



# THE HEINZ C. PRECHTER BIPOLAR RESEARCH FUND

Bipolar Genes Project & Gene Repository

AT THE UNIVERSITY OF MICHIGAN DEPRESSION CENTER

2013 • Volume 6

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## MORE SUPPORT IS NEEDED

to sustain our momentum. Please consider making a gift!



Scan the QR code to make a donation.



## New MISSION

**The mission of the Heinz C. Prechter Bipolar Research Fund is to provide a repository of longitudinal clinical, genetic, and biological data to investigators worldwide for collaborative research on the causes, prevention, and treatment of bipolar disorder.**

## New VISION

**To personalize treatment of bipolar disorder and prevent recurrences to enable those with bipolar disorder to lead healthy and productive lives.**

## Bold New CAMPAIGN

**To build upon our exciting discoveries and provide greater hope for the future. For more information about how you can get involved, please contact Kat Bergman at [kbergman@umich.edu](mailto:kbergman@umich.edu) or 734-763-1440.**



## PILOT PROJECTS TAKE FLIGHT

## From NEW Projects to NEW Breakthroughs

**Pilot projects are concept phase research projects.** Each project starts with ideas that are untested and have major potential for success. Science is about ideas that lead to innovation and breakthroughs. The Prechter Fund has supported many pilot projects. Examples include the induced pluripotent stem cell project for cellular modeling in bipolar disorder, the analysis of acoustic patterns as a predictor of mood changes, and the brain wave project that uses EEG measures of brain electrical activity. These are examples of projects that are now established and have been successful in procuring additional funding.

These pilot projects all got their start with the generous support of the Prechter Research Fund. Research projects are not considered competitive for additional funding if there is no pilot data to support the research concept, yet pilot data requires resources. The University of Michigan is an incubator of new ideas and our investigators are exploring opportunities for integrating technology in assessment and prediction of moods. Can computerized facial, voice and gesture recognition of mood change during treatment of depression? How can we adapt our smart phones to monitor our moods with little or no effort from the person being monitored? The challenge is: How can we integrate data from many sources (biology, acoustics, physiology and imaging) to assess current mood states, and predict and prevent incapacitating mood changes?

On the humanistic side there are many questions surrounding the ethics and impact of accessibility of personal information in predicting outcomes of health. This includes genetic testing and the discovery of incidental findings that may not be related to mood disorders (such as knowledge of cancer-related genes). **Continued on back cover**

Dear Friends:

As we mark the close of our 12th year, we can reflect on the many significant accomplishments achieved by the Heinz C. Prechter Bipolar Research Fund.

Our longitudinal study, the largest in the nation, has close to 1,000 research participants. Our genetics repository is now home to 1,800 samples. What's more, our stem cell study, perhaps the most promising piece of the program, is building momentum. Findings from this study will eventually help us unravel how brain cells from people with bipolar disorder are affected by different medicines. Additionally, to date, 13 other significant projects are being supported by the Prechter Fund!

As a catalyst for the largest study of bipolar illness in the nation, our research initiatives – in collaboration with four other universities – have become synonymous with attracting global attention and funding. For example, our “voice patterns” study, which is conducted in concert with the University of Michigan College of Engineering and researchers in Shanghai, China, is enabling us to understand and identify a patient's state and stage of bipolar disorder. Furthermore, we are proud to be collaborating with the College of Pharmacy, initiating research funded by the FDA that is investigating the bioequivalence and pharmacogenomics of a psychiatric drug and its generic equivalent.

In the end, it is the ultimate goal of the Heinz C. Prechter Bipolar Research Fund to decipher this deadly illness and help find customized and personalized treatment approaches, including ECT, for individuals living with this illness so they can enjoy a greater quality of life!

Your contributions have made it possible for the Fund to come this far and your support is even more critical now as we are embarking on a bold fundraising campaign to build upon the exciting discoveries and provide greater hope for the future.

Thank you for your continued support.

Most sincerely,



Waltraud E. Prechter  
Founder, Heinz C. Prechter Bipolar Research Fund



## AN OVERVIEW

# The Heinz C. Prechter Bipolar Research Fund

by Melvin McInnis, M.D., Principal Investigator



Melvin McInnis, M.D.  
Thomas B. and Nancy Upjohn  
Woodworth Professor of Bipolar  
Disorder and Depression and  
Principal Investigator of the  
Prechter Bipolar Research  
Fund

Waltraud “Wally” Prechter established the Heinz C. Prechter Bipolar Research Fund in 2001, after the tragic death of her husband. The Prechter Fund has supported a plethora of research projects over the years, all aimed at finding a cure for bipolar disorder.

