



HEINZ C. PRECHTER BIPOLAR RESEARCH PROGRAM

MICHIGAN MEDICINE

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A MESSAGE FROM OUR DIRECTOR

Dear friends,

We are now several months into the COVID-19 era. Life has changed for all of us. There is an **'Alice in Wonderland' feeling of uncertainty** as we follow the news on several fronts. How many times have we heard our inner voice proclaim, "this is unbelievable...?"

We have been thrust into a journey that limits our ability to personally move about the world yet provides the opportunity to 'travel' and meet through virtual connections. Our colleagues, friends, and families are electronic representations on a screen. We see the world from inside our homes; we live with online shadows of our previous lives.

For Alice, the journey down the rabbit hole represented adventure and finding new meaning. So it goes with the Prechter team.

We have opportunities to do things differently, often better, and unexpected time to analyze our data and ponder how to meet our goals.



Melvin G. McInnis, M.D., FRCPsych
Thomas B. and Nancy Upjohn Woodworth
Professor of Bipolar Disorder and Depression
Associate Director, U-M Depression Center
Professor of Psychiatry
Director, Heinz C. Prechter
Bipolar Research Program



Curiouser and curiouser.

Many ask us how our research team is doing these days.

"Why, sometimes I've believed as many as six impossible things before breakfast."

We start our days checking in with our team members to make sure that all is well and that projects are moving along in the right direction. I am amazed at how well things are going. We are fortunate that we had already made the decision to move our follow-up data collection to an online format. Data are being analyzed and most projects are moving along nicely. Computers don't mind where they sit and seem to work fine as long as we can reach them by tapping on a keyboard from the kitchen tables of our homes.

We have been connecting with our research participants more efficiently than ever, as people are home more frequently during the pandemic. Our research clinicians are engaged in telephone and Zoom (virtual) interviews that would have occurred in person at the Rachel Upjohn Building. While our clinical interviewers and research techs miss seeing everyone in

CONTINUED ON NEXT PAGE



person, we're glad for the opportunity to keep in contact and learn how our participants are navigating the challenges of these past months. We are partners working toward finding solutions for bipolar disorder and each shared experience from our participants adds to our knowledge and moves us closer to better treatments.

Beyond the longitudinal study, most of our research teams have not been able to get into their labs since last March. But in June, we began the process of slowly opening back up with new safety measures requiring new routines. We are learning to wear face masks while working and to keep at least six feet apart from each other, and so on. But, we are adapting just fine and are happy to be back!

In May, we began a new project focusing on the outcomes of COVID-19. We learned that a number of our participants had become ill with coronavirus and wanted to find out how our group has fared in the pandemic. We decided to increase the frequency of mood evaluations and to ask participants to complete a survey on the impact of the COVID-19 pandemic on their lives. Many find the increase in frequency of questionnaires a comfort. Asking how one is feeling can be good as it indicates that someone cares. Others have found the additional questionnaires a bit of an intrusive burden. **On page 6 and 7, you'll find some quotes sent in from our participants.**

"It's no use going back to yesterday, because I was a different person then."

As you read this year's news and impact report, you'll see that COVID-19 has touched almost all of our activities, one way or another. We don't know what tomorrow will look like, but we know that the Prechter Program is here to stay, thanks to you and your partnership.

I hope that you are well and staying healthy,



Dr. McInnis recorded a video on "Managing Bipolar Disorder in Times of Stress" recently — you can watch it on BP Magazine's website: michmed.org/o430z



Telehealth and Bipolar Disorder

JENNIFER SEVERE, M.D.,
CLINICAL ASSISTANT PROFESSOR,
PROVIDES HER INSIGHTS

“ I have never been more grateful to my patients who allowed me to enter their homes through telehealth and keep an eye on their wellbeing. With the public mental health crisis during the COVID-19 pandemic, University of Michigan psychiatry telehealth services have proved to be critical in the prevention, early intervention and treatment of decompensating and emerging bipolar disorder symptoms. It all happened thanks to our dedicated clinicians and supportive patients ready to trim their sails to the changing wind in healthcare delivery.

What is telehealth?

Telehealth is the delivery of a menu of health care services remotely by means of a telecommunication such as phone visits or video visits. Although less used by most before the pandemic, mounting evidence from telehealth research supports its benefits across most age ranges and medical and psychiatric conditions. It is a useful tool to supplement or momentarily replace in-person mental health visits.

Notable benefits and unintended effects of telehealth

The patient's voice remains a powerful quality indicator for continuous learning of the benefits as well as unintended effects of telehealth. Experiences shared by my colleagues have been equally invaluable in honing my telehealth skills.

The positive changes and pleasant surprises noted with the use of telehealth are numerous. In essence, **telehealth improves access to care** — mainly for those living far from a clinic — health outcomes, health education and medication adherence. It has been a rewarding experience walking through my patients' medicine cabinets or pillboxes and discussing adherence and potential concerns with treatment. **Telehealth decreases travel times to the clinic and related expenses, waiting times between visits, and, more importantly, missed appointments.** The latter can easily derail a well-thought-out bipolar disorder treatment monitoring. **Telehealth increases patients' awareness and engagement** in their mental health conditions as well as communication with healthcare providers, as prompt telehealth visits can be scheduled to check-in with those on a verge of a mood decompensation.

The first lesson I learned is simple. The diagnostic evaluation, treatment recommendation, safety determination, measures-based care integration as well as the level of confidence, professionalism, and ethical discipline during a telehealth visit should remain the same as with an in-person office visit. Some nuances may exist. The second lesson is less conspicuous. **Telehealth can have a negative impact on health equity.** We serve a richly diverse patient population for whom telehealth may stand as a barrier to mental healthcare seeking-behaviors, utilization or reception. Becoming cognizant of those challenges and ways to proactively and suitably respond, are of clinical and advocacy value.

The future of telehealth

Mental health clinicians are in a unique position to capitalize on telehealth to address the mental health care shortage compared to other specialties requiring more hands-on care. We'll continue to learn from each and from our patients to provide the care they all very much need and deserve.

OUR TREATMENT CLINICS are going remarkably well. We have shifted to online, 'virtual' visits. We can connect with people far and wide. There are some issues related to students returning to their home state and due to the state's medical licensing processes, people who are currently out of state may need to be cared for by physicians licensed in their specific states. For telehealth to become truly national, regulations will need to be changed.

