outstanding Service Award, 2020, Cancer Special Interest Group, Society of Behavioral Medicine

Emily McTate, Ph.D.
-Equity Scholar, American Psychosocial Oncology Society, 2022

Eleshia Morrison, Ph.D.
-Kern Center Health Care Delivery Scholarship, Mayo Clinic, 2021

KEY RECENT PUBLICATIONS

Allen ND, Allison CL, Golebiowski R, Janowski JPB, LeMahieu AM, Geske JR, Rasmussen KG. Factors Associated With Postictal Agitation After Electroconvulsive Therapy. *J ECT*. 2022 Mar 1; 38(1):60-61 PMID: 34739422 DOI: 10.1097/YCT.0000000000000807

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Callister, MN; Stonnington, CM; Cuc, A; Alcott, SB; Driver-Dunckley, ED; Mehta, SH; Hasan, S; Marks, LA; Wingerchuk, DM; O'Carroll, CB. In Patients With Functional Movement Disorders, Is Specialized Physical Therapy Effective in Improving Motor Symptoms? A Critically Appraised Topic. *The Neurologist*. March 2022 - Volume 27 - Issue 2 - p 82-88. doi: 10.1097/NRL.0000000000000408

Couser GP, Allen ND. Dealing with a difficult boss: A 'bossectomy' is rarely the cure *Current Psychiatry*. 2021; 20(11):e1-e3. DOI: doi:10.12788/cp.0173

Ehlers SL. Application of the Socioecological Model to Regional Clinical Trials: A Paradigm-Shift to Advance Scientific Discovery and Prognostic Modeling. *J Natl Compr Canc Netw*. 2022 Aug;20(8):962-964. doi: 10.6004/jncn.2022.7054. PMID: 35948039

El Hayek S, Dakroub A, Beaini H, Salem H, Saliba AN, Ehlers SL, Bizri M, Taher A. Psycho-oncology in the Arab world: The time is now. *Psycho-Oncology*. 2022 Jan;31(1):148-51

Enders F, Golembiewski E, Orellana O, DSouza K, Addani M, Morrison EJ, Benson JT, Silvano CJ, Pacheco-Spann LM, Balls-Berry JE. Changing the Face of Academic Medicine: An Equity Action Plan for Institutions *Journal of Clinical and Translational Science*. 2022

Fipps DC, Staab JP, Allen ND. Case Report: Right Insular Stroke Causing Simultaneous Onset of a Functional Vestibular Disorder and Psychiatric Disorder-Persistent Postural-Perceptual Dizziness and Post-stroke Depression. *Front Psychiatry*. 2022; 13:841072 Epub 2022 Apr 21 PMID: 35530020 PMCID: 9070051 DOI: 10.3389/fpsy.2022.841072

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Gao, C.C., Suarez, N.R.E., Toloza, F.J., Zuniga, A.S.M., McCarthy, S.R., Boehmer, K.R., Yao, L., Fu, S. and Brito, J.P., 2021. Patients' perspective about the cost of diabetes management: an analysis of online health communities. *Mayo Clinic Proceedings: Innovations, Quality & Outcomes*, 5(5), pp.898-906

Kacel EL, Pankey TL, Vencill JA, Heredia D, Gonzalez CA, Ruddy KJ, Ehlers SL. Include, Affirm, and Empower: A Paradigm Shift in Cancer Clinical Trials for Sexual and Gender Diverse Populations. *Annals of LGBTQ Public and Population Health*. 2022 Apr 1;3(1):18-40

Karam D, Vierkant RA, Ehlers SL, Freedman RA, Austin J, Khanani S, Larson NL, Loprinzi CL, Couch F, Olson JE, Ruddy KJ. Surveillance mammography in older breast cancer survivors: Current practice patterns and patient perceptions, *Journal of Geriatric Oncology*, 2022,ISSN 1879-4068, <https://doi.org/10.1016/j.jgo.2022.07.003>

Kessler, D.K., Webber, H.E., Suchting, R., Green, C.E., Harvin, J.A., Heads, A.M., Kapoor, S, Yoon, J.Y., Lane, S.D., Schmitz, J.M., & Stotts, A.L. (2022). Early pain, stress, and opioid use following traumatic injury. *Journal of Opioid Management*. 18(1). <https://doi.org/10.5055/jom.2022.0690>

Leung JG, Rakocevic DB, Courtis SN, Leloux MR, Allen ND. Iatrogenic clozapine intoxication after hospital admission: A case-based rationale for an inpatient pharmacy clozapine monitoring service. *J Am Pharm Assoc*). 2022 May 16 [Epub ahead of print] PMID: 35668005 DOI: 10.1016/j.japh.2022.05.013

Liou H, Stonnington CM, Shah AA, Buckner-Petty SA, Locke DEC. Compensatory and Lifestyle-Based Brain Health Program for Subjective Cognitive Decline: Self-Implementation versus Coaching. *Brain Sci*. 2021 Sep 30; 11 (10) Epub 2021 Sept 30 PMID: 34679371 PMCID: 8534077 DOI: 10.3390/brainsci11101306

McCarthy SRB, Schiltz B. Masks, Empathy, and a Pediatric Cancer Diagnosis During COVID-19. *Pediatrics*. 2021 Nov;148(5). doi: 10.1542/peds.2021-051696. Epub 2021 Oct 7. PubMed PMID: 34620726

Orme, W., Kapoor, S., Frueh, B. C., Allen, J. G., Fowler, J. C., & Madan, A. (2021). Attachment Style Mediates the Relationship between Trauma and Somatic Distress among Individuals with Serious Mental Illness. *Psychiatry: Interpersonal and Biological Processes*, 84(2), 150-164, <https://doi.org/10.1080/00332747.2021.1930427>

Padnos L, Scherber R, Geyer H, Langlais BT, Dueck AC, Kosiorek HE, Senyak Z, Clark M, Boxer M, Cotter M, Harrison C, Stonnington C, Geda Y, Mesa R. Depressive symptoms and myeloproliferative neoplasms: Understanding the confounding factor in a complex condition. *Cancer Med*. 2020 Nov; 9(22):8301-8309. Epub 2020 Sep 25. PMID: 32976697 PMCID: 7666736 DOI: 10.1002/cam4.3380

Strouse CS, Larson MC, Ehlers SL, Yost KJ, Maurer MJ, Ansell SM, Inwards DJ, Johnston PB, Micallef IN, Link BK, Farooq U. Long-Term Health-Related Quality of Life of Autologous Hematopoietic Cell Transplantation Patients and Nontransplant Patients With Aggressive Lymphoma: A Prospective Cohort Analysis. *JCO Oncology Practice*. 2022 May:OP-21

Yoon JH, Suchting R, Kessler D, Soder HE, Kapoor S, Stotts AL, Heads AM, Harvin JA, Green CE, Lane SD, Schmitz JM. Utility of a brief assessment of opioid demand among post-discharge trauma care patients. *Exp Clin Psychopharmacol*. 2022 Feb; 30 (1):15-22 Epub 2020 July 16 PMID: 32673047 DOI: 10.1037/pha0000412

LEADERSHIP ROLES

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

-NIH Scientific Review Panels- Scientific Reviewer, 2021
-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

-The Society of Behavioral Medicine, Cancer Special Interest Group: Elected Chair and Co-Chair, 2017-2020

Cancer and Palliative Care



INVESTIGATORS

Matthew M. Clark, Ph.D., L.P., Melanie T. Gentry, M.D., Maria I. Lapid, M.D., Sarah R. McCarthy, Ph.D., M.P.H., L.P., & Teresa A. Rummans, M.D.
(Mayo Clinic Rochester)

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 Cancer and Palliative Care Research Team is to improve the quality of life for cancer patients and their caregivers by first assessing and treating psychiatric, psychological, and spiritual difficulties and then teaching skills for coping with cancer to patients and their caregivers. This multidisciplinary research team spans the Jacksonville, Florida; Rochester, Minnesota; and Scottsdale, Arizona, Mayo Clinic campuses. Interventions are tailored for both adult and child cancer survivors. This research team is involved in several externally funded research projects that seek to identify the predictors of psychiatric distress and quality of life for cancer survivors. Additional projects evaluate tailored multidisciplinary interventions designed to improve the quality of life of cancer patients and their caregivers. Caregivers can be significant others, family members, or parents. Team members are also collaborating with the Karolinska Institute for novel approaches to palliative care, a mindfulness-based intervention for radiation oncology patients and their caregivers, and investigators are exploring a resiliency intervention for palliative care patients.

GRANTS

Agency for Healthcare Research and Quality and Patient-Centered Outcomes Research Institute. K12 HS026379: Minnesota Learning Health System Mentored Career Development Program (MN-LHS). Toward a Learning Healthcare System for Distressed Children with Complex Disease. 09/2019 – 08/2022. PI: Felicity Enders, Ph.D., K12 Scholar: Sarah McCarthy, Ph.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.

Benefactor funded. Effect of Poetry or Mindfulness Interventions on Staff Burnout and Empathy in Hospice Care. Principal Investigator: Daniel K. Hall-Flavin; Co-Investigators: 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, Ho JB, Mohammad SI, Lapid MI. End-of-life care in schizophrenia: a systematic review. *Int Psychogeriatr*. 2021 Feb;33(2):129-147. doi: 10.1017/S1041610220000915. Epub 2020 Jun 19. PMID: 32618553

Borosund E, Ehlers SL, Clark MM, Andrykowski MA, Cvancarova Smastuen M, Solberg Nes L. Digital stress management in cancer: Testing StressProffen in a 12-month randomized controlled trial. *Cancer*. 2022 Apr 1; 128 (7):1503-1512 Epub 2021 Dec 02 PMID: 34855212 DOI: 10.1002/cncr.34046

Feraco AM, McCarthy SR, Revette AC, Stevens SE, Das PJ, Al-Sayegh H, Ma C, Tulskey JA, Wolfe J. Feasibility and acceptability of the "Day 100 Talk": An interdisciplinary communication intervention during the first six months of childhood cancer treatment. *Cancer*. 2021 Apr 1; 127 (7):1134-1145 Epub 2020 Dec 15 PMID: 33320337 DOI: 10.1002/cncr.33362

Havner RD, Lapid MI, Dockter TJ, McCue SA, Stelpflug AJ, Bigelow ML, Robsahm MM, Elwood T, Strand JJ, Bauer BA, Cutshall SM, Sloan JA, Walton MP, Whitford KJ. Impact of Massage Therapy on the Quality of Life of Hospice Patients and Their Caregivers: A Pilot Study. *J Palliat Care*. 2022 Jan; 37 (1):41-47 Epub 2020 Nov 19 PMID: 33213233 DOI: 10.1177/0825859720975991

Lapid MI, Atherton PJ, Kung S, Clark MM, Sloan JA, Whitford KJ, Hubbard JM, Gentry MT, Miller JJ, Rummans TA. A feasibility study of virtual group therapy to improve quality of life of cancer caregivers. *J Psychosoc Oncol.* 2021 Nov 29:1-14. doi: 10.1080/07347332.2021.2000550. Epub ahead of print. PMID: 34842060

Lapid MI, Peisah C. Death and dying are not dirty words: palliative care and the older person in the COVID-19 pandemic. *Psychogeriatrics.* 2021 Sep;21(5):844-845. doi: 10.1111/psyg.12746. Epub 2021 Jul 14. PMID: 34261188; PMCID: PMC8447467

Lindsey JM, Shelton KM, Beito AH, Lapid MI. Palliative Care: Critical Concepts for the Geropsychiatrist. *Focus (Am Psychiatr Publ).* 2021 Jul;19(3):311-319. doi: 10.1176/appi.focus.20210005. Epub 2021 Jul 9. PMID: 34690598; PMCID: PMC8475929

Mackey RM, Yeow ME, Christensen AR, Ingram C, Carey EC, Lapid MI. Reconnecting: Strategies for Supporting Isolated Older Adults during COVID-19 through Tele-palliative Care. *Clin Gerontol.* 2022 Jan-Feb;45(1):204-211. doi: 10.1080/07317115.2020.1830905. Epub 2020 Oct 19. PMID: 33074777

McCarthy SR, Golembiewski EH, Gravholt DL, Clark JE, Clark J, Fischer C, Mulholland H, Babcock K, Montori VM, Jones A. Documentation of Psychosocial Distress and Its Antecedents in Children with Rare or Life-Limiting Chronic Conditions. *Children (Basel).* 2022 May 5; 9 (5) Epub 2022 May 05 PMID: 35626841 DOI: 10.3390/children9050664

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McCarthy S, Tarquini SJ, Metcalf B, Lucy Pickard Pickard, Greenzang KA, Mack J. "What Matters to Me": What pediatric stem cell transplant patients want their providers to know. *J Psychosoc Oncol.* 2021; 39 (4):586-593 Epub 2021 Apr 26 PMID: 33900895 DOI: 10.1080/07347332.2021.1906376

Niazi SK, Spaulding A, Brennan E, Meier SK, Crook JE, Cornell LF, Ailawadhi S, Clark MM, Rummans TA. Mental Health and Chemical Dependency Services at US Cancer Centers. *J Natl Compr Canc Netw.* 2021 Mar 4; 19 (7):829-838 Epub 2021 Mar 04 PMID: 33662936 DOI: 10.6004/jnccn.2020.7657

Schoonover KL, Prokop L, Lapid MI. Valuable Informal Bereavement Support Strategies for Bereaved Parents of Stillborn, Young Children, and Adult Children: A Scoping Review. *J Palliat Care.* 2022 Mar 30:8258597211062762. doi: 10.1177/08258597211062762. Epub ahead of print. PMID: 35354346

Taylor-Desir MJ, Sawchuk CN, Crane SJ, Carroll JL, Evans WS, Bogucki OE, Lewis SE, Lapid MI. Integration of mental health and supportive care in individuals with schizophrenia and cancer: Assertive community treatment model. *Psychooncology.* 2022 Feb 25 [Epub ahead of print] PMID: 35212429 DOI: 10.1002/pon.5911

LEADERSHIP ROLES

Shehzad K. Niazi, M.D.

-Member, Distress Management Panel, National Cancer Center Network

Adult and Pediatric Neuropsychology

INVESTIGATORS

Eva 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 Cassidy, Ph.D., L.P., Julie A. Fields, Ph.D., L.P., Andrea R. Huebner, Ph.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 Stricker, Ph.D., Max R. Trenerry, Ph.D., L.P., & Michael J. Zaccariello, Ph.D., L.P. (Mayo Clinic Rochester)



INVESTIGATORS

Karen E. Blackmon, 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 across the Enterprise are actively involved in interdisciplinary research. They combine cutting-edge technologies such as neuroimaging with psychometrics to advance knowledge and diagnostic precision of neurologic conditions and improve patient outcomes. Adult oriented neuropsychologists at Mayo Clinic are leaders in normative and computerized test development to improve sensitivity to cognitive impairment with aging and neurodegenerative disease such as progressive aphasia, Alzheimer's disease, and parkinsonian conditions (Parkinson's disease, Lewy body dementia, or other cortico-basal syndromes). Investigators are also examining outcomes following rehabilitation efforts for persons with mild cognitive impairment and acquired brain injury and are working with other specialties to better understand the cognitive correlates of multiple sclerosis, autoimmune disease, psychosis, and novel illnesses like COVID-19. 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. Collaboration with adult oriented neuropsychologists has helped characterize the neurodevelopmental trajectory of children exposed to anesthesia, and better defined the cognitive correlates of epilepsy across the lifespan. Investigators also have interest in studying the cognitive effects of proton and photon beam for brain tumor patients and cognitive brain mapping in brain tumor and epilepsy patients to improve functional outcomes following neurosurgery.