As of September 2013, there are 927 research participants in the Prechter bipolar research program. There are 36 faculty and staff providing expertise from answering the phones to growing stem cells. This makes for almost 1,000 individuals that compose the team of the Prechter Fund's program. In his business career, Heinz Prechter was known for building successful teams. These teams did great work, reached out to the world and made a difference. We now continue this legacy of making a difference with our many research projects.

Success emerges from teams. The Prechter program's successes begin with the individual who enrolls in our research studies. I have heard consistently from individuals who say “I am doing so much better because I am involved in this research.” Research

## TREATMENT OPTIONS

# The Healing Power of ECT

by Joshua Bess, M.D.

Clinical Assistant Professor  
University of Michigan Department of Psychiatry  
Medical Director, Adult Psychiatric Unit  
Associate Chair, Psychiatry Adverse Event Review Committee

There are myriad words used by patients and providers when discussing electroconvulsive therapy (ECT): “complicated,” “effective,” “drastic,” “antiquated,” “hopeful,” “lifesaving,” and “scary” are just a few. As someone who has studied and practiced ECT for many years, I can attest that there is at least some truth to all of them. ECT has been around for a very long time – much longer than antidepressants, mood stabilizers, and antipsychotics. These medications and several other “brain stimulation” modalities have been developed and refined since ECT was invented. But for an important subset of patients – especially the most severely ill – ECT remains the most effective treatment option available.

For centuries, physicians had wondered about a link between seizures and improvement in the condition of patients suffering from what was then called “lunacy.” Chemically-induced convulsions were administered to patients in the latter 19th and



early 20th centuries, but the agents used were quite unpleasant. Scientists in Switzerland worked out how to induce seizures in animals using electrical current, and Italian scientists Cerletti and Bini translated that research to the first human patient in 1938. A young man who was found delusional in a train station received 11 treatments and made a full recovery.

In the 1940s ECT took its place alongside several other “somatic” (i.e. physical, as opposed to psychological) treatments employed by psychiatrists. Through the 1950s and 1960s the first effective

[Continued on next page](#)

volunteers are the fabric of our work, as without them, we would not be able to advance this research.

Let's talk about the research. We are going strong and have a team of highly motivated investigators and research staff with an exuberant morale that probably mirrors that of Heinz's enterprise. We are continuously building – big ideas and big data. Our motivation comes from the patients with bipolar disorder that we treat and from our collaborating research participants.

We are searching for better ways to treat, manage, and prevent bipolar disorder. The big idea is to engage individuals with bipolar and learn what relates to illness and wellness – factors such as substance abuse, anxiety, suicide, and stressors. We engage in specific projects within specialties such as genetics, biology, and technology to build a large data repository. We collaborate with colleagues in engineering, cell and molecular biology, computational medicine and bioinformatics, pharmacy, and psychology. As our **MISSION** states, the **Heinz C. Prechter Bipolar Research Fund aims to provide a repository of**

**longitudinal data to investigators worldwide for collaborative research on the causes, prevention, and treatment of bipolar disorder.**

Most physicians, scientists, and the educated public with an interest in bipolar disorder know that it is a complex disease. There is not one gene that contributes solely to the illness, but many. Just like there are multiple factors influencing the complex emotions and behaviors that drive suicide ... distress has many facets. We need the depth and detail of information of the Prechter research program to understand this disease. If bipolar disorder were easy to comprehend, it would already be solved.

This brings me to the **VISION** of the Prechter Fund, which is to **personalize treatment of bipolar disorder and prevent recurrences to enable those with bipolar disorder to lead healthy and productive lives.** With all our research projects, we are on our way there – thank you to all of you for being our supporters and collaborators!

## TREATMENT OPTIONS

# The Healing Power of ECT

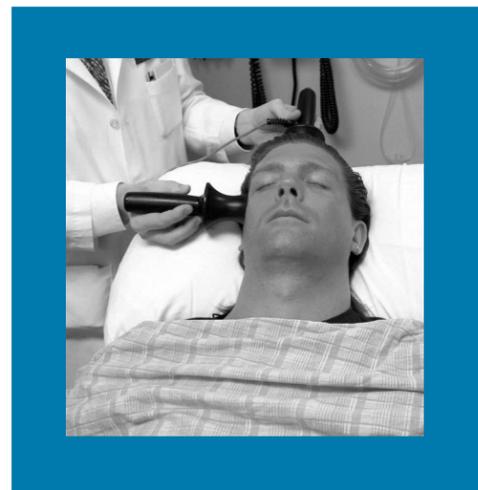
medications for psychiatric illness were developed. By the late 1960s and into the 1970s, ECT use was declining, in part due to increase in stigma and negative media portrayals, despite the fact that through that same period modern anesthesia techniques and other advances markedly reduced patient discomfort and increased safety of the procedure. Through the 1980s, recognition of the limited efficacy of medication in some patients as well as a general increase in acceptance of the need to treat mental illness allowed ECT to make a comeback of sorts, again taking a place amongst legitimate, effective treatments for patients who otherwise would suffer severely.

