



August 2013

Bipolar Disorder Research Feedback

Letter from Principal Investigator

Prof Raj Ramesar

We would like to thank all our participants in this research project, because without your participation our research would not be possible. Thanks to your involvement, we continue to do important research on Bipolar Disorder with collaborations here in the Department of Psychiatry (at UCT), as well as leading researchers, internationally.

For patients and their families, research is never fast enough. However, what this feedback highlights is the value of continued interaction with research recruits, in order to let you know of local and international developments in research. In some instances we will highlight other research projects e.g. our work on 'blindness disorders', or 'cancers' to provide perspective of how long term research has and continues to produce benefits for those involved with the research.

Mindfulness Based Cognitive Therapy (MBCT)

Mindfulness is an innovative approach that combines the practice and clinical application of mindfulness meditations with the tools of cognitive therapy. This serves to acquaint patients with the characteristic cognitive and emotional patterns of mood disorders, while simultaneously inviting them to develop a new healthier relationship to these patterns.

In 2010 we contacted some individuals on our database to take part in a study which aimed to study the effects of mindfulness training on a Bipolar cohort and whether this could be of benefit to them. An MRI was done before and after the 8 sessions with a clinical psychologist. An MRI is a safe and painless test that can provide detailed pictures of organs inside the body. It uses a strong magnetic field and radio waves to create pictures on a computer of example, your brain in this instance. The results have just been published and the data suggests that MBCT improves mindfulness and emotion regulation and reduces anxiety in bipolar disorder.

To view the papers generated by this project you can access them from our website. <http://www.humangenetics.uct.ac.za/research/neuropsychiatric-disorders/bipolar-disorder/publications/>



Division of Human Genetics Mission

Statement:

The Division of Human Genetics undertakes research into inherited disorders which are a major cause of childhood handicap in the populations of South Africa. These include genetic conditions which cause blindness and neuromuscular disease. Our investigations include clinical, genealogical and laboratory molecular studies.

The projects interlock with our out-reach genetic clinics and our aim is to bring the benefits of these service-orientated developments to all sections of the community.

PHARMACOGENOMICS

Lithium Side effect Study

If you have bipolar disorder, you may know that the medications used to treat it can have different effects on each patient. You also know that finding the right medication/s for you is mostly a process of trial and error, a frustrating process that is often hard on both patients and their families. This study is being done to find out if there are genes that influence whether patients with bipolar disorder benefit from a particular medication.

The purpose is to identify genes that affect the susceptibility to side effects of lithium, a medication commonly used for bipolar disorder. The ultimate goal of this research is to develop a test that would help doctors know which medication has the best chance of helping patients—without the trial and error.

Preliminary results indicate that variants in the genes *AKT1*, *ARRB2* and *PPARGC1A* may have an influence on the severity of side effects, such as nausea, weight gain and skin problems that some patients experience while on lithium treatment.

We would like to thank members of our Bipolar cohort who have participated in this study.

Next Generation Sequencing and Bipolar Disorder

Exciting advances in technology have allowed scientists to sequence all the nuclear DNA in an individual's cell (also known as the genome) at a relatively affordable cost. This has enabled the move away from the traditional "candidate gene approach", which limited us to investigating a specific number of genes, to consider a more global genetic view, in what is known as Next Generation Sequencing (NGS). Using this technology, we have sequenced the entire genomes of 4 affected individuals and 1 unaffected relative, of the same

family, from our research group. Because of the vast size of the generated sequence data (in the order of terabytes), analysis and storage of the data has been challenging and we have had to work extensively with our computational biology colleagues at the University and we hope to report on the first results of this study by March next year. As the field of Next Generation Sequencing is still in its infancy, we hope to discover new ways of analysis and develop a deeper understanding of the genetic basis of BPD.

Schizophrenia Project

We've embarked on an extensive USA-National Institute of Health-funded project which aims to determine the genetic basis of Schizophrenia in Xhosa speaking individuals.

This project in collaboration with the Dept. of Psychiatry and Mental Health will be the first project to use modern genomic sequencing approaches to study Schizophrenia in a population of sub-Saharan African lineage.

If successful, our approach will identify genes important for the disorder in populations worldwide and foster the development of gene discovery research for neuropsychiatric disorders in Africa. These genes will stimulate future efforts to develop more effective treatment and preventive strategies.