1,350

RESEARCH PARTICIPANTS
ARE NOW ENROLLED IN THE **PRECHTER
LONGITUDINAL STUDY OF BIPOLAR
DISORDER** WHICH IS IN ITS **14TH**
YEAR

464

GIFTS DONATED
IN FISCAL YEAR 2020 TOTALING
\$3,010,681

5

NATIONAL
INSTITUTES
OF HEALTH
GRANTS
IN FISCAL
YEAR 2020

25

SCIENTIFIC
PUBLICATIONS
IN 2019

164

SCIENTIFIC
PUBLICATIONS
TO DATE

47

RESEARCH STAFF
FOCUS ON
OPERATING
THE DIFFERENT
PROJECTS

11

CURRENT
UNDERGRADUATE,
GRADUATE, AND
MEDICAL STUDENTS
ARE GAINING
EXPERTISE AND
TRAINING IN THE
COURSE OF DOING
THE RESEARCH

50

COLLABORATORS
FROM ALL OVER
THE U.S. AND
WORLD

20

STUDIES
ARE
CONTRIBUTING
TO OUR
KNOWLEDGE
ABOUT BIPOLAR
DISORDER

THE PRECHTER TEAM AT THE ANNUAL PRECHTER LECTURE, FALL 2019



MEET OUR TEAM

Research Area Specialist Erica Vest, LMSW



I am a licensed clinical social worker and have been working with the Prechter Program for three and a half years. My work with the

team mainly consists of conducting clinical diagnostic and follow-up interviews and assessments for the flagship Longitudinal

Study for Bipolar Disorder. However, I have a number of additional responsibilities that include coordinating research studies, including clinical trials, IRB management to ensure studies are able to function, and providing field instruction to social work interns (such as Juan Jauregui — see page 5). Field instruction combines both teaching and supervision to ensure students obtain practical experience in a research and clinical setting while receiving support along the way. Thus far I have provided field instruction to six social work students from the University

of Michigan and Wayne State University.

In addition to my primary research role, I spend 10% of my time working in the bipolar clinic at the Rachel Upjohn Building. In clinic I see a limited number of patients and co-facilitate the Life Goals Group for Bipolar Disorder. This group is a psychoeducation group which teaches self-management skills for individuals who've been diagnosed with bipolar disorder.

In my free time, I enjoy spending time with my family, dogs, and friends, and traveling.

Research Area Specialist Lori Stark, MA

Earlier in my life, I came to Michigan for graduate school interested in studying the larger social structures of race, class and gender, and I still greatly value this work. Many years later, though, I ultimately found the most compelling work to be connecting with individual people and listening closely to their stories of living with bipolar disorder.

I am fortunate to work on two different studies in the Prechter Program as a clinical interviewer and study coordinator. First is our Longitudinal Study that has followed participants for 14 years now. Our participants very graciously entrust me with their very personal stories of the variety of experience with bipolar. And, second, I coordinate another study that follows

people ages 15-25, who have a parent with bipolar disorder, for two years with an intensive focus on their feelings and behaviors over that time.

Our research attracts genuinely caring people who work hard to make a difference. Working with my bright, creative and fun co-workers on the Prechter team has made this job as fulfilling as the work itself.

I enjoy living in southeast Michigan with my husband, my vibrant 10-year-old daughter, and our happy, but scrappy, dog, Cookie.



Prechter research team group photo; Lori is in the front row, second from the right.

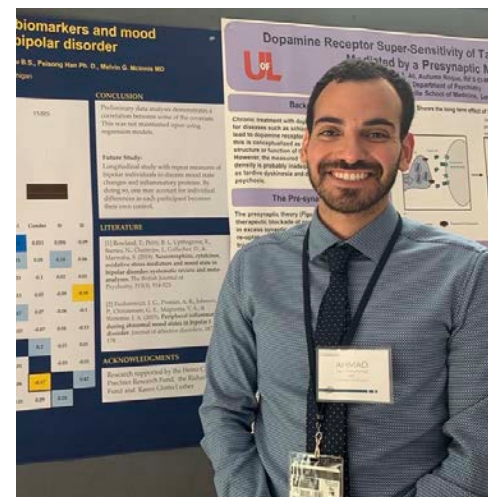
Research Area Specialist Ahmad Subhi Abu-Mohammad, M.D.

I moved to Ann Arbor immediately after graduating from medical school in June 2018 from the American University of Beirut, where I earned my B.A. and M.D. degrees. Like most people who work in mental health, I am interested in helping others while studying human behavior.

I'm a clinical interviewer, which means that I conduct the diagnostic interviews and the biennial LIFE interviews for the Longitudinal Study of Bipolar Disorder. I'm also on the Best Estimate committee. That's where consensus for all 1,300+ participants is established as to their diagnosis for research

purposes. PRIORI, our smart phone app research endeavor, is another project I work on. The use of technology such as smart phones to optimize healthcare services is an interest of mine.

I like the diversity of my role and the overall support from the lab team. Whether it's a clinical case, or how to reboot my desktop, the team is there to help. As for the future, I plan to apply for my psychiatric residency. Ultimately, I would like to be a psychiatrist and a coffee snob; in fact, I'm halfway there!



MSW Intern Juan Jauregui

I started up with the Prechter team as a Social Work Intern in January 2020. I am entering my third year as a dual degree graduate student at the University of Michigan where I am working towards earning my Masters of Public Health in Health Behavior & Health Education and Masters of Social Work in Social Policy & Evaluation. I joined the Prechter Program wanting to gain a better understanding of how to conduct mental health research in a medical setting. In my time with the team so far, I have worked mainly on the Longitudinal Study of Bipolar Disorder. I have also obtained a small grant to create a training for mental health professionals at Michigan Medicine; the training covered how to engage in culturally-sensitive mental health practice with people who are LGBTQ+.

I was awarded the competitive Diversity Scholarship to take part in the 2020 ICPSR Summer Program in Quantitative Methods of Social Research at the University of Michigan where I gained new skills that will be helpful to apply on projects with the Prechter team. I am set to graduate in May 2021 and will be applying to Ph.D. programs in Social Work this December. I plan to continue being involved in mental health research, specifically investigating the impact of stigma, discrimination, and adverse childhood experiences on the mental health and well-being of LGBTQ+ people of color.



Juan with his best friend Alejandra in New York City.

Postdoctoral Fellow Ariana Tart-Zelvin, Ph.D.

I am originally from San Antonio, TX, and have completed every degree in a different state! I chose Michigan for my postdoctoral fellowship for several reasons. The University of Michigan (U-M) has established a strong reputation that is well-known and appreciated across the country. More specifically, U-M offers training resources that I was not able to find elsewhere and demonstrates an exceptional commitment to trainees.

As part of my fellowship, I conduct research within the Prechter Program. I study various aspects of neurocognitive functioning among individuals with bipolar disorder and various affective disorders. We aim to better understand these disorders and identify ways in which research and clinical interventions can be helpful.

I enjoy working with our diverse team because I feel that everyone adds unique perspectives to the research projects. Additionally, our research participants and their families constantly inspire me. No one chooses to get something like

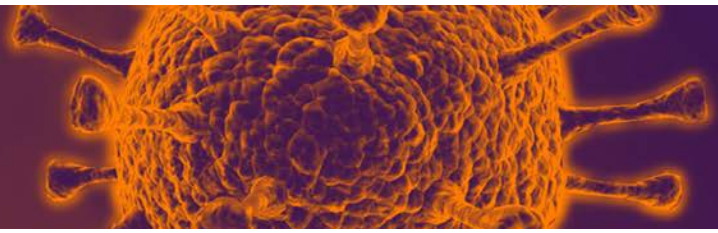
a neurodegenerative disease or bipolar disorder, and as of now, we do not have a cure for these problems. These individuals choose to participate in research to help others, they choose to engage in life as best they can each day, and they choose to support family through countless challenges. To me, those individuals and their choices are inspiring.

In addition to completing my research and clinical work, I'm able to engage in professional development activities at U-M as well. I had the pleasure of being interviewed by business students for the Ross School of Business' "Business Beyond Usual" podcast on 'Impostor Syndrome.' The podcast won the Academy of Interaction and Visual Arts Communicator Award of Distinction. You can listen to it here: michmed.org/JbRI6

While I have had a rewarding experience at U-M, after completing my fellowship, I'm hoping to return to the Pacific Northwest area in order to be closer to family.