ECT is performed either in the pre-operative/post-anesthesia (PACU) area of the hospital or in a separate ECT suite. The patient is under the care of an anesthesiologist or nurse anesthetist and an attending psychiatrist throughout the entire procedure. Monitors are attached to the patient to assess vital signs and brain function (EEG) during the procedure. Intravenous sedative is administered at a dose that causes the patient to be completely asleep. A muscle relaxant is then administered to prevent the patient from having physical convulsions during the seizure. Once everything is ready, a small electrical current is run through one part of the patient's brain to another, depending on the specific type of ECT being performed. This current – the "stimulus" – results in a generalized, whole brain seizure. The seizure is monitored via the EEG and usually lasts between 30 and 60 seconds. The whole procedure from administration of anesthetic until the patient begins to awaken takes about 5 minutes.

The most common indication for ECT is "treatment-resistant depression." Such an episode can be part of bipolar disorder or major depressive disorder. Usually ECT is only recommended

after a patient has tried several, even many, medications – hence the term "treatment-resistant." However, there are situations in which ECT is recommended as a first-line treatment. These are cases in which either medications are potentially more dangerous than ECT (pregnant or elderly patients) or when the symptoms are so severe that the quickest response possible is desired (extreme malnutrition or strong suicidal urges). ECT can also be helpful in patients suffering from the manic phase of bipolar disorder or an acute psychotic episode in schizophrenia.

Against the forces of stigma, less drastic treatment interventions, and regulatory obstacles, ECT continues to offer hope for thousands of patients suffering from mood disorders and their disabling symptoms. The safety and tolerability of the treatment have improved markedly over the years. I hope that the availability of this important treatment modality continues to improve and that more individuals will be able to gain relief from lives of intense suffering. While I also hope for further advances in other therapies, and eventually for treatments that are as effective as ECT without the complexity and historical "baggage," for now I will continue to encourage my patients and their families to



proceed with ECT in cases where all else has failed or where ECT is the safest or most effective treatment regardless of alternatives.

## Meet OUR TEAM

**Simon Evans, Ph.D.**

*Assistant Research Professor, Department of Psychiatry*

Dr. Evans is interested in how dietary patterns may help patients with mental illness respond better to treatment. He has been with the Prechter team for the past four years, coming from a background in neurochemistry and molecular neuroscience.



Dr. Evans is also a recipient of career development awards from the Michigan Institute of Clinical Research and the National Institute of Mental Health (NIMH) that have allowed him to further train in nutritional science and public health over the past few years.

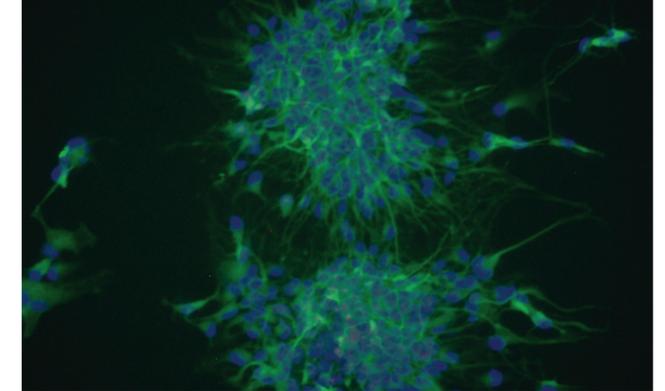
"It's clear that the foods we eat affect the way we feel. The question is, can dietary patterns actually

contribute to mental illness or aid in treatment paradigms to better control these chronic conditions," says Dr. Evans. His research, supported by the Prechter Fund and the NIMH, focuses on how some foods and nutrients may be metabolized differently in people with bipolar disorder and how that may contribute to disease management.

Dr. Evans asks bipolar and control research subjects to track what they eat and then uses a technology called 'metabolomics' to investigate hundreds of metabolites in the blood. Preliminary analyses suggest that bipolar subjects might metabolize specific omega-6 fatty acids differently than non-affected controls. Dr. Evans is also finding that bipolar subjects eat less of certain omega-3 and omega-6 fatty acids that are important for brain function.

Omega-6 fatty acids work in balance with omega-3 fatty acids to maintain proper immune function, inflammatory systems and a host of neurochemical signals in the brain. Interestingly, previous research by a group at the National Institutes of Health suggests that specific omega-6 fats may interact with mood stabilizer medications, which bipolar patients are often prescribed, to help them stabilize. The direction of the research is to help bipolar patients change their diet to see if that helps them better manage their disease.