SELECTED GRANTS

National Institute of Child Health and Human Development (NICHD). RO1 HD 44763. Sensory Mechanisms and Self-Injury. 9/1/2017-6/30/2023. Principal Investigator: Frank Symons (University of Minnesota); Sub Award Primary 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 – 04/30/2024. Principal Investigator: Julie A. Fields, Ph.D., L.P.

National Institute on Aging. R44AG 74127. Personalized, Easy-To-Use Tool for AD/ABDRD Caregivers Addressing Financial Management and Legal Planning. 09/01/2021 – 07/31/2024. Principal Investigator: Julie A. Fields, Ph.D., L.P.

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 A. Fields, Ph.D., L.P.

National Institute on Aging. U19AG 63911. ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD). 09/15/2019 – 06/30/2025. Principal Investigator: Bradley F. Boeve, M.D.; Co-Investigator: Julie A. Fields, Ph.D., L.P.

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 J. Ferman, Ph.D., Julie A. Fields, Ph.D., L.P.

National Institute on Aging. U54AG 44170. Sex-Specific Effects of Endocrine Disruption on Aging and Alzheimer's Disease. 09/30/2018 – 05/31/2023. Principal Investigator: Kejal Kantarci, M.D.; Co-Investigator: Julie A. Fields, Ph.D., L.P.

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 H. Stricker, Ph.D., L.P. Co-Investigators: Aimee Karstens, Ph.D., M.A., Mary M. Machulda, Ph.D., L.P., John L. Stricker, Ph.D., M.S.

National Institute on Aging. R21AG073967, Stricker Learning Span: A Computer Adaptive Word List Memory Test Optimized for Remote Assessment. 08/2021-07/2023. Principal Investigator: Nikki H. Stricker, Ph.D., L.P. Co-Investigators: Mary M. Machulda, Ph.D., L.P., John L. Stricker, Ph.D., M.S.

National Institute on Aging RF1AG 59009. Validation of Online Methods to Predict and Monitor Cognitive Decline. 09/2018-08/2023. Principal Investigator: Michael W. Weiner, M.D. (UCSF). Site Principal Investigator: Ronald C. Petersen, M.D., Ph.D.; Co-Investigator: Nikki H. Stricker, Ph.D., L.P.

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 H. Stricker, Ph.D., L.P.

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: Ronald C. Petersen, M.D., Ph.D. Site PI: John A. Lucas, Ph.D.

National Institute on Aging. 1U2CAG057441-01: ARMADA: Advancing Reliable Measurement in Alzheimer's Disease and cognitive Aging. 9/30/2017 – 4/30/2023. PI: Richard Gershon Ph.D. Site PI: John A. Lucas, Ph.D.

National Institute on Aging. P30AG062677. Core B: Clinical and research support core, Mayo Alzheimer's Disease Research Center. 5/1/2019-4/30/2024. PI: Ronald C. Petersen, M.D., Ph.D. Co-I: John A. Lucas, Ph.D.

National Institute on Aging. P30AG062677-23. Core B: Clinical and research support core, Alzheimer's Disease Research Center. 07/01/2019-04/30/2024. PI: Ronald C. Petersen, M.D., Ph.D. Co-I: Tanis J. Ferman, Ph.D.

National Institute on Aging. U01NS100620-5. Longitudinal Imaging Biomarkers of Disease Progression in DLB. 09/25/2017-08/31/2022. PI: Kejal Kantarci, M.D.; Co-I: Tanis J. Ferman, Ph.D.

National Institute on Aging. U01NS100620-6. Longitudinal Imaging Biomarkers of Disease Progression in DLB. 07/01/2022-06/30/2027. PI: Kejal Kantarci, M.D.; Co-I: Tanis J. Ferman, Ph.D.

National Institute on Aging. AG070486. Machine learning to predict incident MCI using standard clinical measures. 3/1/21 - 2/28/23. Co-I: Melanie J. Chandler, Ph.D.

KEY RECENT PUBLICATIONS

Alden EC, Lundt ES, Christianson TJ, Machulda MM, Kremers WK, Jack CR, Knopman DS, Petersen RC, Mielke MM, Stricker, NH. Mayo Normative Studies: A Conditional Normative Model for Longitudinal Change on the Auditory Verbal Learning Test and Preliminary Validation in Preclinical Alzheimer's Disease. *Alzheimer's Dement*. 2022;14:e12325. <https://doi.org/10.1002/dad2.12325>

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NATIONAL LEADERSHIP ROLES

Melanie J. Chandler, Ph.D.

-Member, Women in Neuropsychology, National Academy of Neuropsychology

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John A. Lucas, Ph.D.

-Member, Alzheimer's Association Inclusion Diversity and Equity for ALL (IDEALL) Council

Beth K. Rush, Ph.D.

-Treasurer, Board of Directors, American Board of Clinical Neuropsychology

Obesity and Eating Disorders

INVESTIGATORS

Bridget K. Biggs, Ph.D., L.P., Matthew M. Clark, Ph.D., L.P., David C. Fipps, D.O., Karen M. Graszer, M.A., L.P., Karen B. Grothe, Ph.D., L.P., Sarah A. Kalsy, M.A., L.P., Jocelyn R. Lebow, Ph.D., L.P., & Leslie A. Sim, Ph.D., L.P.
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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, 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 metabolome and the microbiome in patients with type 2 diabetes, the relationship between history of childhood trauma and food addiction, and the onset of addictive behaviors 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

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 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 - 05/2023. PI: Mark L. Wieland, M.D.; Co-Investigator: Matthew M. Clark, Ph.D.

KEY RECENT PUBLICATIONS

Acosta A, Camilleri M, Abu Dayyeh B, Calderon G, Gonzalez D, McRae A, Rossini W, Singh S, Burton D, Clark MM. Selection of Antiobesity Medications Based on Phenotypes Enhances Weight Loss: A Pragmatic Trial in an Obesity Clinic. *Obesity (Silver Spring)*. 2021 Apr; 29(4):662-671 PMID: 33759389 PMCID: 8168710 DOI: 10.1002/oby.23120

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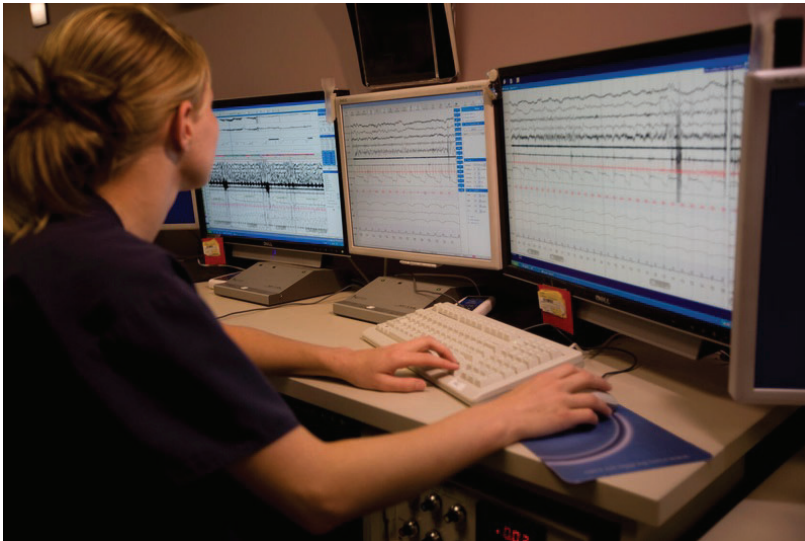
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LEADERSHIP ROLES

Matthew M. Clark, Ph.D.
-Editorial Board, *Eating Behaviors*

Karen Grothe, Ph.D.
-Member, American Society of Metabolic and Bariatric Surgery, Integrated Health Program and Professional Education Committee, Behavioral Health Subcommittee
-Editorial Board, *Bariatric Times*

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



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 Vice 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 member of the AASM accreditation committee and a Fellow of the Royal College of Psychiatrists.

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 Bhanuprakash Kolla, M.D.

KEY RECENT PUBLICATIONS

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LEADERSHIP ROLES

Bhanu Kolla, M.D.

-Agency for Health Quality and Assessment of Catalonia (AQuAS) Review Panel Member

-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., Karen Grothe, Ph.D., L.P., Daniel Hall-Flavin, M.D., Sheila Jowsey-Gregoire, M.D., Victor Karpyak, M.D., & Bhanu Kolla, M.D. (Mayo Clinic Rochester)

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

Terry Schneekloth, M.D. (Mayo Clinic Arizona)



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. 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 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.

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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

Jay-Sheree Allen, M.D., Kurt B. Angstman, M.D., Scott A. Breiting, M.D., RoxAnne M Brennan, M.A.N., R.N., Ramona S. DeJesus, M.D., Cesar A. Gonzalez, Ph.D., L.P., David J. Katzelnick, M.D., 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, D.O., M.B.A., 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 of investigators specializes in the investigation and implementation of evidence-based quality improvement projects that are designed to improve patient outcomes in the primary care setting. Ongoing research programs 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 is currently being used to explore ways to predict those adult primary care patients with depression who are most likely to use higher cost services in the time after eligibility. Additionally, projects are ongoing to test the feasibility of primary care-based interventions for behavior problems in young children (SAPPHIRE) and adolescent eating disorders.

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 challenge ourselves to gather data as part of our “usual practice” as we implement novel programs to compare our outcomes with established benchmarks. Toward this end, 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. Current projects are investigating predictors of response to primary care CBT. Furthermore, we are evaluating the effectiveness of our various group therapy programs, including a transdiagnostic group to help adolescents improve their coping skills.

The COVID-19 pandemic has challenged all of health care to be adaptable and flexible with utilizing new technologies to bridge barriers to care and improve treatment outcomes. During the early stages of the pandemic, our clinical service quickly responded to launch video visits and develop internet-based platforms to deliver stress-management, resilience-building, and insomnia interventions. These offerings have expanded to include behavioral activation and managing negative thinking. We have published on our groups’ adaptations to the pandemic and on delivering a group based intervention virtually. We also completed a pilot project showing the feasibility of using an electronic tablet in primary care sites in telehealth for remote social work assistance.

In 2020, we commenced several feasibility studies including use of passive and active data collection through patient mobile phones through 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.

GRANTS

Dendro Technologies, Inc. Examination of the Impact of CalmiGo's Stress Management Device: Effects on MI. 11/2020-10/2021. Principle Investigator: Amir Lerman, M.D. Co-Investigator: Scott A. Breitingner, M.D.

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

National Eating Disorders Association. Integrative Cognitive-Affective Therapy for Adolescent Eating Disorders. 11/2016-3/2022. Principle Investigator: Jocelyn R. Lebow, Ph.D., L.P.

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 K. Biggs, Ph.D., L.P. Co-Investigator: Kristin S. Vickers, Ph.D., L.P.

Health Resources and Services Administration. HP 33881: Academic Units for Primary Care Training and Enhancement. 07/01/2019 - 06/30/2021. Principal Investigator: Chyke A. Doubeni, M.B.B.S., M.P.H.; Co-Investigator: Mark D. Williams, M.D.

KEY RECENT PUBLICATIONS

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LGBTQ+

INVESTIGATORS

Cesar A. Gonzalez, Ph.D., L.P., Dagoberto Heredia, Jr., Ph.D., L.P., & Jennifer A. Vencill, Ph.D., L.P. (Mayo Clinic Rochester)

The Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ+) Research and Education Committee is a multidisciplinary team housed within the Department of Psychiatry and Psychology that focuses on fostering interdisciplinary science and education initiatives to advance the health and well-being of marginalized sexual and gender populations. The group achieves this aim via delivery of culturally proficient research and educational activities that target biopsychosocial mechanisms to reduce health disparities and inequities among gender and sexual diverse populations. The LGBTQ+ Research and Education Committee also works collectively with the Transgender and Intersex Specialty Care Clinic to achieve Mayo Clinic's broader goal of inspiring hope and contributing to health and well-being by providing the best care to every patient through integrated clinical practice, education, and research.

GRANTS

Mayo Clinic Transgender and Gender Diverse Community Partnership to Improve Gender Affirming Care Access and Outcomes. Funded by the Center for Health Equity and Community Engagement Research. 03/2022 - 02/2023. Co-I: Cesar A. Gonzalez, Ph.D., L.P.

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 - 07/2023. Co-PI: Jennifer A. Vencill, Ph.D.

KEY RECENT PUBLICATIONS

Heredia, D., Pankey, T. L., & Gonzalez, C. A. (2021). LGBTQ-affirmative behavioral health services in primary care. *Primary Care*, 48(2), 243-257 <https://doi.org/10.1016/j.pop.2021.02.005>

Kacel, E. L., Pankey, T. L., Vencill, J. A., Heredia, D., Gonzalez, C. A., Ruddy, K. J., & Ehlers, S. L. (2022). Include, affirm, and empower: A paradigm shift in cancer clinical trials for sexual and gender diverse populations *Annals of LGBTQ Public and Population Health*, 3(1), 18-40. <http://doi.org/10.1891/LGBTQ-2021-0013>

Nakamura, N., Dispenza, F., Abreu, R. L., Ollen, E. W., Pantalone, D. W., Canillas, G., Gormley, B., & Vencill, J. A. (2022). The APA Guidelines for Psychological Practice with Sexual Minority Persons: An executive summary of the 2021 revision. *American Psychologist*. Advance online publication. <https://doi/10.1037/amp0000939>

Oberhelman-Eaton S, Chang A, Gonzalez C, Braith A, Singh RJ, Lteif A. Initiation of Gender Affirming Testosterone Therapy in a Lactating Transgender Man. *J Hum Lact*. 2022 May; 38 (2):339-343 Epub 2021 Sept 07 PMID: 34490813 DOI: 10.1177/08903344211037646

Ollen, E., & Vencill, J. A. (2021). Measurement of sexuality for trans and gender diverse populations: Application of the 2021 APA Guidelines for Psychological Practice with Sexual Minority Persons. *Psychology of Sexual Orientation & Gender Diversity*, 8(3), 378-379. <https://doi.org/10.1037/sgd0000529>

Pankey, T., Heredia, D., Vencill, J. A., & Gonzalez, C. (2021). Gender-affirming telepsychology during and after the COVID-19 pandemic: Recommendations for adult transgender and gender diverse populations. *Journal of Health Service Psychology*, 47, 181-189. <https://doi.org/10.1007/s42843-021-00048-z>

Spencer, K. G., Berg, D. R., Bradford, N. J., Vencill, J. A., Tellawi, G., & Rider, G. N. (2021). The Gender Affirmative Lifespan Approach: A developmental model for clinical work with transgender and gender diverse children, adolescents, and adults. *Psychotherapy*, 58(1), 37-49. <http://dx.doi.org/10.1037/pst0000363>

Vencill, J. A. & Pantalone, D. (2021). Representation of sexual and gender minority experiences in the kink/BDSM literature: Considering the clinical implications. *Psychology of Sexual Orientation & Gender Diversity*, 8(3), 384-385. <https://doi.org/10.1037/sgd0000535>

NATIONAL PRESENTATIONS

Christensen J, Imhof R, Linder K, McKean A. Poster presentation by Christensen J: Society for Adolescent Health and Medicine Annual Meeting. Evidence-Based Interventions for Transgender and Gender Non-Binary Youth Experiencing Suicidality: A Systematic Review of the Literature; 2021 March 10-13; Virtual Conference. DOI: 10.1016/j.jadohealth.2020.12.074

DSouza K, Soo Lee Y, Vasilev DJ, et al. (2022). Investigating the Utilization Rate of Fertility Preservation Services Amongst Transgender and Gender Diverse Patients. Presented at the annual meeting of the Association for Clinical and Translational Sciences.

