

Cerestim

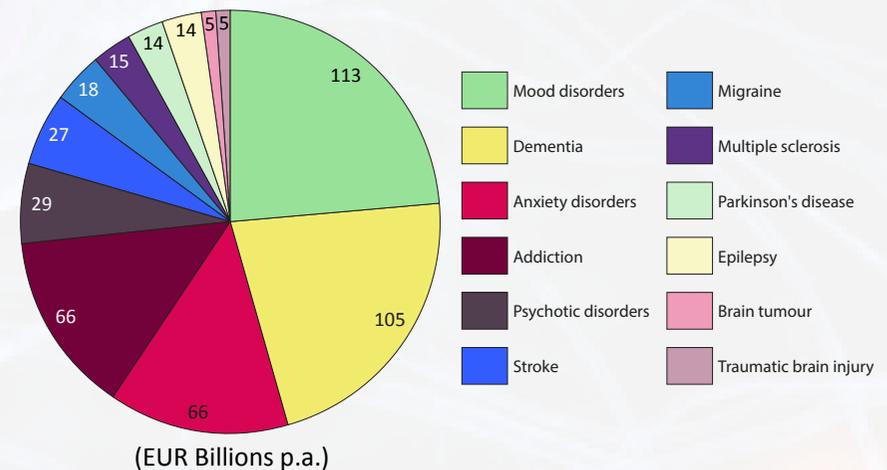
Backgrounder

Cerestim is a UK-registered private limited company that offers an integrated healthcare solution for the treatment of brain disorders. The technology that the company has developed is capable of therapy, rehabilitation and cognitive enhancement. The initial therapeutic indications for the product are drug-resistant depression, sleep disorders and migraine.

As well as loss of life, disorders of the brain can have a profound effect on the quality of life for the surviving patient. In addition, this collectively contributes to serious social and economic burdens on society. Brain disorders' share of the total global burden of disability and mortality is projected to rise from 11% in 1990 to 15% in 2020, which is a larger proportionate increase than even cardiovascular disease. This has led the World Health Organisation to conclude that brain disorders will become the major medical need of the 21st century. However, there is a stark lack of effective medicines to treat such disorders and pharmaceutical companies are actually reducing their research efforts in this therapeutic area. Non drug-based approaches will therefore have greater prominence in the decades ahead. These new approaches follow advances in the understanding of the dynamics of neural pathways - which may result in considerable therapeutic benefit. One such promising approach is neurostimulation - this includes devices for transcranial magnetic stimulation and transcranial electrical stimulation.

Why neurotechnology? 2 billion people worldwide and over 100 million individuals in North America suffer from brain and nervous system illnesses. They represent the largest single unmet medical market. Demographic aging effects imply that the market will increase at a minimum of 5.6% p.a. Currently, there are rapid advances in high computation and resolution neuroimaging (in both time and space); new micro and nano scale sensor and nerve modulation interfaces; and advances in low power but very fast digital signal processing electronics. These advances make neurotechnology the science with the greatest potential for major scientific discoveries and therefore both improved health outcomes and sustainable investment opportunities.

European Economic Burden of Brain Disorder



Source: Cost of disorders of the brain in Europe 2010, European Brain Council
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Our Vision. We aim to be the world's leading therapeutic devices company for the treatment and management of disorders of the brain. We will achieve this by providing the most effective and accessible brain stimulation therapy by combining pioneering technology, cutting-edge neuroscience and ethical business practice. We aim to both improve the health and well-being of all those affected by brain disorders and lower the costs of treatment for healthcare providers.

The Company

Cerestim Ltd was formed in April 2014 following several years of research by Nir Grossman at Imperial College London and MIT Boston. It has recently been awarded a grant of over £140K from the Technology Strategy Board to conduct a feasibility study to deliver a commercialisation strategy for the business.

Market Landscape

Disorders of the brain represent a large and growing healthcare challenge worldwide. The worldwide cost of neurodegenerative diseases and mental illnesses is higher than that of cancer, diabetes and chronic respiratory diseases combined. However, there is a worrying lack of effective medicines to treat such disorders.

Drug therapy alone is not sufficient to effectively treat complex brain disorders. There is a need to harness advances in our understanding of the dynamics of neural pathways for therapeutic benefit.