"Can we find dietary patterns that seem to make the illness worse, and avoid them? And can we find patterns that help the medications work better, even reduce or eliminate the need for some medications?" asks Dr. Evans. "The Prechter Longitudinal Study and its hundreds of participants are an amazing resource to address these questions."



## Prechter Bipolar Research UPDATE

The **Heinz C. Prechter Bipolar Genetics Repository** and **Longitudinal Study of Bipolar Disorder** were launched in 2006 and remain the flagship project. The Longitudinal Study will follow individuals over the course of 10 years with the goal of identifying potential illness patterns in bipolar disorder. Since 2005, the bipolar research team has collaborated in more than 15 different bipolar research projects – all of which continue to have active scientific analysis – and eight continue to recruit new research participants. These additional projects stem from the Longitudinal Study and provide an additional depth of data that is stored in the Prechter repository, including imaging data, electrophysiology, nutrition, stem cells, sleep, medication and speech data. **The repository data has a richness unlike any other collection of bipolar disorder research data in the world.**

The bipolar research team is a true collaborative with a reach across multiple departments and disciplines at the University of Michigan, including:

- Department of Cell and Developmental Biology
- Department of Psychology
- Department of Computational Medicine and Bioinformatics
- College of Engineering
- School of Public Health
- College of Pharmacy
- Department of Human Genetics
- College of Literature, Science, and the Arts (Chemistry Department)
- Department of Cardiology

As of September 2013, 927 research participants are currently enrolled, and the project is in its 7th year of follow-up.

- 652 research participants completed Year 1
- 486 research participants completed Year 2
- 393 research participants completed Year 3
- 260 research participants completed Year 4
- 156 research participants completed Year 5
- 80 research participants completed Year 6
- 24 research participants completed Year 7

**"ECT brought my 19-year-old daughter out of a long psychotic episode when medications were not working. The decision to proceed with ECT was heart wrenching, but it allowed her to get back to her life as a college student, which was extremely important to her, in a relatively short time."**

*Ann Hendrick, mother of Lauren Hendrick*





The Heinz C. Prechter  
Bipolar Research Fund  
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Depression Center

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## PILOT PROJECTS

We are on the vanguard of major changes in health care, technology, and the interface with scientific knowledge. It's abuzz in the news and is the air we breathe here at the University of Michigan.

Pilot projects cost money and may be privately funded anywhere in the range of \$10,000-\$60,000 over a period of one to two years. This money helps pay for participant incentives, project coordinators and technology costs and supplies required to complete a pilot project. We are centered around bipolar disorder and have ideas and questions in the realms of technology that assess and predict moods, biology where we examine the genetics and modeling of diseases with stem cells, as well as the humanistic side that asks about the implications of the research. Support us – become a co-pilot!

## WALLY PRECHTER and the Fight Against BIPOLAR DISORDER

Recently, Ora H. Pescovitz, M.D., U-M Executive Vice President for Medical Affairs and CEO of the U-M Health System, featured our founder Wally Prechter and the fight against bipolar disorder on her blog [medicinethatspeaks.org](http://medicinethatspeaks.org). Dr. Pescovitz wrote: "Wally is an extraordinary woman of remarkable courage, passion, zeal and determination. She is a great partner to our Health System, and she is one of my personal heroes. (...) Wally and the incredible UMHS team associated with The Heinz C. Prechter Bipolar Research Fund are working together to prevent others from experiencing the pain she and her family have experienced. I am in awe of Wally's dedication and passion to making a lasting difference in the fight against bipolar disorder and to making the world a better place."

You can read the entire blog post at <http://victors.us/wallyprechter> and watch the powerful video featuring Wally; her daughter Stephanie; our Principal Investigator, Melvin McInnis, M.D.; and the U-M Depression Center's Executive Director, John Greden, M.D.

Help find a cure for Bipolar Disorder.  
One link at a time.



## ELLA Jewelry Sales to Benefit the Prechter Fund

Our loyal supporter Elizabeth Guz is selling beautiful jewelry to help find a cure for bipolar disorder. In memory of her son Michael, Liz partners with her daughter Lauren to create the original jewelry designs under the name ELLA ("EL" stands for "Elizabeth," "LA" stands for "Lauren"). Fifty percent of all ELLA profits will be donated to the Prechter Research Fund. "Every donation brings us closer to a cure," says Liz. If you live in the Greater Detroit area and would like to host a jewelry party in your home, please contact Liz at [lcguz13@gmail.com](mailto:lcguz13@gmail.com).

**Executive Officers of the University of Michigan Health System:** Ora Hirsch Pescovitz, M.D., U-M Executive Vice President for Medical Affairs and CEO of the U-M Health System; James O. Woolliscroft, M.D., Dean, U-M Medical School; Douglas Strong, Chief Executive Officer, U-M Hospitals and Health Centers; Kathleen Potempa, Dean, School of Nursing.

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