Kacel, E. L., Pankey, T. L., Vencill, J. A., Heredia, D., Gonzalez, C. A., Ruddy, K. J., & Ehlers, S. L. (2021, March). Include, affirm, and empower: A paradigm shift in cancer clinical trials for sexual and gender diverse populations. Poster presented at annual meeting of the American Psycho-Oncology Society, virtual.

Rider, G. N., Caso, T. J., Heredia, D. (2021). Gender euphoria and kink: Intersectional sexploration among transgender and gender diverse People of Color. Presented at the annual meeting of the Society for the Scientific Study of Sexuality. San Juan, Puerto Rico.

Rider, G. N., Girard, A., Arenella, K., Mark, K., Spencer, K., & Vencill, J. A. (2022, November) An inclusive measure of sexual function: Development and validation in LGBTQIA+ and BIPOC samples. Presented at the annual meeting of the Society for the Scientific Study of Sexuality, Vancouver, British Columbia.

LEADERSHIP ROLES

Cesar A. Gonzalez, Ph.D., L.P.

-Editorial Board Member, International Journal of Transgender Health

Jennifer A. Vencill, Ph.D.

-Member, World Professional Association for Transgender Health

(WPATH) Standards of Care Revision, Sexual Health Workgroup

-Editorial Board Member, International Journal of Sexual Health

-Member, American Psychological Association Task Force for

Revising the Professional Practice Guidelines for Working with Sexual Minority Clients

-Editorial Board Member, Psychology of Sexual Orientation & Gender Diversity

Eleshia J. Morrison, Ph.D., L.P.

Dr. Morrison is a board-certified clinical health psychologist and Assistant Professor of Psychology in the Division of Addiction, Pain, and Transplant (Department of Psychiatry and Psychology). Her clinical research interests include behavioral intervention outcomes, psychological symptoms, health behaviors, quality of life, diversity factors & intersectionality, and medical outcomes (e.g., physical symptom burden, physical functioning, morbidity & mortality) in medically-ill patients. Dr. Morrison is a research scholar with the Robert D. and Patricia E. Kern Center for the Science of Healthcare Delivery, where her program (2021-2024) is focused on population-based science, implementation science, digital health care delivery, health equity research, and qualitative science. Her Kern-sponsored research is an effectiveness-implementation study to disseminate a digital behavioral intervention to under-resourced patients with high-impact chronic pain, with a focus on racially diverse, and sex & gender diverse individuals. Dr. Morrison is also a Co-Principal Investigator for a study funded by the Research Council of Norway with Oslo University to develop a digital behavioral intervention for the management of chronic pain, developed with input from pain experts, patients, and caregivers. She has education research interests related to trainees' educational experiences and preferences, and the promotion of health service psychology as an integral component of healthcare delivery. Current interdisciplinary team science projects include pain rehabilitation outcomes for cancer survivors, the impact of chronic pain on sexual health, pain management for transgender and gender diverse individuals, pain management for racially diverse individuals, and pain rehabilitation training experiences of interdisciplinary learners.



GRANTS

Kern Center for the Science of Health Care Delivery, Shark Tank 5th Annual Funding Event. Study: Delivery of an eHealth intervention for under-resourced adult patients with chronic pain. 08/2022-11/2022. PI: Elishia Morrison, Ph.D., L.P.

Robert D and Patricia E. Kern Center for the Science of Health Care Delivery. Study: Delivery of an eHealth intervention for under-resourced adult patients with chronic pain. 08/2021-8/2024. PI: Elishia Morrison, Ph.D., L.P.

The Research Council of Norway. Study: Living Well with Chronic Pain: Using Person-Centered e-Health Design to Support Self-Management. 01/2017-12/2020. PI: Elishia Morrison, Ph.D.

KEY RECENT PUBLICATIONS

Benjamin, J. Z., Heredia, D., Jr., Han, T., Kirtley, A. T., Morrison, E. J., & Leffler, J. M. (2021). Implementation of a cross-cultural simulation workshop: Feasibility and training satisfaction. *Training and Education in Professional Psychology*, 15(1), 45-53. <https://doi.org/10.1037/tep0000300>

Enders FT, Golembiewski EH, Orellana MA, DSouza KN, Addani MA, Morrison EJ, Benson JT, Silvano CJ, Pacheco-Spann LM, Balls-Berry JE. Changing the face of academic medicine: an equity action plan for institutions. *J Clin Transl Sci*. 2022 May 20;6(1):e78. doi: 10.1017/cts.2022.408. PMID: 35874036; PMCID: PMC9280456

Gilliam WP, Schumann ME, Craner JR, Cunningham JL, Morrison EJ, Seibel S, Sawchuk C, Sperry JA. Examining the effectiveness of pain rehabilitation on chronic pain and post-traumatic symptoms. *J Behav Med*. 2020 Dec; 43(6):956-967 Epub 2020 May 25 PMID: 32451649 DOI:10.1007/s10865-020-00160-3

Ledel Solem IK, Varsi C, Eide H, Kristjansdottir OB, Borosund E, Schreurs KMG, Waxenberg LB, Weiss KE, Morrison EJ, Haaland-Overby M, Bevan K, Zangi HA, Stubhaug A, Solberg Nes L. A user-centered approach to an evidence-based electronic health pain management intervention for people with chronic pain: Design and development of EPIO. *J Med Internet Res*. 2020 Jan 21; 22(1):e15889 PMID: 31961331 PMCID: 7001051 DOI: 10.2196/15889

Morrison EJ, Clark MM, Wieland ML, Weis JA, Hanza MMK, Meiers SJ, Patten CA, Sloan JA, Novotny PJ, Sim LA, Nigon JA, Sia IG. Relationship between negative mood and health behaviors in an immigrant and refugee population. *J Immigr Minor Health*. 2017 Jun; 19(3):655-664 PMID: 27669717 PMCID: 5366278 DOI: 10.1007/s10903-016-0506-z

Morrison EJ, Novotny PJ, Sloan JA, Yang P, Patten CA, Ruddy KJ, Clark MM. Emotional problems, quality of life, and symptom burden in patients with lung cancer. *Clin Lung Cancer*. 2017 Sep; 18(5):497-503 Epub 2017 Mar 02 PMID: 28412094 DOI: 10.1016/j.clcc.2017.02.008



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

Dr. Staab is Professor of Psychiatry, Chair of the Department of Psychiatry and Psychology, and Consultant in the Departments of Psychiatry and Psychology and Otorhinolaryngology – Head and Neck Surgery at Mayo Clinic, Rochester, MN. He and his colleagues in the Behavioral Medicine Program evaluate and treat more than 1500 patients with functional neurologic, neuro-otologic, and GI disorders, cancer distress, cardiac distress, and other psychosomatic illnesses each year. His research centers on problems at the interface of neurology, otology, and psychiatry. He is best known for investigations of chronic dizziness. Dr. Staab received a BS in chemical engineering from Northwestern University, MD from the University of Pittsburgh, and MS in bioengineering from Carnegie-Mellon University. He completed an internship in internal medicine and residency in psychiatry at the National Naval Medical Center (now Walter Reed National Military Medical Center) in Bethesda, MD, followed by a fellowship in traumatic stress disorders. He previously served on the faculties of the Uniformed Services University, University of Florida, and University of Pennsylvania. Dr. Staab is author or co-author of over 150 scientific articles, reviews, chapters, and abstracts. He serves on the editorial boards of six scientific journals in the fields of psychosomatic medicine and otorhinolaryngology and holds leadership positions in the Academy of Consultation-Liaison Psychiatry, Barany Society, and Functional Neurological Disorder Society.

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. 09/2018–09/2022. PI: 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

Arshad Q, Saman Y, Sharif M, Kaski D, Staab JP. Magnitude Estimates Orchestrate Hierarchical Construction of Context-Dependent Representational Maps for Vestibular Space and Time: Theoretical Implications for Functional Dizziness. *Front Integr Neurosci*. 2021; 15:806940 Epub 2022 Feb 04 PMID: 35185485 PMCID: 8855482 DOI: 10.3389/fnint.2021.806940

Dunlap PM, Marchetti GF, Sparto PJ, Staab JP, Furman JM, Delitto A, Whitney SL. Exploratory Factor Analysis of the Vestibular Activities Avoidance Instrument. *JAMA Otolaryngol Head Neck Surg*. 2021 Feb 1; 147(2):144-150 PMID: 33237289 PMCID: 7689567 DOI: 10.1001/jamaoto.2020.4203

Dunlap PM, Sparto PJ, Marchetti GF, Furman JM, Staab JP, Delitto A, Klatt BN, Whitney SL. Fear Avoidance Beliefs Are Associated With Perceived Disability in Persons With Vestibular Disorders. *Phys Ther*. 2021 Sep 1; 101(9) PMID: 34120180 DOI: 10.1093/ptj/pzab147

Graham MK, Staab JP, Lohse CM, McCaslin DL. A Comparison of Dizziness Handicap Inventory Scores by Categories of Vestibular Diagnoses. *Otol Neurotol*. 2021 Jan; 42(1):129-136 PMID: 33229883 DOI: 10.1097/MAO.0000000000002890

Hallett M, Aybek S, Dworetzky BA, McWhirter L, Staab JP, Stone J. Functional neurological disorder: new subtypes and shared mechanisms. *Lancet Neurol*. 2022 Jun; 21(6):537-550 Epub 2022 Apr 14 PMID: 35430029 PMCID: 9107510 DOI: 10.1016/S1474-4422(21)00422-1

Indovina I, Passamonti L, Mucci V, Chiarella G, Lacquaniti F, Staab JP. Brain Correlates of Persistent Postural-Perceptual Dizziness: A Review of Neuroimaging Studies. *J Clin Med*. 2021 Sep 21; 10(18) Epub 2021 Sept 21 PMID: 34575385 PMCID: 8468644 DOI: 10.3390/jcm10184274

Marinelli JP, Anzalone CL, Prummer CM, Poling GL, Staab JP, Tombers NM, Lohse CM, Carlson ML. Electrical stimulation of the cochlea for treatment of chronic disabling tinnitus: an open-label trial towards the development of an implantable device. *J Transl Med*. 2022 Jan 29; 20(1):56 PMID: 35093126 PMCID: 8800213 DOI: 10.1186/s12967-022-03271-4

McCaslin DL, Shepard NT, Hollman JH, Staab JP. Characterization of Postural Sway in Patients With Persistent Postural-Perceptual Dizziness (PPPD) Using Wearable Motion Sensors. *Otol Neurotol*. 2022 Feb 1; 43(2):e243-e251 PMID: 34699399 DOI: 10.1097/MAO.0000000000003393

Perez DL, Nicholson TR, Asadi-Pooya AA, Begue I, Butler M, Carson AJ, David AS, Deeley Q, Diez I, Edwards MJ, Espay AJ, Gelauff JM, Hallett M, Horovitz SG, Jungilligens J, Kanaan RAA, Tijssen MAJ, Kozłowska K, LaFaver K, LaFrance WC Jr, Lidstone SC, Marapin RS, Maurer CW, Modirrousta M, Reinders AATS, Sojka P, Staab JP, Stone J, Szaflarski JP, Aybek S. Neuroimaging in Functional Neurological Disorder: State of the Field and Research Agenda. *Neuroimage Clin*. 2021; 30:102623 Epub 2021 Mar 11 PMID: 34215138 PMCID: 8111317 DOI: 10.1016/j.nicl.2021.102623

Singh K, Garcia-Gomar MG, Cauzzo S, Staab JP, Indovina I, Bianciardi M. Structural connectivity of autonomic, pain, limbic, and sensory brainstem nuclei in living humans based on 7 Tesla and 3 Tesla MRI. *Hum Brain Mapp*. 2022 Jul; 43(10):3086-3112 Epub 2022 Mar 19 PMID: 35305272 PMCID: 9188976 DOI: 10.1002/hbm.25836

Trinidad A, Harman P, Stone J, Staab JP, Goebel JA. Assessment of Potential Risk Factors for the Development of Persistent Postural-Perceptual Dizziness: A Case-Control Pilot Study. *Front Neurol*. 2020; 11:601883 Epub 2021 Jan 21 PMID: 33551961 PMCID: 7859446 DOI: 10.3389/fneur.2020.601883

von Sohsten Lins EMD, Bittar RSM, Bazan PR, Amaro Junior E, Staab JP. Cerebral Responses to Stationary Emotional Stimuli Measured by fMRI in Women with Persistent Postural-Perceptual Dizziness. *Int Arch Otorhinolaryngol*. 2021 Jul; 25(3):e355-e364 Epub 2020 Sept 24 PMID: 34377168 PMCID: 8321645 DOI: 10.1055/s-0040-1716572

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

Dr. Croarkin's research focuses on adapting and innovating technologies to advance the clinical practice of psychiatry. 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. A current focus of Dr. Croarkin is improved assessments and treatment of suicidality in adolescents. This is a critical public health challenge. Our recent efforts suggest that focusing on suicidality in the context of childhood mood disorders provides the opportunity to parse a narrow phenotype. The research team recently demonstrated that depressed adolescents with suicidal behaviors have impairments in GABAergic inhibitory tone and that improvement in these deficits correlates with improvement in suicidal ideation. Dr. Croarkin's research team has applied novel transcranial magnetic stimulation therapeutic interventions to adolescents with major depressive disorder and suicidal ideations. The group's collaborations are multidisciplinary spanning psychosocial, clinical psychiatry, neurostimulation, developmental neuroscience, ethics, basic science, physics, and engineering expertise.