TRACKING THE IMPACT OF **CORONAVIRUS** ON BIPOLAR DISORDER



In late April 2020, we asked our **Longitudinal Study of Bipolar Disorder** research participants to join with us in monitoring the impact of the coronavirus pandemic on their lives as we moved through months of social isolation and uncertainty. Links to questionnaires that participants usually filled out every two months began arriving weekly, asking about mood and functioning. Every two weeks, a link to a questionnaire specific to the coronavirus was sent.

The **Coronavirus Impact Scale** is a 12-item scale developed by Joel Stoddard at the University of Colorado and Joan Kaufman at Johns Hopkins University. Individuals are asked how the pandemic has affected their routines, family income, access to food, access to physical and mental health

treatment, and access to family and support systems. The questionnaire also asks about stress related to the pandemic and personal experiences with COVID-19. The questions are rated on a 0-3 scale indicating there's been no change, mild, moderate or severe change since the pandemic. The last question asks participants to tell us about any other ways their lives have been impacted by the pandemic.

Analysis on this data is ongoing. **We have heard stories both positive and heart-wrenching.** One person spoke of how happy she was to be at home with her children while another tried to manage the stress of working from home after her daycare closed. An essential care worker dealt with loneliness and others expressed fear for their elderly

relatives. One participant increased the use of mindfulness as a coping strategy. Some individuals personally dealt with COVID-19 or had family and friends who struggled with the virus.

By tracking our participants' response to the pandemic over time, we will develop a picture of what special challenges and strengths individuals with bipolar disorder have when facing social isolation and the additional stressors caused by the pandemic. This information can provide insight into bipolar disorder and help guide mental health treatments in the future. We'd like to express our thanks for the time and effort our participant partners have taken to provide us with this valuable information.

The following are comments from Prechter Longitudinal Study participants about their experiences during the pandemic.



^ I didn't cower in fear of COVID-19 but chose to wisely go on living. My greatest sorrow came with the ceasing of my one full-day per week volunteering at my grandson's elementary school. Which meant I didn't get to spend time with his brother, mom or dad.

—MICHAEL

The quarantine has severely limited access to many of my strongest coping mechanisms — family, friends, social interaction. I feel like I've lost ground during this time and have developed new mental health issues.

—BARBARA

Bipolar is a roller coaster that I don't get on. It gets on me. It's not a thrill ride or a chill ride or a spill ride. It's an ill-ride. I've spent decades grappling with the negative aspects. The positive aspect is being blessed with creativity and drive. We should be grateful to the artists who create, complete, and share the result of their energy.

—SBD



^ As the world changes we too must learn to adapt.

"Those who do not learn history are doomed to repeat it. Those who cannot remember the past are condemned to repeat it."

(Philosopher George Santayana)

—SEBASTIAN

Compared with the injustice and racist institutions I live with in America, the pandemic is no problem. My PTSD from the 1960s is triggered, so I cry and pray randomly during the day. The reality is too much for me, but I make it. Thank God for tears; I only wish they could wash away man's inhumanity to Black people. I am tired...

—ROBIN

Being bipolar, and the sole caregiver of a family member with advancing Alzheimer's, can be a struggle in normal times but the Covid-19 pandemic really has added to the stress. Just getting the questionnaire each week from the research team makes such a difference because I know someone cares and is there for my mental health concerns.

—DANNY

I was tense in the beginning so I backed off the news feed a little and now I am used to the situation. It helps that we are all going through the same experience.

—ANONYMOUS

I have been ok health-wise since the virus broke out. But I have been getting somewhat irritable and depressed during this time. I had a breakdown for a little while and stayed in bed for the day. I'm trying to keep positive and think of ways to improve my situation and not rely on government handouts.

—ANONYMOUS



▲ It's like non-bipolars get a taste of what it's like to be us. Anxiety, depression, fear... This pandemic has taught them a glimpse of how we live and that you can't just "snap out of it" or "turn off" those feelings. For us, it just heightens what we have and makes us fight twice as hard to find balance. Especially when our support system is off its rails.

—STACEY

Mental illness isn't a character flaw. It isn't being stupid or crazy or evil. Mental illness is leading a dual life; one that we show and one that is hidden. It is a longing to belong yet solitude is cherished. It's gratitude for help and understanding from family, friends, and caregivers; it is a feeling of guilt for needing help. I spend part of my life hoping I don't die, and the rest of the time wishing that I would.

Thank you so much for all that the Prechter Program does. You have all done so much to inform people and so much to lessen the stigma of having a mental illness.

—BARBARA



▲ What this time during the coronavirus has taught me is to be thankful about what I do have, and that's my immediate family. Of course I have adapted to connect with my parents and family across the country via FaceTime and other platforms... I have learned to appreciate my time with my wife and daughter more. I've learned more about how precious time is, and that no one thing (job, hobbies, social media, friends) completely defines me. While at times things have seemed chaotic and the pace of life seems to have crawled along, I have been reminded of times when things were worse for me personally and when I do, it has put the current circumstances of the pandemic in better perspective.

—TREVOR

I am 72 years old. My first episode occurred when I was 17. I have had lots of help from psychiatrists, hospital staff, therapists and family and friends. Because of that (and I must give myself some credit, too), I have had an extremely fulfilling life. Last year, I had my worst episode ever. It was a depression. I had only one previous depression 43 years ago; all others had been manic, psychotic, hypomanic or mixed. The depression started mid-May and lasted until I had ECT at U-M in November. The ECT pulled me out of a depression accompanied by extreme anxiety. Various drugs had not helped. Now I feel very well. My 43-year-old daughter tells me, "You are lovin' life while everyone else is having a bad time." It is so true.

—ANONYMOUS

Being bipolar during the last few months has made it difficult to do my job as an essential employee. I found my chest tightening and at times not wanting to go out or be near other people. It caused me almost to be scared to death.

—DAVE

What grows on top of a mountain?
NOTHING.

What grows in the valley?
EVERYTHING.

I've also found out that we really only have to do 2 things in this life. Trust God. Do good.

—ANONYMOUS

During this pandemic, all KINDS of drama broke loose in my life. To live with bipolar, I have always been one who works hard to keep things on an even keel in my life as much as humanly possible. I have been a mess!

—DEB

Four months of isolation cut off from society during the pandemic has been very difficult. Add in my bipolar 1 disorder with mixed episodes and rapid cycling, my life can quickly spiral dangerously out of control. To help keep my disease from triggering during this challenging period, I maintain a daily routine that consists of proper diet, exercise, going to bed at the same time, getting out of bed at the same time, no alcohol or drugs, staying on my meds, and reaching out to family and friends for support.

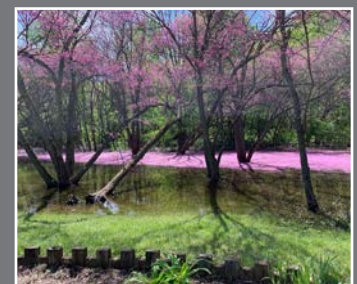
—BRYAN

Obviously COVID has been very confining. However, when I'm in a depressive state (which I am now), it has been a relief to have shelter-in-place, because I do that normally when I am depressed. So now, it's not characterized as unusual behavior.

