Since 1987, the BBRFoundation has been committed to alleviating the suffering caused by mental illness. Chairman of the Board, Stephen A Lieber highlights a number of important breakthroughs supported by their NARSAD Research Grants, and asserts its commitment to backing novel, hard to fund projects that push forward innovative research and discovery.

International Innovation featured the Brain & Behavior Research Foundation (BBRFoundation) last April – welcome back! To recap, could you give an overview of the Foundation and its core goals?

BBRFoundation (formerly the National Alliance for Research on Schizophrenia and Depression – NARSAD) funds cutting-edge research projects to understand, treat, and ultimately prevent and cure mental illness. The Foundation, supported through private contributions, has awarded over US $300 million through its NARSAD Research Grants to more than 3,700 scientists around the world, since 1987. Comprised of 147 leading experts, the Foundation’s Scientific Council awards grants to the most promising research proposals with the aim of funding projects that will achieve major gains in short timeframes. The Foundation’s operational expenses are underwritten by two family foundations, meaning 100 per cent of donor contributions for research are directly invested into the selected research proposals.

What have been the major focal points for the Foundation over the past year?

Our priority has been to continue to provide research grants to outstanding scientists at all levels, notwithstanding a climate of receding financial support from other entities. The largest proportion of our grants goes to young, early-career scientists with innovative research ideas. Our support usually serves as a critical catalyst for their research careers, and once they have established proof of concept they are prepared to secure further, sustained support, which can be as much as 50 times the original grant amount. We also support both independent investigators with their own labs and distinguished investigators with novel, ‘out of the box’ ideas that can be difficult to fund through traditional sources. The Foundation’s main focus is supporting as many promising research ideas as possible to progress the field and ultimately improve the lives of the millions of people living with various mental illnesses.

The Foundation contributes actively to public education in mental health by regularly disseminating research results and progress, through high quality publications and a vibrant and interactive website. We also develop and host events open to the public where leading scientists present their latest findings and engage in dialogue with the audience. We do this in both virtual ‘Meet the Scientist’ webinars and in conferences in different cities.

To stimulate scientific achievement and public recognition we award the largest group of prizes for outstanding achievements in mental health research. The prize winners are selected annually through a peer-review process of our Scientific Council and receive their prizes in October at our National Awards Dinner in New York City. That same day, the prize winners present their latest research discoveries at a symposium in New York that is open to the public. Two of our prize winners have gone on to win Nobel Prizes.

The BBRFoundation is primarily committed to the alleviation and eradication of mental illness. In which aspects of mental health is the BBRFoundation currently most interested?

The Foundation is interested in all aspects of mental illness, as illustrated by our motto ‘From discovery to recovery’. We award grants that will lead to advances and breakthroughs in scientific research to improve the lives of people living with illnesses such as depression, schizophrenia, anxiety, autism and bipolar, attention-deficit hyperactivity, post-traumatic stress and obsessive-compulsive disorders. Our vision is to bring the joy of living to those affected by mental illness – both those who are ill and their loved ones.

Toward this aim, we fund essential fundamental (or basic) brain research to understand what causes mental illness. Notwithstanding the complexity of the brain, our research goals are to achieve breakthroughs in understanding its function, and to develop treatments and cures for its malfunction. We also fund development of new technologies that will allow scientists to go beyond what we know today, by advancing or creating new ways of studying the brain that will deepen knowledge of how it works and how its dysfunction can be effectively corrected. Our NARSAD Research Grants also support the development of next-generation therapies to alleviate the symptoms of mental illness and retrain the brain.

How are children and young adults with mental health disorders approached in comparison to adult patients?

We focus upon understanding treatment and rehabilitation of psychiatric conditions at all phases of life; from conception, to childhood and adolescence, all the way through to maturation and geriatric stages. The Foundation offers research grants selected by members of our Scientific Council who are experts in paediatric, psychiatric and neurological disorders. Similarly, other Council members provide expertise on phase-specific concerns, for example, to adolescence or the geriatric phase.

Is the BBRFoundation supporting any revolutionary new technologies to better understand the brain?

NARSAD Grants fund major projects that are using or developing innovative new technologies, many of which lead to breakthroughs and change the field.

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For example, in 1991 Dr Helen Mayberg secured NARSAD Grant funding to use brain scan technology (positron emission tomography – PET) to study the neurology of depression. Based on her findings, she went on to develop an important model of depression and opened new frontiers in brain research. Dr Yvette Sheline used functional MRI scans to identify structural brain changes in depressed patients and established depression as a brain disease. She received a NARSAD Grant to further this research and identified how antidepressants correct abnormal brain function to alleviate the symptoms of depression.

In 2005, the Foundation awarded a NARSAD Young Investigator Grant to a brilliant psychiatrist and bioengineer, Dr Karl Deisseroth, who sought to understand how application of electrical activity to the brain may lead to neurogenesis (the growth of new neurons) and be a potential new treatment for depression. His lab developed a breakthrough technology called ‘optogenetics’ that provides precise control over brain circuitry in conscious animals and allows for observation of corresponding behaviours. He has now shared the technology with thousands of labs around the world, enabling researchers to identify the mechanisms in the brain that give rise to depression, anxiety, schizophrenia, autism, and other brain and behaviour disorders. It can be a real challenge to fund these kinds of projects before they have been ‘proven’ – and it is precisely this type of research that NARSAD Grants seek to support and fund.