SELECTED GRANTS

Funded by National Institute of Mental Health. R01 MH 113700: Glutamatergic and GABAergic Biomarkers in rTMS for Adolescent Depression. 08/2017–11/2022. 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 Science Foundation. 2041339: FW-HTF-RM: Introducing Patient-Specific Therapy Profiles in Electronic Health Records for Guiding Treatment Selection in the Era of Genomic Medicine. 09/2020–08/2023. Co-PI: Paul Croarkin, D.O., M.S. and Arjun Athreya, Ph.D., 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 (#1) for Neuropsychopharmacology - American College of Neuropsychopharmacology 2021

KEY RECENT PUBLICATIONS

Collins AR, Cheung J, Croarkin PE, Kolla BP, Kung S. Effects of transcranial magnetic stimulation on sleep quality and mood in patients with major depressive disorder. *J Clin Sleep Med*. 2022 May 1; 18 (5):1297-1305 PMID: 34931606 PMCID: 9059593 DOI: 10.5664/jcsm.9846

Grant CW, Barreto EF, Kumar R, Kaddurah-Daouk R, Skime M, Mayes T, Carmody T, Biernacka J, Wang L, Weinsilboum R, Trivedi MH, Bobo WV, Croarkin PE, Athreya AP. Multi-Omics Characterization of Early- and Adult-Onset Major Depressive Disorder. *J Pers Med*. 2022 Mar 6; 12 (3) Epub 2022 Mar 06 PMID: 35330412 PMCID: 8949112 DOI: 10.3390/jpm12030412

Kucuker MU, Ozerdem A, Ceylan D, Cabello-Arreola A, Ho AMC, Joseph B, Webb LM, Croarkin PE, Frye MA, Veldic M. The role of base excision repair in major depressive disorder and bipolar disorder. *J Affect Disord*. 2022 Jun 1; 306:288-300 Epub 2022 Mar 16 PMID: 35306122 DOI: 10.1016/j.jad.2022.03.033

Markota M, Croarkin PE, Bobo WV. Positive Urine Drug Screens and External Mortality in Teenagers Who Present for Medical Care. *J Clin Psychiatry*. 2022 Jan 11; 83 (1) PMID: 35015935 DOI: 10.4088/JCP.20m13729

Mills JA, Suresh V, Chang L, Mayes T, Croarkin PE, Trivedi MH, Strawn JR. Socioeconomic Predictors of Treatment Outcomes Among Adults With Major Depressive Disorder. *Psychiatr Serv*. 2022 Mar 31; appips202100559 [Epub ahead of print] PMID: 35354325 DOI: 10.1176/appi.ps.202100559

Seewoo BJ, Rodger J, Demitrack MA, Heart KL, Port JD, Strawn JR, Croarkin PE. Neurostructural differences in adolescents with treatment resistant depression and treatment effects of transcranial magnetic stimulation. *Int J Neuropsychopharmacol*. 2022 Jan 28 [Epub ahead of print] PMID: 35089358 DOI: 10.1093/ijnp/pyac007

Strawn JR, Mills JA, Suresh V, Peris TS, Walkup JT, Croarkin PE. Combining selective serotonin reuptake inhibitors and cognitive behavioral therapy in youth with depression and anxiety. *J Affect Disord*. 2022 Feb 1; 298 (Pt A):292-300 Epub 2021 Oct 31 PMID: 34728290 PMCID: 8674898 DOI: 10.1016/j.jad.2021.10.047

Vande Voort JL, Orth SS, Shekunov J, Romanowicz M, Geske JR, Ward JA, Leibman NI, Frye MA, Croarkin PE. A Randomized Controlled Trial of Combinatorial Pharmacogenetics Testing in Adolescent Depression. *J Am Acad Child Adolesc Psychiatry*. 2022 Jan; 61 (1):46-55 Epub 2021 June 05 PMID: 34099307 PMCID: 9118122 DOI: 10.1016/j.jaac.2021.03.011

LEADERSHIP ROLES

Chair (2021) Center for Scientific Review Special Emphasis Panel ZRG1 ETTN-A (91) Special Topics: Noninvasive Neuromodulation and Neuroimaging Techniques (NIH special emphasis panel)



Sheila G. Jowsey-Gregoire, M.D.

Dr. Jowsey-Gregoire is an Associate Professor of Psychiatry who completed her training in Psychiatry and Consultation-Liaison Fellowship at the Mayo Clinic. She is a member of the Department of Psychiatry and Psychology and has a joint appointment in the Department of Surgery. Dr. Jowsey-Gregoire created the Transplant Psychiatry Clinic at Mayo Clinic. She has a career interest in the psychosocial assessment and psychiatric care of transplant patients. She has served on the United Network of Organ Sharing Vascularized Composite Allotransplantation Committee, was Chair of the American Society of Transplantation Psychosocial and Ethics Community of Practice and served on the American Society of Transplantation Education Committee. She is a founding member of the Chauvet Workgroup, an international consortium, focused on the psychosocial needs of Vascularized Composite Allotransplantation patients. The Mayo Clinic has established an active hand and face transplant program and successfully performed both hand and face transplants. Dr. Jowsey-Gregoire has led the clinical psychiatric care and psychosocial research in the Essam and Dalal Obaid Center for Reconstructive Transplant Surgery. She has collaborated with colleagues in the William J von Liebig Center for Transplantation and Clinical Regeneration, Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health care Delivery and the Knowledge and Evaluation Research Unit to utilize

qualitative research methods and purposeful shared decision-making design to improve decision making for hand and face transplant candidates. She and her colleagues have received funding through the Congressionally Directed Medical Research Program administered by the department of Defense and the Obaid Reconstructive Transplant Award to study shared decision making in Vascularized Composite Transplantation and are developing a shared decision-making prototype for use by hand and face transplant candidates.

GRANT

Congressionally Mandated Medical Research Project Award, funded by U.S. Army Medical Research Acquisition Activity W81XWH-18-1-0676: Potential VCA Candidates, Caregivers, and Providers Motivations, Expectations, and Shared Decision-Making in VCA. 9/18-9/22. PI: Sheila Jowsey-Gregoire, M.D.

KEY RECENT PUBLICATIONS

Finnie D, Griffin J, Kennedy C, Schaepe K, Boehmer K, Hargraves I, Amer H, Jowsey-Gregoire S. "Psychosocial and Bioethical Challenges and Developments for the Future of Vascularized Composite Allotransplantation" Title: Education for patients with limb loss or absence: Aging, Overuse Concerns, and Patient Treatment Knowledge Gaps. *Frontiers in Psychology*. 2022 Aug; Sec. Health Psychology. doi: 10.3389/fpsyg.2022.953113

Fipps DC, Goetze RE, Clark MM, Mara K, Watt KD, Jowsey-Gregoire SG, Heimbach JK, Grothe K. Liver Transplantation After Bariatric Surgery: a Clinical Cohort Study. *Obes Surg*. 2021 Aug; 31(8):3700-3706. Epub 2021 May 22. doi: 10.1007/s11695-021-05483-x. PMID: 34021883.

Griffin JM, Kennedy CC, Boehmer KR, Hargraves IG, Amer H, Jowsey-gregoire SG(2022) Using Team Science in Vascularized Composite Allotransplantation (VCA) to Improve Team and Patient Outcomes. *Front. Psychol*. 13:935507. doi:10.3389/fpsyg.2022.935507

Jowsey-Gregoire S, Jannetto PJ, Jesse MT, Fleming J, Winder GS, Balliet W, Kuntz K, Vasquez A, Weinland S, Hussain F, Weinrieb R, Fireman M, Nickels MW, Peipert JD, Thomas C, Zimbren PC. Substance use screening in transplant populations: Recommendations from a consensus workgroup. *Transplant Rev (Orlando)*. 2022 Apr;36(2):100694. doi: 10.1016/j.trre.2022.100694. Epub 2022 Apr 25. PMID: 35537285

Kumnig M, Jowsey-Gregoire SG, Bellew M, Dean W, Järholm S, Coffman K, Brown C, Moreno E, Talbot SG, Morelon E, Petruzzo P, Amer H. The Chauvet Workgroup: A Resource for the Psychosocial Aspects of Reconstructive Transplantation. *Mayo Clin Proc*. 2022 Jun;97(6):1050-1053. doi: 10.1016/j.mayocp.2022.02.003. PMID: 35662423

LEADERSHIP ROLES

Chauvet Steering Committee, Chauvet Workgroup. International Society of Vascularized Composite Allotransplantation, 2015-present

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 as research leader in the Division of Addiction, Department of Psychiatry and Psychology, and is a mentor to numerous trainees and junior faculty in research.



GRANTS

National Institute on Alcohol Abuse and Alcoholism. Pharmacogenomics of Acamprosate Treatment Outcome. 09/2019 – 02/2022. Co-PI: Victor Karpyak, M.D., Ph.D. and Stacey Winham, 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. 08/2018–08/2023. Co-PI: Victor Karpyak, M.D., Ph.D. and Stacey Winham, Ph.D.

KEY RECENT PUBLICATIONS

Biernacka JM, Coombes BJ, Batzler A, et al. Genetic contributions to alcohol use disorder treatment outcomes: a genome-wide pharmacogenomics study. *Neuropsychopharmacology*. 2021;46(12):2132-2139. doi:10.1038/s41386-021-01097-0

Fairbanks J, Umbreit A, Prakash Kolla B, Kolla BP, Karpyak VM, Schneekloth TD, Loukianova LL, Sinha S. Evidence-Based Pharmacotherapies for Alcohol Use Disorder: Clinical Pearls. *Mayo Clin Proc*. 2020 Sep; 95 (9):1964-1977 Epub 2020 May 20 PMID: 32446635 DOI: 10.1016/j.mayocp.2020.01.030

Ho MF, Zhang C, Wei L, et al. Genetic variants associated with acamprosate treatment response in alcohol use disorder patients: A multiple omics study. *Br J Pharmacol*. 2022;179(13):3330-3345. doi:10.1111/bph.15795

Ho MF, Zhang C, Zhang L, et al. TSPAN5 influences serotonin and kynurenine: pharmacogenomic mechanisms related to alcohol use disorder and acamprosate treatment response. *Mol Psychiatry*. 2021;26(7):3122-3133. doi:10.1038/s41380-020-0855-9

Meng W, Sjöholm LK, Kononenko O, et al. Genotype-dependent epigenetic regulation of DLGAP2 in alcohol use and dependence. *Mol Psychiatry*. 2021;26(8):4367-4382. doi: 10.1038/s41380-019-0588-9

Nosova O, Bazov I, Karpyak V, Hallberg M, Bakalkin G. Epigenetic and Transcriptional Control of the Opioid Prodynorphine Gene: In-Depth Analysis in the Human Brain. *Molecules*. 2021;26(11):3458. Published 2021 Jun 7. doi:10.3390/molecules26113458

Oesterle TS, Karpyak VM, Coombes BJ, Athreya AP, Breiting SA, Correa da Costa S, Dana Gerber DJ. Systematic review: Wearable remote monitoring to detect nonalcohol/nonnicotine-related substance use disorder symptoms. *Am J Addict*. 2022 Sep 5 Epub 2022 Sept 05 PMID: 36062888 DOI: 10.1111/ajad.13341

Schneekloth TD, Arab JP, Simonetto DA, Petterson TM, Niazi SK, Hall-Flavin DK, Karpyak VM, Kolla BP, Roth JE, Kremers WK, Rosen CB. Factors Having an Impact on Relapse and Survival in Transplant Recipients With Alcohol-Induced Liver Disease. *Mayo Clin Proc Innov Qual Outcomes*. 2021 Dec; 5 (6):1153-1164 Epub 2021 Dec 08 PMID: 34938953 PMCID: 8666351 DOI: 10.1016/j.mayocpiqo.2021.10.005



Laura Suarez Pardo, M.D.

Dr. Suarez Pardo is an Assistant Professor of Psychiatry who is board certified in general and consultation-liaison psychiatry. The focus of her clinical practice is treating patients with comorbid medical and psychiatric illnesses, with a particular concentration on cardiovascular disease. In her research, she has focused on psychocardiology, which examines the relationship between mental health and cardiovascular disease. The beginning of her research career was at the Cardiac Psychiatry Research Program at Massachusetts General Hospital, where she participated in studies that examined depression, anxiety, and positive emotions in the context of cardiovascular disease, as well as the effectiveness of collaborative care models and psychological interventions in the management of mental illness, and their impact on health behavior change and cardiovascular health recovery. In recent years, her work has focused on improving the understanding of psychological distress, including depression, in individuals with heart failure and those with ventricular assist devices. In addition, Dr. Suarez Pardo is interested in researching healthcare disparities and promoting inclusive research practices. She is particularly interested in translating research on psychocardiology to Latinx communities and has recently received funding from the Center for Chronic Disease Reduction and Equity Promotion Across Minnesota (C2DREAM), funded by the National Institute for Minority Health and Health Disparities (NIMHD). Furthermore, she is involved in other funded studies that aim to understand the role psychiatric disorders play in the progression and recovery of cardiac disease. In the long term, Dr. Suarez Pardo hopes to establish a better understanding of the phenotypic characteristics of depression, anxiety, and traumatic distress in cardiovascular disease subpopulations that take gender and cultural factors into account, measure cardiac psychosocial distress accurately, and develop

culturally responsive interventions that can improve mental and cardiovascular health. Due to her research skills, she was accepted into the Clinician Investigator Training Program, Mayo Clinic Graduate School of Medicine from July 2020 to June 2022.

GRANTS AND AWARDS

Cardiac distress in Latinx/Hispanic women with cardiovascular disease and risk factors: examining its prevalence and the role of discrimination and acculturation experiences. 04/2022–06/2024. Funded by C2DREAM is supported by NIMHD grant P50MD017342. Principal Investigator: Laura Suarez Pardo, MD. Mentors: Jeffrey Staab, MD, and Matthew Clark, PhD.

Evaluation of Voice Analysis Technology in Detecting and Managing Depression and Anxiety in Patients undergoing Cardiac Rehabilitation. Funded by Mayo Clinic Cardiovascular Research Center. 01/2022–04/2024. Co-Principal Investigators: Amir Lerman, MD; Virend Somers, MD, PhD; Eric St Louis, MD. Co-Investigators: Laura Suarez Pardo, MD, Jeffrey Staab, MD.

Anxiety and depression in people with myocarditis and their identified support givers (caregivers): a comprehensive survey-based study of its impact on quality of life and health outcomes. 6/1/2020–6/1/2023 Funded by The Myocarditis Foundation. Principal Investigator: William Bobo, MD; Co-Investigators: Laura Suarez Pardo, MD; Leslie Cooper, MD.