—ANONYMOUS

I have never been so stressed out in my life. It is a struggle every day to remember to take care of my mental well-being on top of everything else. An unexpected reminder has arisen with the weekly email I get from the Bipolar Research Team asking about my experiences through these unimaginable-but-true times. That email nudges me every week to check in with myself and adjust my supports as needed; I don't always get to completing the questionnaires, but it comes every week nevertheless and always makes the same non-judgmental inquiry: how are you feeling? There will likely be no paradigm-shifting discovery because of my participation in the survey, and I continue to struggle day-in and day-out. And yet, I want to acknowledge that the simple weekly email from the Bipolar Research Team is a service in and of itself, and I am grateful.

—KAREN



▲ Spring is the perfect season to reflect on my personal growth, and focus on self-care while enjoying a walk in the park. The fish were jumping under the redbuds!

—HEIDI

I feel like now the general populace is living how I do every day. Including the bad: random anxiety, lack of work / money, & having to constantly learn a new normal. But, also, the good: re-evaluating what is necessary / wanted in our lives, extra time to do anything you want, & learning self-care & kindness.

—SCARLET

VIRTUAL GALLERY LAUNCHED



BRAIN HEALTH AND THE POWER OF CREATIVE EXPRESSION

The **ENERGY** exhibit and related events, originally planned for May 2020, have been postponed to May 2021. The curated exhibit next spring will be centered around the power of art as a part of the process in healing and recovery with a focus on the bipolar diagnosis. This is a collaborative effort with the **Metropolitan Museum of Design Detroit** and **Collected Detroit** art gallery.

To give the public a peek as to what lies ahead next spring, we have worked with the Metropolitan Museum of Design Detroit to launch **ENERGY: Brain Health and the Power of Creative Expression** as an online gallery.

The emphasis is to share the work of creatives and show the impact of the arts on their journey with brain health and wellness. The mission is to inspire others to explore the arts, just like several Prechter Longitudinal Study participants have done.

The gallery features 11 artists with several of their pieces and personal statements. Here is a sampling from the artists.

You can view the entire collection at: mm-o-dd.org/energy



◀ **“For twenty years,** I worked on a series of watercolor and mixed media paintings to work my way through some of the most confusing and painful parts as well as some of the triumphs and joys of living with bipolar disorder.”

— DONNA HINSON
DISTURBING MY PEACE

“I see myself as a rescuer of orphan items whose value has been overlooked or misunderstood. This stems in no doubt from a tumultuous childhood. I am compelled to write and create and I believe it is a critical component to maintaining my mental health.”

— MARISA GAGGINO

RETURNING TO ART

By Trevor Cutts

I have always found that returning to art helps me to have a healthy relationship with what I am feeling inside. For the postponed ENERGY exhibit, I was planning to show some of the aerial videography (link: michmed.org/yOxVY) that I created of Detroit with my drone. A few years ago I decided to survey the Motor City from the sky, and I found inspiration in how Detroit’s many neighborhoods had weathered hard times. **Now we are all weathering hard times, and I have returned to art to help me stay connected and aware.**

During the first weeks of lockdown, I contacted my old roommate from college and asked him to do a music project over email with me. We had both been musicians during undergrad, but never found the time to collaborate. Quarantine gave us the free time to create an instrumental track called “On Lock” (link: michmed.org/BvmPO) together under our new band name “12G6F.” Social media can be harmful, and I try to stay away from it, but being in touch with one specific friend — with art as a goal — helped me to feel productive and connected as the crisis was intensifying.

Video and music mean a lot to me, but I am working hard to return to a simpler art form. Writing has been the most rewarding, yet most painful, art practice that I have experienced. I have been focused on



nonfiction writing for several years now, as I recently finished a book about my experience at the intersection of popular culture and mental health. **Just how my drone helped me to see Detroit from above, writing helps me to see my life from above — in all its complexity and color.** Nothing could have helped me to get to know Detroit better than filming the city from above. Nothing could help me know myself better than writing down my story. Returning to art takes patience, practice, and some tolerance for pain. The reward is a new perspective, a chance to connect and a chance to change.



^ **“Most of my work comes from** processing a quiet place and then being able to activate that into the tangible realm. Every media takes its own time, takes its own activation energy to build and to create a final project. Creating brings me joy, it helps me bring and reflect beauty back into the world.”

– TREVOR MCCAULEY
THE FACE OF SPARTA



^ **“My impetus to create** has been with me all my life. I pride myself on being primarily self-taught. To have a “way” to do this, to create something from nothing, is of great importance to me and of great benefit to my mental health.

– BEN MILLER, *KREATURE*

“I think the ability to create, to see beauty in things that others don’t or to take raw materials and have a vision for something that has not been made yet is a gift. For me, creating is as important as breathing.”

– JENNIFER FREESE

The Global Bipolar Cohort



The inaugural meeting of research collaborators behind the establishment of a Global Bipolar Cohort was held in Ann Arbor, Michigan, in the fall of 2019. The attendees represented researchers from **13 institutions in nine countries**, and included a senior and an early- or mid-career researcher from each collaborative site. The meeting was co-led by Melvin McInnis (Prechter Program Director, University of Michigan) and Andrew Nierenberg (Massachusetts General Hospital).

The goals of the meeting were to assess the status of longitudinal research in bipolar disorder and set the stage for establishing a world-wide research collaborative and cohort of individuals with bipolar disorder.

This will facilitate and expedite a range of research programs to include the **identification of biological mechanism** (e.g. biomarkers), **predictive outcome patterns**, and **clinical trials**. The underlying premise of the Ann Arbor conference was the recognition that over the years, several cohorts of individuals with bipolar disorder had been established internationally but were no longer followed due to lack of resources. The importance of the longitudinal approach was emphasized as bipolar disorder is a lifelong disorder that may express differently in various stages of life. Researchers discussed strategies to engage and retain individuals with bipolar disorder throughout their life-spans, the value of combining data sets and the need to establish common data points, and methods to overcome the lack of federal funding opportunities for longitudinal studies.

An executive committee formed and has been meeting regularly to explore bringing the ideas from the meeting to fruition. NAMI (National Alliance on Mental Illness) has generously provided a grant to support a project manager who will assist in the launch of this effort.