Could you highlight some of the Foundation’s greatest success stories? How do you measure success within the Foundation?

In addition to the advances made in new technologies and next generation therapies, the Foundation’s grants have supported major breakthroughs in basic brain research:

• In 1998 we supported Dr Bruce McEwen’s investigation into what happens when stress impacts and seems to ‘damage’ the brain. Dr McEwen went on to discover the brain’s inherent capacity to re-adapt and remodel its architecture – and established the concept of ‘neuroplasticity’

• Drs Paul Greengard and Eric Kandel, in 1992 and 1995 respectively, were supported by the Foundation in their search to further understanding of memory. This work led to them being awarded the Nobel Prize in 2000 for establishing the physiological basis of memory storage in neurons.

• Dr Kenneth Kendler, a researcher previously funded by the Foundation, demonstrated for the first time in 2002 that environmental risk factors impact genetic expression to cause major depression. This work launched the development of ‘epigenetics’ in the field, where scientists seek to identify gene-environment interactions and their links to the development of illness.

• In 2000, we funded Dr Daniel Weinberger’s novel work identifying genes linked to schizophrenia. His discoveries were recognised by Science in 2003 as ‘the second biggest scientific breakthrough of the year’ – second to the discovery of the origins of the cosmos.

• In 2006, we supported another groundbreaking researcher, Dr Mary-Claire King, renowned for her discovery of breast cancer genes, who proposed a sophisticated genetic analysis approach to identify rare genetic mutations linked to schizophrenia. In 2008, her work identified such mutations and she advanced the process of creating a ‘genetic map’ for schizophrenia.

Each year, we fund research that leads to discoveries that build upon each other. We measure our success by the continual progression of knowledge in the field and the accumulated effect of discoveries that lead to recovery in people’s lives.

Can you expand on the state of the art of next-generation therapies and how these fit into the Foundation’s work?

The Foundation has always been committed to supporting research to evolve, and improve treatments and therapies for mental illness. In 1988, our second year of grant-giving, we funded Dr Herbert Meltzer who led testing of clozapine as a ‘second generation’ antipsychotic medication in patients with treatment-resistant schizophrenia. Clozapine was approved by the US Food and Drug Administration in 1989 and led to the development of a new class of atypical antipsychotics that effectively treat millions of patients today.

More recently, NARSAD Grants have supported the development of neurostimulation techniques to treat depression and other disorders. These techniques were considered too ‘out of the box’ for traditional funders. We supported Dr Mark George’s idea to use electrical and magnetic stimulation to modulate brain circuits and change brain activity in resistant depression. With NARSAD Research Grant support, he developed transcranial magnetic stimulation (TMS) for treatment of resistant depression, which was FDA-approved in 2008 and is currently helping hundreds of patients each year recover from major depression.

After developing an influential model of depression with early NARSAD grant funding, Dr Helen Mayberg, with continued Foundation support, piloted the use of deep brain stimulation (DBS) to treat intractable depression by targeting the area she had earlier identified as a key locus of depression pathology in the brain (the subcallosal cingulate or Brodmann Area 25). This is showing great promise in treating resistant depression as well as other brain and behaviour disorders in clinical trials today. Both Drs George and Mayberg emphasise that the Scientific Council’s willingness to fund ideas deemed to be meritorious, even though they had unproven hypotheses and lacked pilot data, was essential to the development of these breakthrough treatments.

These are just a few examples. Our aim is to support the ideas with potential for breakthroughs that may not get funding elsewhere.

What inspired you to become the Foundation’s Chairman? How do you draw on past experiences to perform this role?

I became the Foundation’s Chairman to facilitate the efforts of this outstanding organisation – which I have long been dedicated and committed to. As the parent of a person suffering from the debilitating consequences of mental illness, I am determined to assist in advancing approaches to overcome mental illness. My responsibilities in the organisation have been stimulated and enhanced by my wife’s leadership as the Foundation’s president for 18 years. I have also been aided by my professional background in the field of investment management.

How can the stigma associated with such illnesses be reduced?

We continue to make progress in identifying the biological causes of mental illnesses, and developing precise and effective treatments and cures. This is the major focus of the Foundation’s work and as it progresses, alongside public education, stigma will be eliminated.

Looking ahead, what are the Foundation’s plans for the future?

The Foundation’s plans are to build on its base of 27 years of funding leading researchers in brain and behaviour science. We recognise that the grants we have given to young scientists have become the catalysts for their careers, and that the funding given to the most distinguished investigators has enabled them to explore highly innovative approaches to overcome the challenges of understanding and effectively treating the diseases of the brain. As the breadth of the scientific achievement grows and the members practicing in the field increases worldwide, we aim to broaden the numbers and the level of support we provide scientists. Recognising that to achieve the maximum opportunity, we must vigorously engage the public, we will enhance our informational events and seek to disseminate our publications to a larger audience – to broaden understanding and accelerate discoveries and breakthroughs in the field.

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