The Laughlin Fellowship Program. American College of Psychiatrists. 02/2020–02/2021

William Webb Fellowship Program. Academy of Consultation-Liaison Psychiatry. 11/2019–11/2020

Student/Early Career Mentorship Council International Psychogeriatric Association (IPA). 06/2018–06/2020

AAGP Honors Scholars Program. American Association for Geriatric Psychiatry (AAGP). 03/2018–03/2019

KEY RECENT PUBLICATIONS

Foroughi M, Medina Inojosa JR, Lopez-Jimenez F, Saeidifard F, Suarez L, Stokin GB, Prieto ML, Rocca WA, Frye MA, Morgan RJ. Association of Bipolar Disorder with Major Adverse Cardiovascular Events: A Population-Based Historical Cohort Study. *Psychosom Med.* 2022 Jan 1; 84 (1):97-103 PMID: 34611111 PMCID: 8678204 DOI: 10.1097/PSY.0000000000001017

Sara JDS, Ahmad A, Toya T, Suarez Pardo L, Lerman LO, Lerman A. Anxiety Disorders Are Associated with Coronary Endothelial Dysfunction in Women with Chest Pain and Nonobstructive Coronary Artery Disease. *J Am Heart Assoc.* 2021 Sep 7; 10 (17):e021722 Epub 2021 Aug 28 PMID: 34459240 PMCID: 8649259 DOI: 10.1161/JAHA.121.021722

Suarez L, Dunlay SM, Schettle SD, Stulak JM, Staab JP. Associations of depressive symptoms with outcomes in patients implanted with left ventricular assist devices. *Gen Hosp Psychiatry.* 2020 May - Jun; 64:93-98 Epub 2020 Jan 03 PMID: 32008725 DOI: 10.1016/j.genhosppsych.2019.12.005

Suarez L, Kolla BP, Hall-Flavin D, Mansukhani MP. QTc Prolongation Secondary to Zolpidem Use. *Prim Care Companion CNS Disord.* 2020 Mar 19; 22 (2) PMID: 32220151 DOI: 10.4088/PCC.19l02506

Aimee Karstens, Ph.D., M.A.

Dr. Karstens's research interests involve risk factors for cognitive decline and age-related dementia causing disorders such as Alzheimer's disease. This work incorporates clinical, biological, genetic, neuroimaging and cognitive variables to identify possible markers/mechanisms to guide precision medicine approaches to inform diagnosis/treatment. Dr. Karstens's research involves the intersection of genetic (sex, APOE) and modifiable factors (diet, lipid transport), Alzheimer's disease genetic risk, lifestyle and behavioral interventions, plasma biomarker development, cognitive test development, sex differences, and algorithmic criteria for mild cognitive impairment. This work has emphasized historically underrepresented groups, with efforts towards improving research and clinical tools in populations including African American older adults and native Spanish speakers. Currently at Mayo Clinic, she is working on cultural and linguistic adaptations of a remote self-administered cognitive test in Spanish speakers and plans to do similar community-based adaptation work in the English-speaking Caribbean country Grenada. These projects will set the stage for future efforts to examine population-specific environmental risk factors for cognitive decline.



GRANTS AND AWARDS

National Institutes of Health T32 AG057468 Alzheimer's Disease and Related Dementias Predoctoral Fellow

University of Illinois, Chicago Graduate College Provost Deiss Award. 2018 – 2019. Principal Investigator: Aimee J. Karstens, Ph.D.

University of Illinois, Chicago Graduate College Provost Graduate Research Award. 2018 – 2019. Principal Investigator: Aimee J. Karstens, Ph.D.

American Psychological Foundation Benton Meier Scholarship. 2019 – 2020. Principal Investigator: Aimee J. Karstens, Ph.D.

International College of Psychoneuropharmacology Conference Junior Investigator Award 2016 – 2017

KEY RECENT PUBLICATIONS

Bessette KL, Karstens AJ, Crane NA, Peters AT, Stange JP, Elverman KH, Morimoto SS, Weisenbach SL, Langenecker SA. A Lifespan Model of Interference Resolution and Inhibitory Control: Risk for Depression and Changes with Illness Progression. *Neuropsychol Rev*. 2020 Dec; 30(4):477-498 Epub 2020 Jan 15 PMID: 31942706 PMCID: 7363517 DOI: 10.1007/s11065-019-09424-5

Karstens AJ, Korzun I, Avery ET, Kassel MT, Keelan R, Kales H, Abercrombie H, Eisenlohr-Moul T, Langenecker SA, Weisenbach S. Examining HPA-axis functioning as a mediator of the relationship between depression and cognition across the adult lifespan. *Neuropsychol Dev Cogn B Aging Neuropsychol Cogn*. 2019 Jul; 26(4):507-520 Epub 2018 July 11 PMID: 29993318 PMCID: 6329657 DOI: 10.1080/13825585.2018.1495309

Karstens AJ, Tussing-Humphreys L, Zhan L, Rajendran N, Cohen J, Dion C, Zhou XJ, Lamar M. Associations of the Mediterranean diet with cognitive and neuroimaging phenotypes of dementia in healthy older adults. *Am J Clin Nutr*. 2019 Feb 1; 109(2):361-368 PMID: 30698630 PMCID: 6367961 DOI: 10.1093/ajcn/nqy275

McLeod, A, Tussing-Humphreys, L, Antonic, M, Berbaum, M, Blumstein, L, Dakers-Jones, R, Karstens A, Lamar, M, OjiHemphill, N, Restrepo, L, Sanchez-Flack, J, Schiffer, L, Siegel, L, Strahan, D, Fitzgibbon, M. The Effect of a Mediterranean Diet With or Without Calorie Restriction on Cognition, Lifestyle, and Metabolic Health of Obese, Predominately Non-Hispanic Black Older Adults Current Developments in Nutrition. 2022; 6(1):796. DOI: <https://doi.org/10.1093/cdn/nzac064.015>

Stricker NH, Stricker JL, Karstens AJ, Geske JR, Fields JA, Hassenstab J, Schwarz CG, Tosakulwong N, Wiste HJ, Jack CR Jr, Kantarci K, Mielke MM. A novel computer adaptive word list memory test optimized for remote assessment: Psychometric properties and associations with neurodegenerative biomarkers in older women without dementia. *Alzheimers Dement (Amst)*. 2022; 14(1):e12299 Epub 2022 Mar 09 PMID: 35280963 PMCID: 8905660 DOI: 10.1002/dad2.12299

LEADERSHIP ROLES

Postdoctoral Officer, Association for Neuropsychology Students and Trainees APA Division 40/Society for Clinical Neuropsychology, Aging Focus Group 2020 – 2022

Committee Member, Society for Clinical Neuropsychology/Division 40 Program Committee, 2015 – 2020



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

Dr. Oesterle is Co-Chair of the Division of Addiction Psychiatry, Medical Director of the Mayo Clinic Intensive Addiction Program (I.A.P.), and Medical Director of Fountain Centers, Chemical Dependency Treatment Programs that are part of the Department of Psychiatry and Psychology, Mayo Clinic. Dr. Oesterle joined the staff of Mayo Clinic in 2014 and holds the academic rank of Assistant Professor of Psychiatry at Mayo Clinic College of Medicine and Science. Dr. Oesterle earned his B.A. at Brigham Young University in Provo, Utah, and his M.D. at the University of Minnesota Medical School, Twin Cities. He subsequently earned his M.P.H. at the University of Minnesota School of Public Health. Dr. Oesterle continued his training through a combined adult, child, and adolescent psychiatry residency and a fellowship in addiction psychiatry through the Mayo Clinic School of Graduate Medical Education. Dr. Oesterle is interested in treating complex addiction in rural locations through technological solutions. Dr. Oesterle's research focuses on digital biomarkers, telehealth for rural chemical dependency treatment, and the genetics of addiction. He has given many presentations on his work and has authored journal articles, abstracts, and other written publications. Due to his research productivity, Dr. Oesterle received a Departmental Junior Faculty Research Award.

GRANTS

Hormel Foundation Grant. Digital delivery of substance use disorder treatment to rural communities. 01/2022 – 01/2023. PI: Tyler S. Oesterle, M.D., M.P.H., Co-investigator Scott Breitingger, M.D.

National Institute on Alcohol Abuse and Alcoholism. NIAAA UO1 AA027487: Pharmacogenomics of Acamprostate Treatment Response. 09/2018 – 02/2022; Co-PI: Victor Karpyak, M.D. and Tyler S. Oesterle, M.D., M.P.H.

KEY RECENT PUBLICATIONS

Carley JA, Oesterle T. Therapeutic Approaches to Opioid Use Disorder: What is the Current Standard of Care? *Int J Gen Med.* 2021 Jun 3;14:2305-2311. doi: 10.2147/IJGM.S295461. PMID: 34113160; PMCID: PMC8184146

da Costa SC, Oesterle T, Rummans TA, Richelson E, Gold M. Psychedelic drugs for psychiatric disorders. *J Neurol Sci.* 2022 Sep 15; 440:120332 Epub 2022 July 05 PMID: 35841696 DOI: 10.1016/j.jns.2022.120332

Ho MF, Zhang C, Moon I, Wei L, Coombes B, Biernacka J, Skime M, Choi DS, Frye M, Schmidt K, Gliske K, Braughton J, Ngo Q, Skillon C, Seppala M, Oesterle T, Karpyak V, Li H, Weinshilboum R. Genome-wide association study for circulating FGF21 in patients with alcohol use disorder: Molecular links between the SNHG16 locus and catecholamine metabolism. *Mol Metab.* 2022 Jun 22:101534. doi: 10.1016/j.molmet.2022.101534. Epub ahead of print. PMID: 35752286

Ho MF, Zhang C, Wei L, Zhang L, Moon I, Geske JR, Skime MK, Choi DS, Biernacka JM, Oesterle TS, Frye MA, Seppala MD, Karpyak VM, Li H, Weinshilboum R.M. Genetic variants associated with acamprostate treatment response in alcohol use disorder patients: A multiple omics study. *Br J Pharmacol.* 2022 Jul;179(13):3330-3345. doi: 10.1111/bph.15795. Epub 2022 Feb 8. PMID: 35016259; PMCID: PMC9177536

Kamath CC, Kelpin SS, Patten CA, Rummans TA, Kremers HM, Oesterle TS, Williams MD, Breitingger SA. Shaping the Screening, Behavioral Intervention, and Referral to Treatment (SBIRT) Model for Treatment of Alcohol Use Disorder in the COVID-19 Era. *Mayo Clin Proc.* 2022 Oct; 97(10):1774-1779 Epub 2022 July 19 PMID: 36202491 PMCID: 9293785 DOI: 10.1016/j.mayocp.2022.07.006

Oesterle TS, Karpyak VM, Coombes BJ, Athreya AP, Breitingger SA, Correa da Costa S, Dana Gerber DJ. Systematic review: Wearable remote monitoring to detect nonalcohol/nonnicotine-related substance use disorder symptoms. *Am J Addict.* 2022 Sep 5 Epub 2022 Sept 05 PMID: 36062888 DOI: 10.1111/ajad.13341

Oesterle TS, Kolla B, Risma CJ, Breitingger SA, Rakocevic DB, Loukianova LL, Hall-Flavin DK, Gentry MT, Rummans TA, Chauhan M, Gold MS. Substance Use Disorders and Telehealth in the COVID-19 Pandemic Era: A New Outlook. *Mayo Clin Proc.* 2020 Dec;95(12):2709-2718. doi: 10.1016/j.mayocp.2020.10.011. Epub 2020 Oct 21. PMID: 33276843; PMCID: PMC7577694

Romanowicz M, Oesterle TS, Croarkin PE, Sutor B. Measuring patient satisfaction in an outpatient psychiatric clinic. What factors play a role? *Ann Gen Psychiatry.* 2022 Jan 18;21(1):2. doi: 10.1186/s12991-022-00379-1. PMID: 35042513; PMCID: PMC8764838

Monica J. Taylor-Desir, M.D., M.P.H.

Dr. Taylor-Desir is board certified in general psychiatry and addiction medicine. She is a consultant with the Department of Psychiatry and Psychology at the Mayo Clinic in Rochester where she serves as a community psychiatrist for the Olmsted County Assertive Community Treatment Team through an outreach collaborative agreement between Mayo Clinic and Olmsted County. Dr. Taylor-Desir also serves as the co-chair for the Equity, Inclusion and Diversity Committee for the Department of Psychiatry and Psychology. Dr. Taylor-Desir graduated from the University of Cincinnati College of Medicine. After completing her psychiatry residency and a fellowship in community psychiatry at Emory University, Dr. Taylor-Desir began her career with the Winslow Indian Health Care Center in Winslow, AZ, working with a predominantly Navajo population. This work was through her commitment to the National Health Service Corps as a Scholarship recipient. Dr. Taylor-Desir served the Salt River Pima-Maricopa Indian Community for eight years in Scottsdale, AZ, providing outpatient psychiatric care to community members, working with the crisis team, the Salt River Department of Corrections and the community residential treatment center. Dr. Taylor-Desir then moved to New Town, North Dakota, to serve the Mandan, Hidatsa, Arikara Nation for three years as their Chief Medical Officer and psychiatrist for the Elbowoods Memorial Health Care Center. Dr. Taylor-Desir became board certified in addiction medicine in 2019 and is a Fellow of the American Society of Addiction Medicine. She was instrumental in securing SAMHSA grants addressing mental health and substance use in tribal communities. One of her proudest honors is receiving the American Psychiatric Association 2019 Award for Excellence in Service and Advocacy from the Women of the Assembly. Dr. Taylor-Desir also serves as a member of the National Advisory Committee to the National Health Service Corps where she continues advocacy for and service to tribal and rural communities. Dr. Taylor-Desir is also a board member American Psychiatric Association Foundation (APAF). The APAF is the philanthropic arm of the APA and works to lead partnerships to address challenges in mental health in order to create a mentally healthy nation for all.



GRANTS AND AWARDS

Luke & Grace Kim Visiting Professor in Cultural Psychiatry 2021

Clinical Scholar, Building Resilience, Building Health, Robert Wood Johnson Foundation 2017-2020

Consultant, Robert Wood Johnson Foundation Clinical Scholars COVID-19 Rapid Response Project. Funded by the Robert Wood Johnson Foundation Clinical Scholars Program, 2021

American Psychiatric Association Assembly Award for Excellence in Service and Advocacy 2019

KEY RECENT PUBLICATIONS

Gardea-Resendez M, Taylor-Desir MJ, Romo-Nava F, Bond D, Vallender EJ, Cuellar-Barboza AB, Prieto ML, Nunez N, Veldic M, Ozerdem A, Singh B, Markota M, Colby CL, Coombes BJ, Biernacka JM, McElroy SL, Frye MA. Clinical Phenotype of Tardive Dyskinesia in Bipolar Disorder. *J Clin Psychopharmacol*. 2022 Feb 25 [Epub ahead of print] PMID: 35221314 DOI: 10.1097/JCP.0000000000001532

Skime MK, Puspitasari AJ, Gentry MT, Heredia D Jr, Sawchuk CN, Moore WR, Taylor-Desir MJ, Schak KM. Patient Satisfaction and Recommendations for Delivering a Group-Based Intensive Outpatient Program via Telemental Health During the COVID-19 Pandemic: Cross-sectional Cohort Study. *JMIR Ment Health*. 2022 Jan 28; 9 (1):e30204 PMID: 34878999 PMCID: 8797152 DOI: 10.2196/30204

Taylor-Desir MJ, Balls-Berry JE, McElroy SL, Bond DJ, Vallender EJ, Ladner M, Coombes BJ, Jackson L, Arceo D, Caples FV, Colby C, Patten CA, Biernacka JM, Frye MA. Comparison of Demographic and Clinical Features of Bipolar Disorder in Persons of African and European Ancestry. *J Racial Ethn Health Disparities*. 2022 Jan 21 [Epub ahead of print] PMID: 35064520 DOI: 10.1007/s40615-022-01228-3

Taylor-Desir MJ, Sawchuk CN, Crane SJ, Carroll JL, Evans WS, Bogucki OE, Lewis SE, Lapid MI. Integration of mental health and supportive care in individuals with schizophrenia and cancer: Assertive community treatment model. *Psychooncology*. 2022 Feb 25 [Epub ahead of print] PMID: 35212429 DOI: 10.1002/pon.5911

LEADERSHIP ROLES

National Network of Depression Centers- Racial Diversity and Equity Work-group

American Psychiatric Association Council on Communications

Minnesota Psychiatric Society Health Equity and Racial Justice Work-group



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 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. Dr. Stricker and her collaborators are examining the acceptability and efficiency of MTD across several populations and are investigating the validity of MTD measures by examining (1) associations with other person-administered neuropsychological tests, (2) associations with Alzheimer's disease biomarkers, and (3) sensitivity to preclinical Alzheimer's disease. Most participants complete these tests at home. This work is supported by the National Institute on Aging of the National Institutes of Health and the Kevin Merszei Career Development Award in Neurodegenerative Diseases Research IHO Janet Vittone, MD. Dr. Stricker's team is also updating normative data for

neuropsychological tests and determining how refining normative data can increase sensitivity for detection of subtle cognitive decline, mild cognitive impairment, and dementia. New normative data are available to clinicians and researchers for a first administration of the Auditory Verbal Learning Test (AVLT), and for determining atypical performance on AVLT at follow-up visits. Dr. Stricker is a co-investigator on several other NIH-funded projects. She serves as a mentor to several trainees and received the Department of Psychiatry & Psychology Rome Mentor Award in 2020. She was awarded the Robert A. and Phyllis Levitt Early Career Award in Neuropsychology by the American Psychological Association Society for Clinical Neuropsychology (Division 40) in 2018 and serves as a selected delegate for the Minnesota 2022 Conference to Update Education and Training Guidelines in Clinical Neuropsychology.