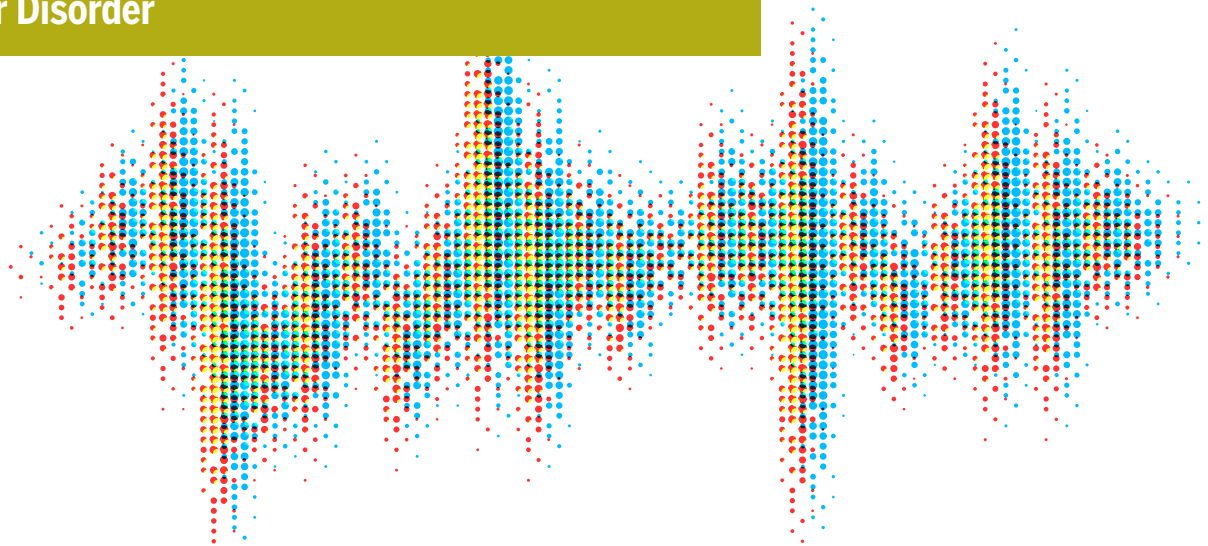


ATTENDEES AT THE FALL 2019 CONFERENCE

THE PRIORI STUDY >>>>

PREDICTING INDIVIDUAL OUTCOMES FOR RAPID INTERVENTION

LONGITUDINAL VOICE PATTERNS in Bipolar Disorder



OUR TEAM in the Department of Engineering and the Prechter Bipolar Research Program have been collaborating on PRIORI for the last eight years, systematically collecting and analyzing speech data recorded from smartphones from individuals with bipolar disorder (BD) and unaffected controls. The PRIORI system consists of: (1) a deployable smartphone app that captures audio from telephone conversations and securely stores and transmits the data and (2) computational strategies to detect mood.

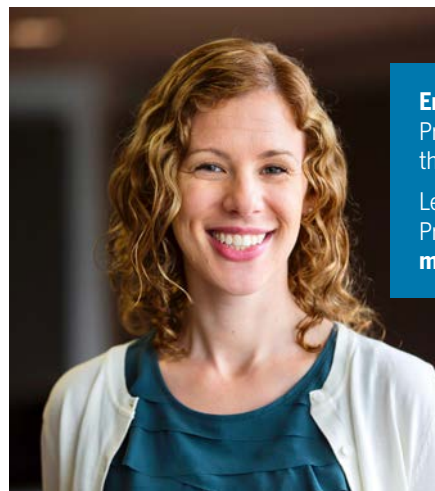
Our goal is to use changes in speech to predict changes in mood.

We originally deployed PRIORI to 51 individuals with BD and 9 healthy controls who used study smartphones as their primary device for up to a year (avg. 26 weeks). **We obtained measures of mood through weekly structured telephone interviews with study clinicians** (1,516 assessment calls, using the Hamilton Depression Scale and the Young Mania Rating Scale). We refer to all other calls, calls made as individuals go about their days, as 'personal calls' (44,760 calls).

Over the last 12 months we have become particularly interested in **what natural speech, speech recorded during personal calls, may tell us about someone's mood severity**. This is important because this is the type of speech that will be gathered when PRIORI is utilized outside of the research realm. Natural speech is challenging, because whom we are speaking to often determines how we express ourselves. A phone call to a friend or a family member or the local take-out restaurant on the same day may result in different expressions of mood severity. From an engineering perspective, that means that we do not know if it should be possible to estimate mood from a given sample of speech. Our initial results supported this — we found that we could not predict mood directly from the underlying acoustics

of speech (e.g., the volume of a person's voice, that person's pitch, etc.). This led us to study other aspects of speech that may be tied to mood. We focused on patterns in emotion expression and patterns in language expression and then estimated mood severity from these patterns in symptom expression. **This allowed us, for the first time, to show that our measures were sensitive to mood symptom severity.**

We are continuing to pursue this line of inquiry and plan to explore how patterns in language and emotion can help us to identify specific personal calls, or even specific periods in time within personal calls, during which individuals are expressing mood severity. With this ability in hand, we will be well positioned to carry on towards our **long-term goal of providing quantitative tools that individuals and their caregivers can use to track severity over time and to identify early warning signs** that signify enhanced risk for upcoming mood episodes.



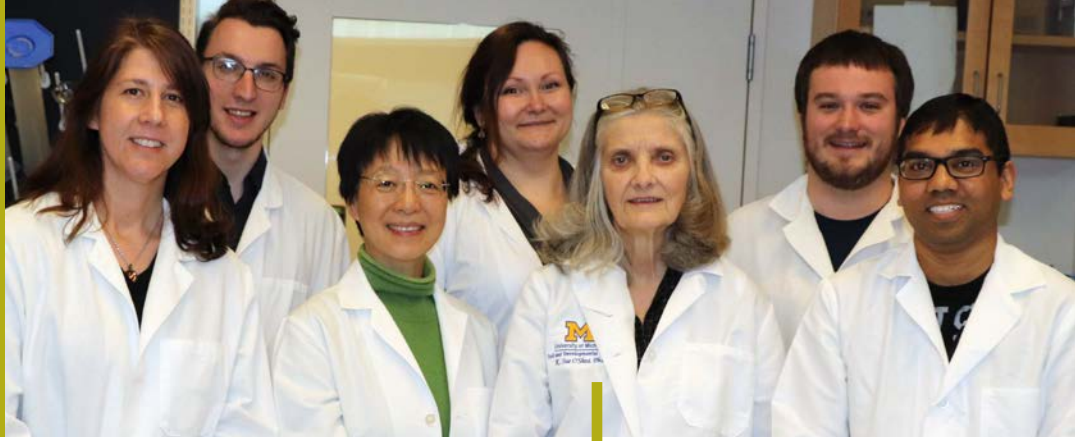
Emily Mower Provost, Ph.D.,
Principal Investigator of
the PRIORI study

Learn more about Dr. Mower
Provost on our website:
myumi.ch/6j5EV

PLURIPOTENT STEM CELL RESEARCH LAB UPDATES

K. Sue O'Shea, Ph.D.,
Director, Pluripotent Stem Cell
Research Lab

Learn more about Dr. O'Shea's work
on our website: myumi.ch/JlwEQ



K. Sue O'Shea, Ph.D., with her team

OUR LAB works to understand the cell and developmental origins of bipolar disorder. I trained to study the earliest development of the nervous system, so we focus on trying to **understand how the human brain develops and how errors in development can result in conditions such as bipolar disorder.** Since we can't take a biopsy of human brain cells, we use a new method in which we take adult cells, such as skin cells, and cause them to behave as though they came from a very early embryo. These cells are capable of forming all the cells of the body, and are called stem cells. **In our lab, we take these stem cells and coax them to form neurons and glia of the developing brain.** We then compare the brain cells from control research participants (living without bipolar disorder) with those from patients living with bipolar disorder.

In one project, we have repaired a defect in a gene that lets calcium into cells and is associated with bipolar disorder. Other research is studying the supporting cells of the nervous system, astrocytes, to determine if they are somehow different in individuals with bipolar disorder. In yet another project, we are examining the way bipolar cells communicate with other cells.