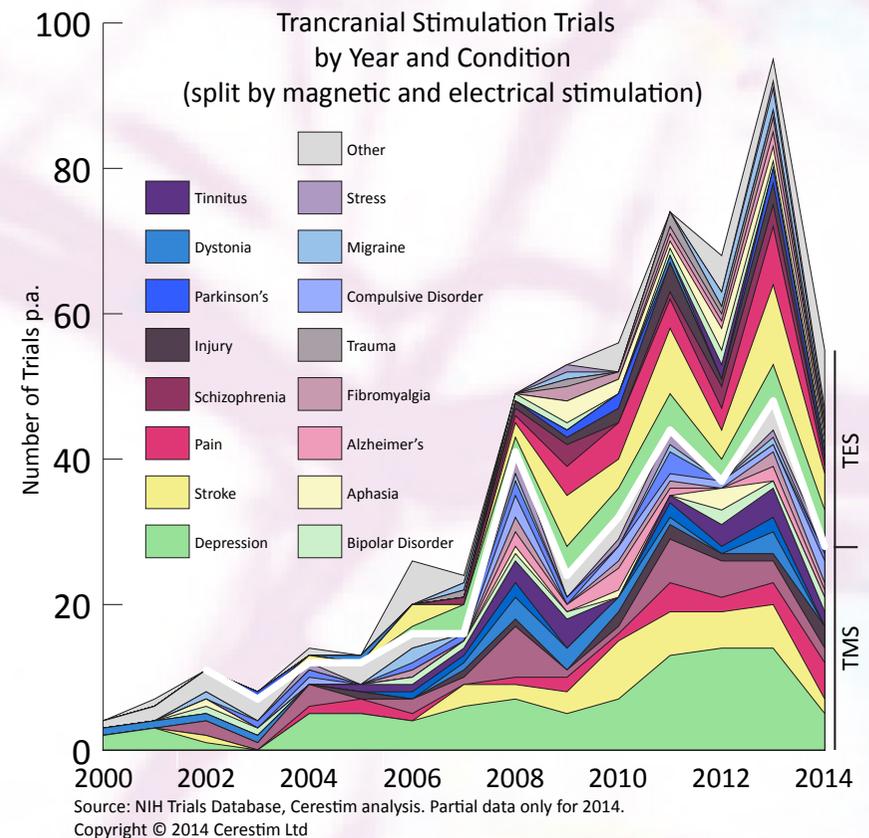
Why transcranial stimulation? The majority of the CNS market is either underserved or unserved entirely. Neurostimulation offers a new therapeutic avenue with better side effect profiles and broader patient population applicability than drug therapies.

The Product

Cerestim has developed a platform technology called Neuro360™, an innovative alternating current transcranial stimulation device. Unlike direct current stimulation and transcranial magnetic stimulation devices, Neuro360™ is much smaller, cheaper and portable.

Proof of concept for the technology has already been demonstrated in the literature. Key papers include:

- Loo et al. (2012) *Br J Psychiatry* 200(1):52-9 (RCT, 64 patients)
- Brunoni et al. (2013) *JAMA Psychiatry* 70(4):383-39 (RCT, TCS vs. Sertraline, 120 patients)
- Blumberger et al. (2013) *Curr Psychiatry Rep* 15:368 (recent review)



Management Team

Director and CEO: Ian Harris

Ian is an experienced CEO in the life sciences industries. He has raised significant venture capital investment, developed innovative products, created successful sales and marketing strategies and taken products through CE marking and FDA 510(K) regulatory clearance. In particular, he was employed as CEO at Cambridge Cognition and through a number of product development, capital raising, personnel, and culture and process changes he put it on a strong footing and a renewed growth trajectory in preparation for its 2013 IPO.

Founder and Lead Scientist: Dr Nir Grossman

Nir's research at the MIT Media Lab and Harvard's Beth Israel Hospital focuses on transcranial electromagnetic stimulation, in which external fields are used to modify the excitability of brain areas and entrain rhythmic synchrony among cortical neural pathways. Nir is a Wellcome Trust-MIT Fellow. He was awarded the British Biotechnology and Biological Sciences Research Council Enterprise Fellow prize which he conducted at the laboratory of Christofer Toumazou at the Institute of Biomedical Engineering at Imperial.

Director: Professor Alan M. Palmer

Alan has formed or co-founded six biotech start-up companies. He is presently a director of Cerebroscience, MS Therapeutics Ltd, One Nucleus and the British Neuroscience Association. With over 100 peer-reviewed papers to his name, his scientific research has had a high impact particularly in the study of dementia. Alan is visiting Professor at University College London and the University of Reading and Life Science Entrepreneur in Residence at the University of Bristol. He was voted London Biotechnology Network Entrepreneur of the Year in 2005.

Director: Dr Jill Rasmussen

Jill is the Royal College of General Practitioners (RCGP) Clinical Champion for Dementia and Chair of the RCGP learning disability Group. She is a primary care clinician at the Moat House with a special interests in psychiatry and neurology. Jill has worked in the pharmaceutical industry internationally with responsibility for the development of new drugs for psychiatry and neurology.

Chairman: Galvin Mould

Galvin is an experienced Chairman and Non-Executive Director with international sales, marketing and general management experience in medical device companies. He has been Chairman and/or Director of a number of Imperial College spin-outs and is also Chairman of Medicina Holdings, a Business Growth Fund medtech business.

Founder and CTO: Alan Ambrose

Alan is a software architect and product designer with a long history and successful track record in software design and architecture. He was a director and CTO of Credit Market Analysis, now owned by S&P Capital IQ and is a business angel to a number of technology ventures. He is a graduate of Oxford, Harvard, Imperial and the Royal College of Art in Engineering, Management and Design, respectively.

Founder and Director: Nick Davies

Nick is a software-as-a-service (SaaS) and cloud services specialist and founder and CEO of NJ Technologies, a dental SaaS provider. He is a graduate of Imperial's bio-engineering programme and has been involved in Cere~~s~~tim since its inception.