GRANTS

National Institute on Aging. R21AG073967. Stricker Learning Span: A Computer Adaptive Word List Memory Test Optimized for Remote Assessment. 08/2021 – 07/2023. Principal Investigator: Nikki Stricker, Ph.D.

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, Ph.D.

National Institute on Aging RF1AG 59009. Validation of Online Methods to Predict and Monitor Cognitive Decline. 09/2018 – 08/2023. Principal Investigator: Michael W. Weiner, M.D. (UCSF). Site Principal Investigator: Ronald C. Petersen, M.D., Ph.D.; Co-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 – 03/2024. Principal Investigator: Jenna-Lee (Jenna) Taylor, Ph.D.; 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 RECENT PUBLICATIONS

Alden EC, Lundt ES, Christianson TJ, Machulda MM, Kremers WK, Jack CR, Knopman DS, Petersen RC, Mielke MM, Stricker, NH. Mayo Normative Studies: A Conditional Normative Model for Longitudinal Change on the Auditory Verbal Learning Test and Preliminary Validation in Preclinical Alzheimer's Disease. *Alzheimer's Dement*. 2022;14:e12325. <https://doi.org/10.1002/dad2.12325>

Corriveau-Lecavalier N, Machulda MM, Botha H, Graff-Radford J, Knopman DS, Lowe VJ, Fields JA, Stricker NH, Boeve BF, Jack CR Jr, Petersen RC, Jones DT. Phenotypic subtypes of progressive dysexecutive syndrome due to Alzheimer's disease: a series of clinical cases. *J Neurol*. 2022 Feb 25 [Epub ahead of print] PMID: 35211780 DOI: 10.1007/s00415-022-11025-x

Stricker JL, Corriveau-Lecavalier N, Wiepert DA, Botha H, Jones DT, Stricker NH. (2022). Neural network process simulations support a distributed memory system and aid design of a novel computer adaptive digital memory test for preclinical and prodromal Alzheimer's disease. *Neuropsychology*. DOI: 10.1037/neu0000847

Stricker, N. H., Stricker, J. L., Karstens, A. J., Geske, J. R., Fields, J. A., Hassenstab, J., Schwarz, C. G., Tosakulwong, N., Wiste, H. J., Jack, C. R., Jr, Kantarci, K., & Mielke, M. M. (2022). A novel computer adaptive word list memory test optimized for remote assessment: Psychometric properties and associations with neurodegenerative biomarkers in older women without dementia. *Alzheimer's & dementia*, 14(1), e12299. <https://doi.org/10.1002/dad2.12299>

LEADERSHIP ROLES

Associate Editor, *Journal of Alzheimer's Disease*, 2021 – present

NIH Grant Reviewer, 2022/10 CNN Study Section (Early Career Reviewer Program)

William V. Bobo, M.D., M.P.H.

Dr. Bobo is Professor and Chair, Department of Psychiatry & Psychology at Mayo Clinic Florida where he also serves as the Cecilia and Dan Carmichael Family Associate Director for the Center for Individualized Medicine in Florida. Dr. Bobo is a general psychiatrist with particular expertise in the assessment and treatment of mood disorders. Dr. Bobo's research is broadly focused on population studies of mood and other psychiatric disorders, assessing the utilization and clinical effects of psychotropic medications in population studies and clinical trials, and predicting treatment response to medications that are used to treat mood disorders. For these efforts, Dr. Bobo has led research teams that have brought together clinicians and investigators from varied disciplines including psychiatry, cardiovascular medicine, family medicine, pediatrics, epidemiology, pharmacology, engineering, and computer science. These collaborations have spanned the Mayo Clinic enterprise with the goal of developing AI-enhanced, multi-omic tools and discoveries that can enable both "forward" translation (individualized treatments for patients with mood disorders) and biomarker discovery. Dr. Bobo co-developed an AI platform for predicting short-term therapeutic outcomes with common antidepressants in depressed adults and youth in close collaboration with Arjun Athreya, M.S., Ph.D., and Paul Croarkin, D.O., M.S. These efforts have resulted in two U.S. Patent disclosures, numerous Federal research grants (listed below), and clinical implementation efforts within Mayo Clinic and beyond (e.g., Children's Mercy Hospital in Kansas City, MO).



GRANTS AND AWARDS

NIH R01 NR020362. Wearable Augmented Prediction of Burnout in Nurses: A Synergy of Engineering, Bioethics, Nursing and Wellness Sciences. 2022 – 2026. Co-Principal Investigator

NSF Award 2041339. Introducing Patient-Specific Therapy Profiles in Electronic Health Records. 2020 – 2023. Co-Principal Investigator

Funded by The Myocarditis Foundation. Anxiety and depression in people with myocarditis and their identified support givers (caregivers): a comprehensive survey-based study of its impact on quality of life and health outcomes. 2020 – 2023. Principal Investigator

NIH R01 MH114967. A multi-cohort assessment of gestational SSRI exposure on long-term psychiatric outcomes (PI Ardisheer Talati, Ph.D.). Site Principal Investigator. 2018 – 2023

NIH R01 AG52425. Multiple Chronic Conditions and Aging (PI Walter Rocca, M.D.). Co-Investigator. 2017 – 2022

KEY RECENT PUBLICATIONS

Athreya AP, Vande Voort JL, Shekunov J, Rackley SJ, Leffler JM, McKean AJ, Romanowicz M, Kennard BD, Emslie GJ, Mayes T, Trivedi M, Wang L, Weinshilboum RM, Bobo WV, Croarkin PE. Evidence for machine learning guided early prediction of acute outcomes in the treatment of depressed children and adolescents with antidepressants. *J Child Psychol Psychiatry*. 2022 Mar 15 [Epub ahead of print] PMID: 35288932 DOI: 10.1111/jcpp.13580

Bobo WV, Grossardt BR, Virani S, St Sauver JL, Boyd CM, Rocca WA. Association of Depression and Anxiety With the Accumulation of Chronic Conditions. *JAMA Netw Open*. 2022 May 2; 5 (5):e229817 Epub 2022 May 02 PMID: 35499825 PMCID: 9062691 DOI: 10.1001/jamanetworkopen.2022.9817

Grant CW, Barreto EF, Kumar R, Kaddurah-Daouk R, Skime M, Mayes T, Carmody T, Biernacka J, Wang L, Weinshilboum R, Trivedi MH, Bobo WV, Croarkin PE, Athreya AP. Multi-Omics Characterization of Early- and Adult-Onset Major Depressive Disorder. *J Pers Med*. 2022 Mar 6; 12 (3) Epub 2022 Mar 06 PMID: 35330412 PMCID: 8949112 DOI: 10.3390/jpm12030412

Markota M, Croarkin PE, Bobo WV. Positive Urine Drug Screens and External Mortality in Teenagers Who Present for Medical Care. *J Clin Psychiatry*. 2022 Jan 11; 83 (1) PMID: 35015935 DOI: 10.4088/JCP.20m13729

Simeone RM, Downing KF, Bobo WV, Grosse SD, Khanna AD, Farr SL. Post-traumatic stress disorder, anxiety, and depression among adults with congenital heart defects. *Birth Defects Res*. 2022 Feb; 114 (3-4):124-135 Epub 2021 Dec 21 PMID: 34935303 PMCID: 8828688 DOI: 10.1002/bdr2.1971



Karen E. Blackmon, Ph.D.

Dr. Blackmon is a board-certified neuropsychologist at Mayo Clinic Florida. She has clinical expertise in the assessment of epilepsy. Her research has shed light on the various neurobiological and psychosocial factors that contribute to neuropsychological comorbidities in epilepsy. She combines methods across several disciplines and levels of analysis, including genetics, histopathology, quantitative imaging, EEG, neuropsychology, and social determinants of health, to better understand and prevent functional disability in epilepsy. She led a major research effort in Grenada, West Indies to longitudinally track children with prenatal Zika virus exposure and characterize long-term risk of epilepsy and neurodevelopmental disorders. She is committed to building neuropsychological assessment capacity in the Caribbean through education, training, and culturally appropriate test development. Since coming to Mayo Clinic, she has been longitudinally tracking neurocognitive performance in adults recovering from COVID-19 infection to identify factors that contribute to chronic neurologic dysfunction. She is a member of several global research consortiums that have agreed to pool data to better understand the worldwide functional burden of neurological disorders. Her goal is to work with global colleagues to design culturally appropriate assessment measures that will allow for optimal surveillance of neuropsychological outcomes associated with viral exposures and epilepsy. She serves as a mentor in the Mayo Graduate Education Program and to numerous trainees from resource-limited

regions as part of her commitment to education and reduction in global health disparities. She serves on the editorial board of *Epilepsy and Behavior Reports*.

GRANTS

Research Accelerator for Clinicians Engaged in Research Program (RACER). Distinct Neurocognitive Profiles in Patients Recovering from COVID-19. 2/2022 – 12/2022. Primary Investigator.

Matthews Fund, Global Engagement Committee, International Neuropsychological Association. Strengthening Capacity for Neuropsychological Assessment in the Caribbean. 08/2021 – 05/2022. Co-Investigator.

NIH R21HD093551-01. Rescuing Neurodevelopment in Zika Exposed Children. 09/2018 – 08/2020. Co-Investigator.

USAID AID-OAA-A-14-00028. Tracking Neurodevelopment in Zika Exposed Children. 03/2018 – 02/2019. Co-Investigator.

KEY RECENT PUBLICATIONS

Blackmon K, Day GS, Powers HR, Bosch W, Prabhakaran D, Woolston D, Pedraza O (2022) Neurocognitive Screening in Patients Following SARS-CoV-2 Infection: Tools for Triage. In press at *BMC Neurology*. Jul 30;22(1):285

Blackmon K, Evans R, Fernandes M, Landon B, Noel T, Macpherson C, Cudjoe N, Burgen KS, Punch B, Krystosik A, Grossi-Soyster EN, LaBeaud AD, Waechter R (2022). Neurodevelopment in normocephalic children with and without prenatal Zika virus exposure. *Archives of Disease in Childhood* 107:244-250

Blackmon K, Waechter W, Landon B, Noël T, Macpherson C, Donald T, Cudjoe N, Evans R, Burgen KS, Jayatilake P, Oyegunle V, Pedraza O, Abdel Baki SG, Thesen T, Dlugos D, Chari G, Patel AA, Grossi-Soyster EN, Krystosik AR, LaBeaud AD (2020). Epilepsy surveillance in normocephalic children with and without prenatal Zika virus exposure. *PLOS Neglected Tropical Diseases* Nov 30;14(11):e0008874

Waechter R, Burgen KS, Punch B, Evans R, Blackmon K, Noël T, Fernandes M, Landon B (2022). Improving neurodevelopment in Zika-exposed children: A randomized controlled trial. *PLoS Negl Trop Dis*. Mar 8;16(3):e0010263

LEADERSHIP ROLES

International Neuropsychological Association Board of Governors, Member At Large, 2022-2025

Leslie C. Baxter, Ph.D.

Leslie C. Baxter, Ph.D., is a Professor of Psychology and clinical neuropsychologist at Mayo Clinic Arizona. She attended University of Michigan as an undergraduate and earned her doctorate in clinical neuropsychology from the Rosalind Franklin University of Medicine and Science. She came to Arizona after her Dartmouth University residency. Since then, she has specialized in providing cognitive brain mapping for neurosurgical patients using functional MRI and tractography and awake corticography procedures. Dr. Baxter's research activity includes investigations of cognition and/or neuroimaging in a variety of neurological disorders including autism, Alzheimer's disease, and brain tumors. Dr. Baxter is part of a multi-disciplinary team investigating neuroimaging correlates of brain tumor progression. With her former post-doctoral fellow, she also developed what is currently the largest U.S. cohort study of cognition and neuroimaging study of adults with Autism Spectrum Disorder. She is currently conducting a Department of Defense supported study with a novel behavioral intervention to improve functional independence in autistic adults. She received funding to develop new functional MRI tools to map both musical ability and memory function in presurgical patients. She also uses graph theory and other techniques to determine brain connectivity changes in individuals at-risk for Alzheimer's disease. Prior to joining Mayo Clinic, she was a site Principal Investigator for the Arizona Alzheimer's Disease Consortium. Dr. Baxter has enjoyed mentoring at all learner levels from high school students to fellows, and she has adjunct appointments for collaborative studies at Arizona State University in Psychology, Engineering and Speech and Hearing Sciences.