All cells have ways of communicating with each other and with other cells. One of those ways is by secreting chemical signals back and forth. Sometimes the chemical is released directly into the brain, e.g., neurotransmitters. Other times, it is secreted in a membrane-bound vesicle about the diameter of a human hair. These packets are called exosomes and they can bind to the surface of target cells and then release their contents directly into the cells.

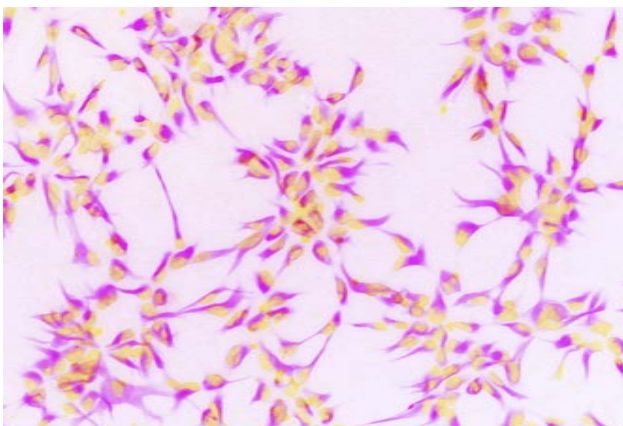
Exosomes are released from supporting cells to give information to neurons in the brain and vice versa. They also have the ability to remove toxic waste from cells and transport it from the Central Nervous System. We are very excited about exploring exosomes and their contents — what chemicals they carry and how the numbers, size and uptake may be different between control and bipolar brain cells.



Durga Attili, MS, is a Research Lab Specialist Senior who has taken the lead on the exosome project. **Durga has worked extremely hard to devise methods to purify exosomes, and to characterize them.** He is also comparing the content of exosomes in the lab with that of exosomes derived from serum from the same individuals in the Prechter Program who donated a skin sample to derive the stem cells, to see if any similar proteins are present in both cells and serum. This is exciting because Durga may identify a marker of bipolar disorder in the peripheral circulation. He is also using electroshock (ECT) to determine if deleterious exosomes may be removed from cells using ECT. Durga is an important member of our stem cell lab team.

Durga received his undergraduate Bachelor of Technology in Biotechnology degree from Jawaharlal Nehru Technological University, Hyderabad, India, and his Master of Science in Molecular and Cellular Biology from Eastern Michigan University. Durga came to our lab two years ago, after working with James Varani, Ph.D., in Pathology here at the University of Michigan. Durga says, "My long term goal is to continue to work in a research field with translational applications. I would like to have my own company or CRO (contract research organization) and work toward better understanding disease."

This photo illustrates the appearance of immature neurons derived from skin cells of an individual with bipolar disorder. Pink = the cell body of the neurons, yellow = the nucleus.



The Prechter Program partners with THE SLEEP AND CIRCADIAN RESEARCH LAB

IN THE SLEEP AND CIRCADIAN RESEARCH LABORATORY we are starting two different studies, both recruiting bipolar I and control participants from the Prechter Program.

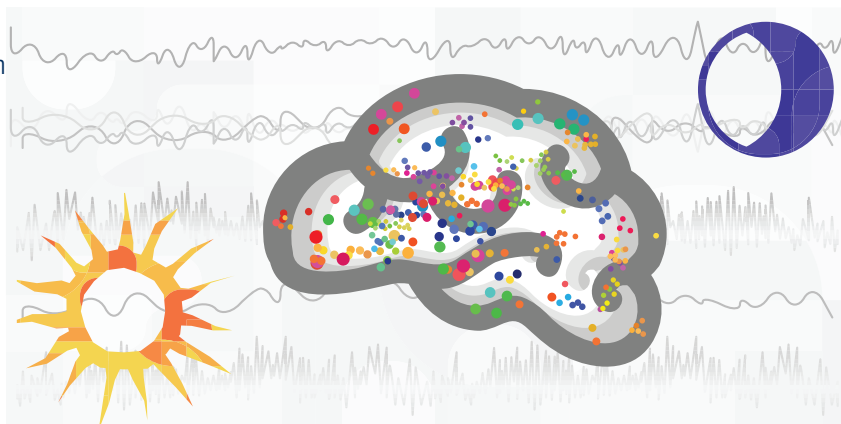
The first study examines **light sensitivity**. There is evidence that people with bipolar disorder are more sensitive to light. Classically, sensitivity to light has been measured by examining how much light exposure **suppresses melatonin, a hormone secreted by the brain at night**. People with bipolar disorder show more melatonin suppression in response to the same light exposure as controls, and even people with a first-degree relative with bipolar disorder show this increased sensitivity to light. However, previous work has only looked at sensitivity to brighter light and we are interested in examining sensitivity to dimmer indoor lighting that people usually receive at home in the few hours before they go to bed. Additionally, we plan to expand our measures beyond only melatonin suppression, by also **looking at pupil responses to brief flashes of light**.

Overall, in this study we hope to show that people with bipolar disorder are also more sensitive to dimmer light in the evening, which would suggest that **approaches to modify home lighting in people with bipolar disorder could assist in mood management**.

The second study will dive deep into **examining sleep in the home environment**. Research-grade wrist worn accelerometers (activity trackers) are often used in sleep research for 1-2 weeks to estimate sleep timing, duration and continuity. We are interested in expanding this to examine sleep and particularly sleep variability on a night-by-night basis over many months, and in all seasons, in the same individuals, to better understand individual variability in sleep and how that may impact mood.



HELEN BURGESS, PH.D.,
PROFESSOR OF PSYCHIATRY AND
CO-DIRECTOR OF THE SLEEP LAB,
EXPLAINS THIS PARTNERSHIP



MICHIGAN SOCIAL COGNITIVE AND AFFECTIVE NEUROSCIENCE (MiSCAN) LAB



IVY TSO, PH.D., ASSISTANT
PROFESSOR OF PSYCHIATRY

THE MiSCAN LAB, directed by Ivy Tso, Ph.D., investigates the cognitive and neural bases of social processes that are altered and interfere with social functioning in psychiatric disorders, including bipolar disorder. **The overarching goal is to develop innovative brain-based interventions to effectively improve functioning and quality of life of people living with psychiatric illnesses.**

The MiSCAN lab uses a diverse array of cognitive and neuroscience methods to identify biobehavioral markers of bipolar disorder in collaboration with the Heinz C. Prechter Bipolar Research Program. Work from the lab has shown multiple endophenotypes may differentiate bipolar disorder from psychotic disorders such as schizophrenia and schizoaffective disorder. These include: drive and affective forecast related to rewards; the P300 brain wave during response inhibition; the N170 brain wave during face/gaze processing; and activation of the mentalizing brain system (medial prefrontal cortex, bilateral temporo-parietal junctions).

Ongoing work in the lab includes application of cutting-edge time-frequency decomposition methods to examine neural oscillations in EEG brain signals in bipolar disorder. Results showed that altered affective face processing in bipolar disorder may be underlined by reduced theta-band (3-8 Hz) neural oscillations and diminished synchrony between low- and high-frequency neural activities. Another new line of research in the lab is using mathematical modeling and Bayesian computation to isolate and estimate psychological processes underlying behavior in bipolar disorder. A recently completed study using this approach showed that **risk-taking behavior in bipolar disorder is driven by heightened reward sensitivity, but this is only present in those with a history of substance use disorder**. The results suggest that substance use in bipolar disorder likely reflects trait vulnerabilities that contribute to risky behavior, even when mood symptoms and substance use are in remission.