Useful Websites and Resources

- www.humangenetics.uct.ac.za/
- www.rcpsych.ac.uk/
- www.patientslikeme.com/
- www.nimh.nih.gov/





Vincent Van Gogh is reputed to have suffered from Bipolar

*Creativity
is closely associated
with Bipolar
Disorder
Some famous names
associated with BPD*

*Charles Dickens
Vincent Van Gogh
Beethoven
Sylvia Plath
Marilyn Monroe*

*Interesting book on this
topic: Manic Depression
and Creativity by Hersh-
man and Lieb 1998*

Gene therapy

On 2 November 2012, GLYBERA was the first **human** gene therapy drug to receive long awaited market approval in the United States. This important milestone is expected to open the door to additional gene therapies for the treatment of many diseases.

But what is gene therapy?

Gene therapy is the insertion of genes into an individual's cells and tissues to treat a hereditary disease. A non-functioning gene is replaced with a functioning one. This is an extremely complex procedure and there are numerous projects worldwide hoping that this new therapy will be able to end the suffering of patients.

In the Division of Human Genetics we have the Retinal Disease project which is researching retinal blindness. Together with Retina South Africa they are committed to alleviating the suffering in this cohort of patients. Retina SA is also trying to bring clinical trials to SA, for patients with single gene disorders leading to blindness.

But what does this mean for Bipolar patients? As Bipolar disorder, in contrast to retinal disorders, is a complex disorder, no single gene has been identified as a causative factor, but research is on-going worldwide in this sector. So for now, gene therapy in Bipolar Disorder is still a long way off.

Bipolar Support Groups

WESTERN CAPE

Western Cape Bipolar Support Association - Jay 072 424 1812
or Michelle 082 412 4448
Email: info@bipolar.co.za
Kleinmond
Johan 028 271 5476
Worcester
Francis Crouss 082 647 8883
George
Reda 083 560 6017

GAUTENG

Johannesburg Bipolar Support Association-
Linda Trump 011 485 2406
West Rand
Marie Du Toit 082 781 3607
Randburg
Karen 082 339 1323
Faerie Glen
Francois 082 990 7074

KWAZULU NATAL

Durban Westville
Sr Pillay 031 265 0911(Ward D)
Kwa Dukuza
Anna Govender 032 947 2381/084 455 4433
Pietermaritzburg
Claire 033 345 2041/ 084 240 9610
Durban-(family members)
Mrs d'Unienville 031 469 4668

MPUMALANGA

Witbank
Gwen 013 6925388
Ermelo
Judy Grey 076 474 6994 / 017 811 1919
Heidelberg
Avril 083 226 6679/016 341 6779

LIMPOPO

Thohoyandou
Mrs Sinyosi 072 347 1091

EASTERN CAPE

Butterworth
Harty Osbourne 073 852 0696

Source-www.bipolar.co.za

Projects 2013

Phd Project 2013
**Analysis of Genetic Overlap
in Two Psychiatric Phenotypes**
Human Genetics Student-
Shareefa Dalvie

Masters Project 2013
**Genetics of Lithium Response
in a South African Cohort**
Human Genetics Student-
Reinette Weidemann

Collaborations
**Presentation and Risk Factors In
Psychobiology of Psychosis**
Dr Henk Temmingh

**Structural and Functional Brain Abnor-
malities after Methamphetamine Abuse**
Anne Uhlmann

**Cortical Inhibition
and Attentional Modulation**
Dr Fleur Howells

**Genetic Basis of Schizophrenia
in a population of Sub-Saharan
African lineage**
Collaboration with NIH and the Dept of
Psychiatry and Mental Health

Bipolar Disorder Project

The Bipolar research project, based in the Division of Human Genetics at the University of Cape Town (UCT) was first approved on the 30 May 1996. The UCT Ethics Research Committee approved the research. The focus was on the molecular basis of Bipolar Disorder. The project was planned over several distinct phases:-

Phase 1: Clinical archival and confirmation of clinical diagnosis

Phase 2: Family tracing/Genealogical study

Phase 3: Canvassing families and sibling pairs for blood samples for DNA.

Phase 4: DNA Genotyping studies

Recruitment to date

No of Families-250

No of Individuals-948

Research Papers published-33

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Bipolar Research Team 2013

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and Sr G.Benefeld



Change of Details

If you have changed your address, telephone number, or email address, please send it to us as soon as possible. We will be sending feedback as well as informing you of interesting projects in the future.

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