GRANTS

Congressionally Mandated Medical Research Project Award, funded by Department of Defense Activity W81XWH-20-1-0171; Multi-component Behavioral Intervention Designed to Increase Functional Independence during Aging in ASD. 4/20-4/23. Nicole Matthews, Ph.D., Blair Braden, Ph.D., Leslie Baxter, Ph.D. Co-PIs

National Cancer Institute; R01CA158079; MRI assessment of tumor perfusion, permeability and cellularity. 1/17-1/22. Leslie Baxter, Ph.D. Co-I

National Cancer Institute; 1U01CA2220378; Quantifying Multiscale Competitive Landscapes of Clonal Diversity in Glioblastoma; 9/17-8/22. Leslie Baxter, Ph.D. Co-I

KEY RECENT PUBLICATIONS

Baxter LC, Nespodzany A, Wood E, Stoeckmann M, Smith CJ, Braden BB. The influence of age and ASD on verbal fluency networks. *Res Autism Spectr Disord*. 2019 Jul; 63:52-62 Epub 2019 Mar 29 PMID: 32565886 PMID: 7304570 DOI: 10.1016/j.rasd.2019.03.002

Bergamino M, Burke A, Baxter L, Caselli R, Sabbagh M, Talboom J, Huentelman M, Stokes A. Longitudinal Assessment of Intravoxel Incoherent Motion Diffusion-Weighted MRI Metrics in Cognitive Decline. *Journal of Magnetic Resonance Imaging*. 2022 March. doi: <https://doi.org/10.1002/jmri.28172>

Bergamino M, Keeling EG, Baxter LC, Sisco N, Walsh RR, Stokes AM. Sex differences in Alzheimer's disease revealed by free-water DTI and voxel-based morphometry. *Journal of Alzheimer's Disease*. 2022 85(1): 395-414, DOI: 10.3233/JAD-210406

Bergamino M, Nespodzany A, Baxter LC, Burke A, Caselli RJ, Sabbagh MN, Walsh RR, Stokes AM. Preliminary Assessment of Intravoxel Incoherent Motion Diffusion-Weighted MRI (IVIM-DWI) Metrics in Alzheimer's Disease. *J Magn Reson Imaging*. 2020 Dec; 52 (6):1811-1826 Epub 2020 July 04 PMID: 32621405 DOI: 10.1002/jmri.27272

Fitzhugh M, Schaefer SY, Baxter LC, Rogalsky C. Cognitive and neural predictors of speech comprehension in noisy backgrounds in older adults. *Language, Cognition and Neuroscience*. 2020 (3) 269-287. DOI: 10.1080/23273798.2020.1828946

Hu LS, Wang L, Hawkins-Daarud A, Eschbacher JM, Singleton KW, Jackson PR, Clark-Swanson K, Sereduk CP, Peng S, Wang P, Wang J, Baxter LC, Smith KA, Mazza GL, Stokes AM, Bendok BR, Zimmerman RS, Krishna C, Porter AB, Mrugala MM, Hoxworth JM, Wu T, Tran NL, Swanson KR, Li J. Uncertainty quantification in the radiogenomics modeling of EGFR amplification in glioblastoma. *Sci Rep*. 2021 Feb 16; 11(1):3932 PMID: 33594116 PMID: 7886858 DOI: 10.1038/s41598-021-83141-z

Stokes AM, Bergamino M, Alhalali L, Hu LS, Karis JP, Baxter LC, Bell LC, Quarles CQ. Evaluation of single bolus, dual-echo dynamic susceptibility contrast MRI protocols in brain tumor patients. *Journal of Cerebral Blood Flow & Metabolism* 2021 Aug 20, DOI: 10.1177/0271678X211039597

Research Fellows



Marin Veldic, M.D., Chair, Research Training Program

The Department of Psychiatry and Psychology has established a Research Training Program to assist in the orientation and training of research temporary professionals (RTPs) who support department faculty with their research programs. The faculty member is the primary mentor for the RTP and the Research Training Program assists with recruitment and training policies, and provides training structure and resources for the RTPs, such that this strengthens the faculty member's research program and enhances the research training experience. The program is integrated with existing broader Mayo Clinic resources for RTPs and with Department of Psychiatry and Psychology overall research, education, and training efforts.

The program is led by Dr. Marin Veldic with a Research Training Committee comprised of several faculty members within the department: Dr. Paul Croarkin (publications); Dr. Marin Veldic (recruitment efforts); and Dr. Andrea Huebner (mentoring plans). The program has administrative support from the research operations administrator, and the program services and operations by Michelle Skime, MS, a research program manager. Other important contributors have been Rylee Meyer (Office of Postdoctoral Affairs and Research Training Education Administration Coordinator). The department has also provided administrative assistance from Rene Kelly-Jambor and Lori Solmonson. The Research Training Committee reports to the Department Research Committee.

- Jorge Sanchez Ruiz, M.D., M.S. Research Fellow
- Sirinapa Aphisitphinyo, M.D. Visiting Research Fellow
- Juan Garzon Hincapie, M.D. Research Fellow
- Jaclyn Gunderson, Ph.D. Research Fellow
- Man Choi (Ada) Ho, Ph.D. Research Associate
- Alessandro Miola, M.D. Research Fellow
- Nicolas Nunez, M.D., M.S. Research Fellow
- Cinar Oztosun Research Trainee
- Francesca Pampaloni, M.D. Visiting Research Fellow
- Vlad Popescu, Pharm.D. Research Fellow
- Maria Saliba Research Trainee
- Pamela Sinicrope, Ph.D. Research Associate
- Deniz Yuruk, M.D. Research Fellow

Ho MF, Zhang C, Wei L, Zhang L, Moon I, Geske JR, Skime MK, Choi DS, Biernacka JM, Oesterle TS, Frye MA, Seppala MD, Karpyak VM, Li H, Weinshilboum RM. Genetic variants associated with acamprosate treatment response in alcohol use disorder patients: A multiple omics study. *Br J Pharmacol.* 2022 Jan 11. doi: 10.1111/bph.15795

Ho MF, Zhang C, Zhang L, Wei L, Zhou Y, Moon I, Geske JR, Choi DS, Biernacka J, Frye M, Wen Z, Karpyak VM, Li H, Weinshilboum R. TSPAN5 influences serotonin and kynurenine: pharmacogenomic mechanisms related to alcohol use disorder and acamprosate treatment response. *Mol Psychiatry.* 2021 Jul;26(7):3122-3133. doi: 10.1038/s41380-020-0855-9

Nunez NA, Coombes BJ, Romo-Nava F, Bond DJ, Vande Voort J, Croarkin PE, Leibman N, Gardea Resendez M, Veldic M, Betcher H, Singh B, Colby C, Cuellar-Barboza A, Prieto M, Moore KM, Ozerdem A, McElroy SL, Frye MA, Biernacka JM. Clinical and Genetic Correlates of Bipolar Disorder With Childhood-Onset Attention Deficit Disorder. *Front Psychiatry.* 2022; 13:884217. DOI:10.3389/fpsy.2022.884217

Nuñez NA, Joseph B, Pahwa M, Kumar R, Resendez MG, Prokop LJ, Veldic M, Seshadri A, Biernacka JM, Frye MA, Wang Z, Singh B. Augmentation strategies for treatment resistant major depression: A systematic review and network meta-analysis. *J Affect Disord.* 2022 Apr 1;302:385-400

Sinicrope PS, Maciejko LA, Fox JM, Steffens MT, Decker PA, Wheeler P, Juhn YJ, Wi CI, Gorfine M, Patten CA. Factors associated with willingness to wear a mask to prevent the spread of COVID-19 in a Midwestern Community. *Prev Med Rep.* 2021 Dec;24:101543. doi: 10.1016/j.pmedr.2021.101543

Sinicrope PS, Young CD, Resnicow K, Merritt ZT, McConnell CR, Hughes CA, Koller KR, Bock MJ, Decker PA, Flanagan CA, Meade CD, Thomas TK, Prochaska JJ, Patten CA. Lessons Learned From Beta-Testing a Facebook Group Prototype to Promote Treatment Use in the "Connecting Alaska Native People to Quit Smoking" (CAN Quit) Study. *J Med Internet Res.* 2022 Feb 17;24(2):e28704

KEY RECENT PUBLICATIONS

Gardea-Resendez M, Taylor-Desir MJ, Romo-Nava F, Bond D, Vallender EJ, Cuellar-Barboza AB, Prieto ML, Nunez N, Veldic M, Ozerdem A, Singh B, Markota M, Colby CL, Coombes BJ, Biernacka JM, McElroy SL, Frye MA. Clinical Phenotype of Tardive Dyskinesia in Bipolar Disorder. *J Clin Psychopharmacol.* 2022 Mar-Apr 01;42(2):159-162

Gardea-Resendez M, Winham SJ, Romo-Nava F, Cuellar-Barboza A, Clark MM, Andrezza AC, Cabello-Arreola A, Veldic M, Bond DJ, Singh B, Prieto ML, Nunez NA, Betcher H, Moore KM, Blom T, Colby C, Pendegraft RS, Kelpin SS, Ozerdem A, Miola A, De Filippis E, Biernacka JM, McElroy SL, Frye MA. Quantification of diet quality utilizing the rapid eating assessment for participants-shortened version in bipolar disorder: Implications for prospective depression and cardiometabolic studies. *J Affect Disord.* 2022 May 8;310:150-155

Psychiatry Resident Researchers

Nursel Selcukler, M.D., PGY-3 – Psychiatry Resident

Mentor: Matej Markota, M.D.

Dr. Selcukler is studying perinatal risk factors for developing schizophrenia in adulthood. Dr. Selcukler used the Rochester Epidemiology Project to identify all Olmsted County residents who developed schizophrenia in adulthood. She next identified mothers and maternal siblings of these affected patients. Her work is based on comparing perinatal events between affected and unaffected maternal siblings.



Jeremiah B. Joyce, M.D., M.S., PGY-3 – Psychiatry Resident

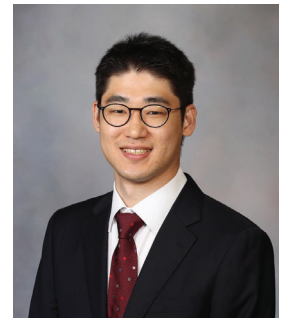
Mentor: Mark A. Frye, M.D.

Dr. Joyce's project aims to analyze voice and speech characteristics of patients with bipolar disorder. He will test whether computational linguistic analysis can identify periods of mania and euthymia in the same patients as their treatment progresses. It is easy to imagine how continued work on this topic could be applied to improved diagnostics and relapse prevention in psychiatry.

Jin Hong (Harry) Park, M.D., M.S., PGY-3 – Psychiatry Resident

Mentors: Mark A. Frye M.D.; and Scott A. Breiting M.D.

Dr. Park will perform a retrospective study to elucidate any potential differences in how patients with bipolar disorder are treated in speciality/mood clinic compared to Integrated Behavioral Health or to primary care. This work could be important in improving how care for bipolar disorder is delivered in diverse treatment settings.



Casimir C. Klim, M.D., PGY-3 – Psychiatry Resident

Mentor: Daniel K. Hall-Flavin, M.D., M.S.

The goal of Dr. Klim's investigation is to critically review the scope and results of psychedelics research at Mayo Clinic conducted in the mid-twentieth century. This historical perspective will be used to gain greater appreciation of and provide guidance to current revitalization efforts developing psilocybin for treatment resistant depression. Dr. Klim is currently using the Freedom of Information Act to access records from the CIA in order to explore government's understanding of psychedelic research conducted at Mayo Clinic in mid-twentieth century.

Medical Psychology Fellows

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

Janae Kirsch, Ph.D.

Clinical Health Psychology Fellow

Shawna Ehlers, Ph.D., L.P. & Christi Patten, Ph.D., Mentors

Dr. Kirsch's primary research interests focus on the intersection between multiple comorbidities and psychosocial factors that influence cancer progression, treatment response, survival, and patient quality of life. During fellowship, she has worked closely with her primary mentor, Dr. Ehlers, and interdisciplinary colleagues on several diverse research projects within the Mayo Clinic Cancer Center. Broadly, these projects encompass exploration of prognostic factors of lifestyle behaviors and psychological comorbidity in hematopoietic stem cell transplant candidates, examination of the association between cancer distress and healthcare utilization, and collaboration with the Hepatobiliary Specialized Program of Research Excellence (SPORE) to better understand cancer distress and improve patient care. Dr. Kirsch was recently named a grant awardee of the Department of Psychiatry & Psychology Small Grants Program 2022 for her proposal examining medical mistrust and discrimination in hepatobiliary cancer.



Samuel Nayman, Ph.D.

Pediatric/Clinical Child Psychology Fellow

Bridget Biggs, Ph.D., L.P., Mentor

Dr. Nayman received rigorous research training through the clinical psychology doctoral program at Rutgers, The State University of New Jersey; the clinical psychology internship at Yale School of Medicine; and Mayo Clinic's Medical Psychology Postdoctoral Fellowship. He has focused his efforts on the promotion of health, wellness, and resilience, and has operated at the intersection of research and practice, engaging in program development, implementation, evaluation, and dissemination. In addition to co-authoring multiple peer-reviewed publications, book chapters, and a book, Dr. Nayman has presented at national and international conferences.

Alyssa Neumann, Ph.D.

Clinical Pediatric Neuropsychology Fellow

Adam R. Cassidy, Ph.D., L.P., Andrea R. S. Huebner, Ph.D., L.P., & Tanya M. Brown, Ph.D., L.P., Mentors

Dr. Neumann's research interests center on early-life contributors to neurodevelopment, with a specific interest in perinatal influences on aspects of executive functioning (e.g., self-regulation). Additionally, she is dedicated to research related to ways in which neuropsychologists can assist in surveillance, screening, prevention, and intervention early in development to optimize outcomes. Past research projects have focused on fetal exposure to SSRI medications, maternal mood, trauma, and anxiety disorders, and opioids, as well as implementing and evaluating home-based interventions aiming to enhance parent-child interactions to promote positive developmental trajectories. Her current projects span diverse but interconnected topics including predictors of neurodevelopment in HIV-exposed/uninfected toddlers, referral patterns in pediatric neuropsychological practice, and prenatal mental health intervention for pregnant individuals who have received a fetal diagnosis of congenital heart disease (CHD).





Jay Patel, Ph.D.

Neuropsychology fellow

Nikki H. Stricker, Ph.D., L.P., & Eva Alden, Ph.D., L.P., Mentors

Dr. Patel is interested in test development, usability, and validation. His current projects focus on the validation of Mayo Test Drive, which is a remote cognitive screener. He is also broadly interested in language networks as it applies to memory, especially in the epilepsy population. His prior research leveraged the structural equation modeling framework to explore heterogeneity of depression and its association with heart disease risk.

Anne Roche, Ph.D.

Clinical Health Psychology Fellow

Craig N. Sawchuk, Ph.D., L.P., Matthew M. Clark, Ph.D., & Christi A. Patten, Ph.D., Mentors

Dr. Roche's primary research interests broadly include acceptance-based behavioral therapy, integrated behavioral health, brief interventions, and understanding psychotherapeutic processes of change. Dr. Roche's research to date has focused on acceptance and mindfulness processes and their association with psychological, physical, and behavioral outcomes and on examining the efficacy of Acceptance and Commitment Therapy (ACT) in a brief intervention framework. During fellowship, Dr. Roche works as a member of an interdisciplinary team examining treatment outcomes for multisite CBT programs in primary care. She has also sought the opportunity to be involved in health inequities research, including learning about community-based participatory research methods. Finally, Dr. Roche has brought her experience with ACT to ongoing projects at Mayo Clinic, for example with the NIH funded Mindful Breathing Lab.



Jennifer A. Scheurich, Ph.D.