Dr. Tso recently received the U-M Depression Center's **Frances and Kenneth Eisenberg Scholar Award** for her research on biomarkers in bipolar disorder.

DATA LAB UPDATES



THE INFORMATION OUR PARTICIPANTS

PROVIDE us by volunteering biological samples, answering questions and sharing their lives, is what moves our understanding of bipolar disorder forward. **Anastasia Yocum, Ph.D., the Prechter data team manager**, describes this stream of information as a **“LIVING, BREATHING LAKE OF DATA; one that truly represents the very peoples’ lives it hopes to positively change.”**

Dr. Yocum and her data team members Kritika Versha and Steve Anderau are essential in helping the Prechter Program build a comprehensive understanding of bipolar disorder by providing researchers with the data they need. Cleaning, structuring and maintaining quality control on over 13 years of data from over 1,300 individuals (and growing) can, however, be challenging.

“To say it’s been a steep learning curve,” Dr. Yocum says, “is like drawing similarities between your backyard sledding hill and Mount Everest. But, at the top of that mountain, WOW — you find an enormous, beautiful group of data lakes. Data distribution is the team’s highest priority.”

“The goal is simple: get our research data into the hands of researchers, for them to use in the best way that they can, leveraging their domain expertise and allowing their inquisitive directions to flourish.”

Good research requires good data. In the fall of 2019, the data team embarked on an award-winning collaborative project with students from the **University of Michigan School of Information**. The project, an interactive dashboard, set out to define missing data points, but the results can be used for much, much more. The project can identify and complete data entry errors, act as a hypothesis generator, and exhibit almost real-time pattern recognition on the health of our participants.

Dr. Yocum and her team relish the challenges presented by the Prechter data. “We are getting there. We’ve taken great care to define issues and have started mapping out our solutions. I can’t wait to showcase these solutions over the next year.”

Spotlight



Michael Yee, M.D., is a senior research fellow working with Dr. Melvin McInnis, director of the Prechter Program. A native of Wayne County, Michigan, Michael completed his undergraduate degree at the Massachusetts Institute of Technology, where he was a member of the Computer Science and Artificial Intelligence Laboratory (CSAIL), and graduated in **MIT’s inaugural class of biological engineers**. He was thrilled to return home in 2008, when he began graduate studies in biomedical engineering at the University of Michigan. Drawn towards the complexities of the human brain, he graduated with his medical degree in 2015.

Dr. Yee’s interests have always lain at the intersection of humanistic medicine and the diverse possibilities in the fields of engineering and mathematical modeling. He is eager to have the opportunity to put his skills into practice at the Prechter Program, where he plans to apply machine learning and artificial intelligence methods to pressing problems in psychiatry. Current projects include investigation into the characteristic time scale of bipolar disorder, as well as defining data-driven mood states to enhance short-range prediction.

In his spare time, Dr. Yee enjoys playing competitive sports, spending time with his loved ones, and watching Michigan football. **Go Blue!**

In Memory Of

By **LISA FABIAN**
Senior Associate
Director of Development

Every month, I look closely at the gifts made to the Heinz C. Prechter Bipolar Research Program, aware that each represents a very personal desire to improve treatment options for people living with bipolar disorder. I have had the great pleasure of getting to know many of our supporters and have learned that there is often a special person and always a unique set of circumstances that motivates their gifts.

Frequently, gifts are accompanied by tributes — short notes that tell us that the gift is made in memory of someone who lived with bipolar disorder. In the last 18 months, for example, 37% of gifts were memorial tributes. That number speaks to the terrible losses caused by this illness — losses that amplify the importance of our research and the urgency to find solutions for people with bipolar disorder.

It as an honor and responsibility to receive memorial gifts. The strength and compassion of a grieving family to look for a way to help others is inspiring to our researchers, who are mindful of the burden of bipolar illness and **motivated by the connection to real individuals and families who have been impacted.** Memorial gifts are also very meaningful to our many research participants, who tell us that they are encouraged and strengthened because people care about their future and quality of life.

Some of those who designate memorial gifts to the Prechter Program become special friends and true partners in our mission. We learn about the person they lost and how bipolar disorder impacted his or her life. As we work to find ways to improve care for people with this illness, it is comforting to get to know those whose legacy we represent. I thought you might like to know them too.



☀️ Kelly Elizabeth Beld

Above all, Kelly is remembered for her effervescent smile, caring warmth for others, and contagious joie de vie. Her loving children Jillian, Jacob, and Ryan and husband Ken remain in awe of her time with them, and blessedly mindful of her guiding principles.

The Kelly Elizabeth Beld Memorial Fund was established with the hope of accelerating the search for a better understanding and treatment of bipolar disorder. Kelly's parents appreciate the passion and dedication of the stem cell researchers under the leadership of Dr. Sue O'Shea.



☀️ Michael Guz

Michael was a talented, bright, compassionate young man who loved movies, cooking and playing the piano. He was a great son, brother and friend who touched the lives of everyone close to him. At the age of 17, Michael lost his battle after many years of struggling with bipolar disorder.

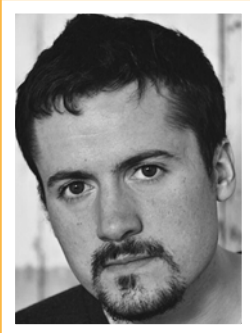
The Michael Guz Bipolar Cell Biology Fund was established to honor his life and to support innovative techniques in developmental science to expose the biological basis of bipolar disorder. This research is led by Dr. Sue O'Shea, which you can learn more about on page 11.



☀️ Sam Lanckton

Sam was a brilliant and witty man, and had a powerful ability with words. From a young age, he wrote poignant, amusing and insightful stories — some about his life experiences.

After learning about the Prechter Program's innovative and robust research and its sensitive, compassionate patient care, Sam's parents decided to memorialize their son with a gift to support the Prechter Program so they could help other bipolar patients.



James Leaf

James was a gifted actor, director, playwright, poet, and educator. Filled with passion, he thought deeply, loved deeply, and forged strong and lasting bonds with many friends, mentors and colleagues. Part of James' life and work was devoted to supporting individuals living with a bipolar condition.

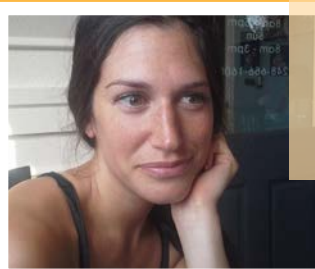
James' parents honor him by supporting innovative pilot bipolar research projects as well as artistic exploration of the bipolar experience — an approach he would have appreciated.



Katie Zack

Katie's warmth, humor, intelligence, and unwavering loyalty to the people she loved were qualities valued by all who knew her. She faced numerous health challenges over the course of her life, showing a resilience that inspired those in her orbit. After she was diagnosed with bipolar disorder, Katie invested considerable time and energy to find treatment and life practices that worked well for her; sadly, a form of leukemia ended her life far too soon.

Katie's parents, Stephanie and Jim, always set an example for their children of giving back to their community and to causes that reflect their values. They often suggest donations to the Prechter Program, honoring Katie's memory.