Clinical Child/Pediatric Psychology Fellow

Cynthia Harbeck-Weber, Ph.D., L.P., Mentor

Dr. Scheurich's research interests are related to pediatric pain and somatic symptoms. She is particularly interested in the role of anxiety in these disorders, and how anxiety disorders can be better addressed to improve treatment outcomes in pediatric and adolescent patients. Her current research project examines anxiety in adolescents with nonepileptic events.

Psychiatry and Psychology Research Team

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

PERSONNEL

Charlie R. Bleifus, Danielle M. Cox, Kristina C. Dammen, Gracie Diehl, Hope M. Edgar, Emma J. Fink, Judy K. Gebhard, C.C.R.P., Jennifer R. Geske, M.S., Marjorie A. Gresbrink, Barbara A. Hall, Laura N. Harper, Deanna R. Hofschulte, C.C.R.P., Rene C. Kelly-Jambor, Allison M. LeMahieu, M.S., Karin M. Lindstrom, Jared D. Masrud, Katelyn A. Melcher, Brooke A. Morath, Shayna O'Donnell, Can Ozger, Katherine M. Piderman, Ph.D., Nicole Reinicke, Aya Siddig, Michelle K. Skime, M.S., AMA-CMP, Lori L. Solmonson, Daniel G. Smith, Cynthia J. Stoppel, C.C.R.P., Jeremy M. Weiss, Sara M. Williams, & Ashley Xiong, C.C.R.P.
(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, AMA-CMP, Program Manager, and Sarah Williams, Clinical Research Coordinator-Supervisor, lead teams of well-trained certified, associate, and clinical research coordinators. On average, 10 dedicated clinical coordinators support over 80 active clinical research protocols throughout the department including, but not limited to, the Pain Rehabilitation Program, Addiction Center, and Mood Clinic in both adult and adolescent populations. The team also includes Barbara Hall (Research Protocol Specialist III), Cindy Stoppel and Ashley Xiong (Senior Program Coordinators for Addictions and Mood respectively), Emma Fink (Data Entry Clerk), Rene Kelly-Jambor and Lori Solmonson (Research Administrative Assistants), 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. We have a formal Research Training Committee, chaired by Dr. Veldic, and supported by Ms. Michelle Skime, that tracks and coordinates the training and mentoring for approximately 30 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.

In addition to clinical studies, two research technicians and a wealth of research facilities are located on the second floor of the Generose Building alongside the inpatient and outpatient Psychiatry and Psychology Department. The laboratory is equipped for protein work (Western blotting and ELISA), molecular biology (PCR, RT-PCR, SNP analysis, and gene expression), immunohistochemistry of tissues, cell culture and immortalization of cells, and the processing of clinical samples.

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. Cuéllar-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 Autónoma de Nuevo León, Monterrey, México. Through his collaboration with the Individualized Medicine Biobank for Bipolar Disorder, Dr. Cuéllar-Barboza has contributed to the understanding of bipolar disorder genetic risk and its interactions with obesity and eating behaviors. He is the leading investigator of a pharmacogenomics trial testing genetic expression in unipolar depressed patients with support from a CONACYT (Mexico) Grant. Together with Dr. Marin Veldic, he is leading a study on the impact of metabolic syndrome in the clinical presentation, treatment response, and genetic risk of bipolar disorder. Prior to returning to his alma mater in Mexico, Dr. Cuéllar-Barboza completed a research fellowship at the Mayo Clinic Depression Center in Rochester, Minnesota, under the mentorship of Dr. Mark A. Frye. He was appointed adjunct assistant professor of psychiatry and research collaborator of Mayo Clinic's Department of Psychiatry and Psychology. He is an active collaborator of the Psychiatric Genomic Consortium and the Consortium of Lithium Genetics. Dr. Cuéllar-Barboza is the recipient of several awards such as the Eli-Lilly Fellowship on Bipolar Disorder and the Samuel Gershon Junior Investigator Award.

Miguel L. Prieto Cancino, M.D., M.S. Universidad de los Andes, Santiago, Chile

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

Dr. Cuéllar-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 Autónoma de Nuevo León, Monterrey, México. Through his collaboration with the Individualized Medicine Biobank for Bipolar Disorder, Dr. Cuéllar-Barboza has contributed to the understanding of bipolar disorder genetic risk and its interactions with obesity and eating behaviors. He is the leading investigator of a pharmacogenomics trial testing genetic expression in unipolar depressed patients with support from a CONACYT (Mexico) Grant. Together with Dr. Marin Veldic, he is leading a study on the impact of metabolic syndrome in the clinical presentation, treatment response, and genetic risk of bipolar disorder. Prior to returning to his alma mater in Mexico, Dr. Cuéllar-Barboza completed a research fellowship at the Mayo Clinic Depression Center in Rochester, Minnesota, under the mentorship of Dr. Mark A. Frye. He was appointed adjunct assistant professor of psychiatry and research collaborator of Mayo Clinic's Department of Psychiatry and Psychology. He is an active collaborator of the Psychiatric Genomic Consortium and the Consortium of Lithium Genetics. Dr. Cuéllar-Barboza is the recipient of several awards such as the Eli-Lilly Fellowship on Bipolar Disorder and the Samuel Gershon Junior Investigator Award.



Martin Schalling, M.D., Ph.D. Professor of Medical Genetics, Karolinska Institutet, Stockholm, Sweden

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



Dr. Schalling is a professor of medical genetics in the Department of Molecular Medicine and Surgery at the Center for Molecular Medicine, Karolinska Institutet, Stockholm, Sweden. Dr. Schalling's interests include understanding mechanisms behind psychiatric and metabolic disorders—thus enabling better diagnosis, prevention and more individualized treatment. He is the academic coordinator for the Karolinska Institutet collaborations with Mayo Clinic and the University of Minnesota. He has supervised over 20 Ph.D. students and has published over 290 scientific papers.

Lise Solberg Nes, Ph.D. Oslo University Hospital, Oslo, Norway

Mayo Clinic Collaborators: Matthew Clark, Ph.D., L.P., Shawna Ehlers, Ph.D., L.P., & Eleshia Morrison, Ph.D., L.P.

Dr. Solberg Nes is the Center Director and Head of Department, Department of Digital Health Research, Division of Medicine, Oslo University Hospital, Norway. She is also an Adjunct Associate Professor of Psychology at 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 eHealth to help patients utilize self-management strategies and make lasting health behavior changes for coping with cancer and managing chronic pain. She has published her findings in numerous scientific journals including *Annals of Behavioral Medicine*, *Pain*, *Lung Cancer*, *Psychological Science*, *Personality and Individual Differences*, and the *International Journal of Behavioral Medicine*.



Susannah J. Tye, Ph.D. Queensland Brain Institute & Asia Pacific Centre for Neuromodulation, The University of Queensland, Brisbane, QLD, Australia

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



Dr. Susannah Tye is head of the Functional Neuromodulation and Novel Therapeutics Laboratory at the Queensland Brain Institute & Asia Pacific Centre for Neuromodulation in Queensland, Australia, and Adjunct Assistant Professor of Psychology, Mayo Clinic College of Medicine and Science. Dr. Tye's long-standing research interest is in treatment refractory mood disorders and neuromodulation. As a translational researcher, her work bridges bench-to-bedside, including animal, cell-based, and clinical biomarker studies aimed at uncovering mechanisms and markers of antidepressant resistance and response. Dr. Tye's research is funded by an R01 equivalent grant from the Australian National Health and Medical Research Institute, and through multiple industry partnerships.

Research Operations Administration

David M. Moertel, M.B.A.

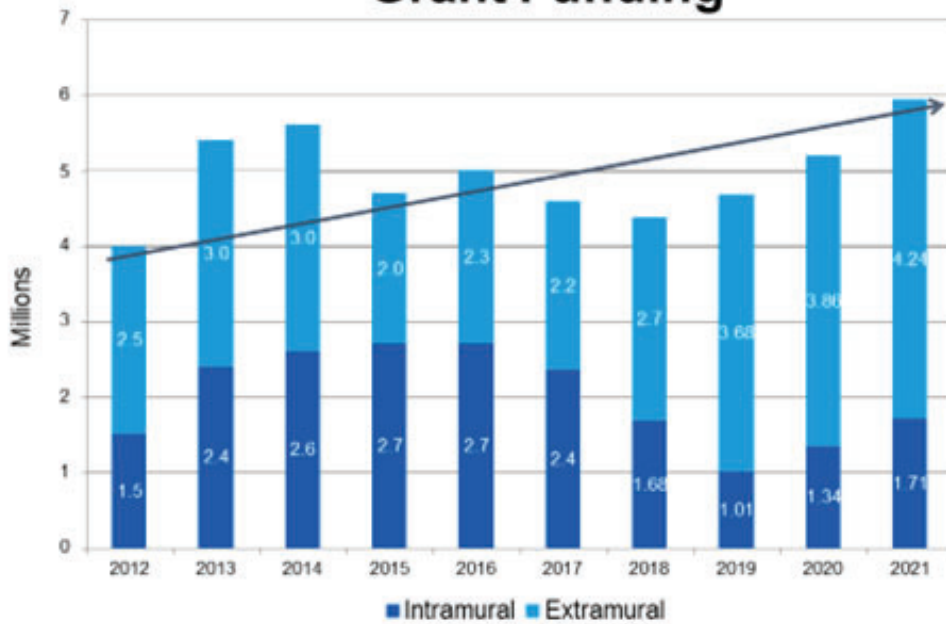


The Mayo Clinic research shield provides a broad range of support for the research efforts and accomplishments highlighted in this research report. This support ranges from obtaining research space and equipment to the various administrative services including grant preparation and submission, publishing, statistics, funding and finance, legal contracting, human resources, patent applications and commercialization, protocol development and patient accrual, and Institutional Review Board (IRB) and Institutional Animal Care and Use Committee (IACUC) support. Many of these have the direct and outstanding support of the department's own research unit highlighted on the previous pages.

In addition, the Mayo Clinic research shield provides an operations administrator to help guide and advocate for the overall research efforts in the department. Our operations administrator is a dedicated advocate for the research goals of the department, the individual faculty members, and the allied health staff involved in research. This advocacy includes everything from helping to plan for future department-wide research opportunities and needs, to obtaining research funding, faculty research time, space, and staff for supporting research, to ensuring that all of Mayo Clinic's support resources work optimally for the department's research goals and objectives. All of this is done with a commitment toward advancing medicine and science and ultimately improving the lives of patients.

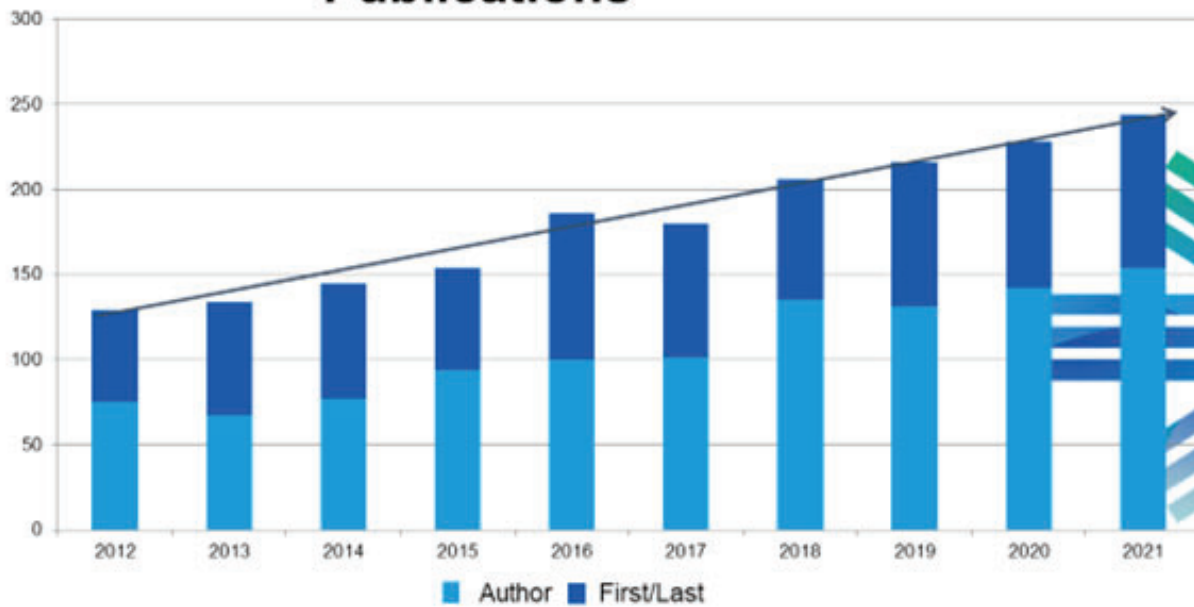
The graphs shown present the collective research accomplishments of the department faculty, trainees, and staff. The publication and grant funding trends are positive and reflect our Departmental research efforts over many years. The Department has steadily invested more resources for research over the past several years, and the return has been advances in understanding and treating patients with mental health illnesses, as evidenced throughout this report. The plan is to continue to burnish its research shield by investing and augmenting the research resources in support of the staff.

Grant Funding



KEY PUBLICATIONS

Publications



Department of Psychiatry and Psychology Researchers



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



Eva C. Alden, Ph.D., L.P.
Mayo Clinic Rochester



Chelsea M. Ale, Ph.D., L.P.
Mayo Clinic Health System



Nicholas D. Allen, M.D.
Mayo Clinic Rochester



Gretchen E. Ames, Ph.D.
Mayo Clinic Florida



Steven C. Ames, Ph.D.
Mayo Clinic Florida



Arjun P. Athreya, Ph.D., M.S.
Mayo Clinic Rochester



R. Robert Auger, M.D.
Mayo Clinic Rochester



Michael R. Basso, Ph.D., L.P.
Mayo Clinic Rochester



Leslie C. Baxter, Ph.D.
Mayo Clinic Arizona



Thomas Bergquist, Ph.D., L.P.
Mayo Clinic Rochester



Hannah K. Betcher, M.D.
Mayo Clinic Rochester



Joanna M. Biernacka, Ph.D.
Mayo Clinic Rochester



Bridget K. Biggs, Ph.D., L.P.
Mayo Clinic Rochester



Karen E. Blackmon, Ph.D.
Mayo Clinic Florida



William V. Bobo, M.D., M.P.H.
Mayo Clinic Florida



Scott A. Breitinger, M.D.
Mayo Clinic Rochester



Robert P. Bright, M.D.
Mayo Clinic Arizona



Tanya M. Brown, Ph.D., L.P.
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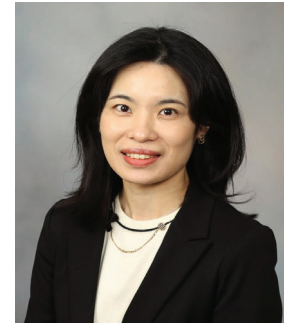
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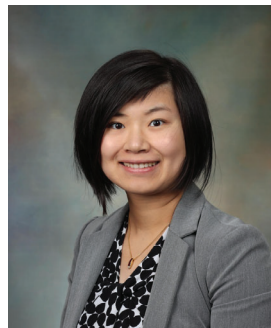
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