Alison Dee Zaret

A Michigan State University graduate with a degree in merchandising, Alison dreamed of a career in the fashion industry. She was inventive and creative and cared deeply about contributing to the happiness of others.

Diane and George Babich, Alison's aunt and uncle, established this endowment in consultation with her parents to provide a meaningful legacy for Alison while advancing work on more effective treatments.



Heinz C. Prechter

Heinz Prechter is remembered as a charismatic man with a passion for life who offered his handsome smile and a kind word to everyone he encountered. One year as an exchange student in America convinced him it was his new home. Heinz introduced the sunroof to the U.S., invented the moon roof, and became a successful and well-known figure in the Detroit auto industry.

Vocal champions for medical research on bipolar disorder, his family, led by Heinz's widow, Waltraud "Wally" Prechter, made a gift to name U-M's bipolar research program in his memory — an enduring legacy of this vibrant and deeply-loved man.



DEAR FRIENDS:

In these challenging and unprecedented times, while we are hibernating at home to stay safe from COVID-19, the Heinz C. Prechter Bipolar Research Program's work is going on strong and the team is adapting to a "new normal" in trying to uncover the intricacies of bipolar illness.

Much of the research, administrative support and data analysis moved quickly to a virtual phase.

New studies have begun and are ongoing like the sleep study by Helen Burgess as well as a collaboration with Ivy Tso who received the Eisenberg Scholar award recently. You'll read about them in these pages.

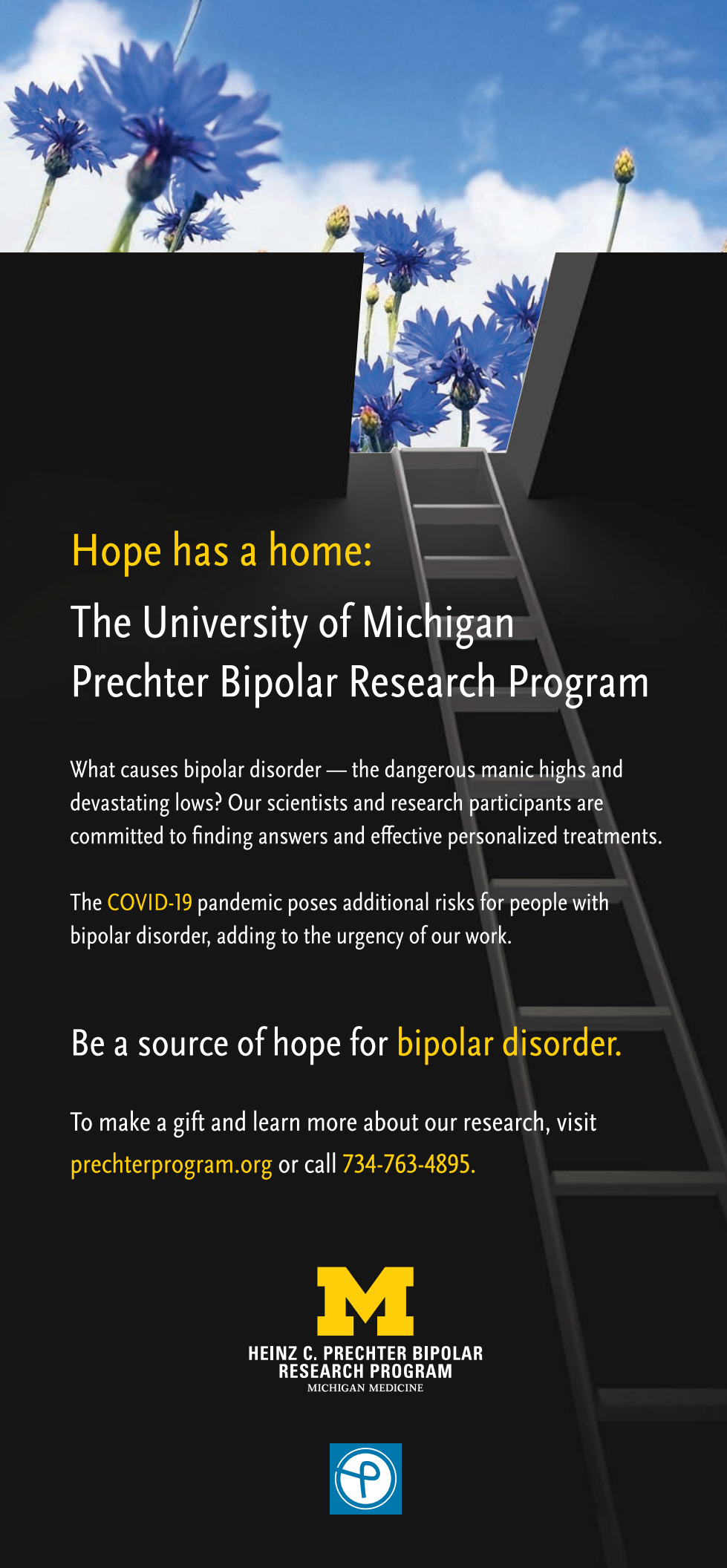
This illness does not stop because of the virus and we are continuing to push new frontiers and collect more data to understand it better!

The Global Bipolar Cohort Program which was inaugurated in October 2019 is aiming to do just that by building a worldwide research collaborative and cohort of individuals with bipolar disorder! This exciting new expanded research initiative will accelerate research and studies based on more participants, their DNA, demographics and clinical descriptors. Its experiments and future findings will have even more powerful impact post COVID!

My deepest gratitude to all who have given to our work. I hope you will continue to partner with us.

Waltraud C. Prechter

WALTRAUD "WALLY" PRECHTER
Founder, Heinz C. Prechter
Bipolar Research Program



Hope has a home:

The University of Michigan Prechter Bipolar Research Program

What causes bipolar disorder — the dangerous manic highs and devastating lows? Our scientists and research participants are committed to finding answers and effective personalized treatments.

The **COVID-19** pandemic poses additional risks for people with bipolar disorder, adding to the urgency of our work.

Be a source of hope for **bipolar disorder**.

To make a gift and learn more about our research, visit prechterprogram.org or call 734-763-4895.



**HEINZ C. PRECHTER BIPOLAR
RESEARCH PROGRAM**
MICHIGAN MEDICINE



For information about supporting the Prechter Program or to make a gift, please contact: Lisa Fabian, Senior Associate Director, Mental Health Programs at fabianl@umich.edu or 734-763-4895.

OUR MISSION

The mission of the Heinz C. Prechter Bipolar Research Program is to discover the mechanisms that contribute to bipolar disorder, predict and improve outcomes, and develop effective, innovative treatments.

OUR VISION

We are building a future where personalized and evidence-based treatments for bipolar disorder will enable every individual with the illness to lead a healthy and productive life.

HEINZ C. PRECHTER BIPOLAR RESEARCH PROGRAM ADVISORY BOARD

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To sign up to receive our yearly printed newsletter or our quarterly E-newsletter, please contact: Kat Bergman at kbergman@umich.edu or 734-232-0456.

If you or anyone you know are experiencing thoughts of **suicide**, contact the **Crisis Text Line** [Text HOME to 741741 to connect with a Crisis Counselor] or call the **National Suicide Prevention Lifeline** [1-800-273-TALK (8255)].

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