BRAINWAVE

VOLUNTEER SUPPORT NEWSLETTER

SCHIZOPHRENIA RESEARCH INSTITUTE

PREVENTION, CURE.

2012 Edition

Six years on – best still to come

It sounded such a simple idea. Ask people with schizophrenia to provide information, store it on a database and invite scientists to use the data in their research. But in the words of Professor Vaughan Carr, the man behind the idea, "It turned into a long hard slog".

What volunteers see when Assessor, Dominique Rich displays the Clinical Assessment System.

Dr Carmel Loughland, who was involved from the start, remembers the challenges. "We did revolutionary things, we had no template, we learnt as we built it and getting people with schizophrenia to be part of it was unheard of, but we did it".

Now, six years after he began knocking on doors for funding, overcoming the mammoth task of gaining ethics approval, and building a team of specialists to collect and collate the data, Professor Carr knows Australia's first Schizophrenia Research Bank is a success.

"We have more than 2,300 volunteers who've supplied samples and data, the Bank has supported 70 projects, including one international project and Bank-supported research has resulted in the publication of 32 journal articles." said Professor Carr, CEO, Schizophrenia Research Institute. "The results demonstrate the Bank's significant contribution to our knowledge of schizophrenia."

While the Bank was launched in 2006, its beginnings go back to 1996. Professor Carr saw the need for a central resource where scientists could access clinical data, MRI brain scans and genetic material collected from people with schizophrenia as well as those who didn't have the illness.

When asked about the difficulties of getting the Bank started, Professor Carr leans back in his chair, folds his arms and gives a wry smile; "We went into it not knowing how difficult it would be getting the funding. It meant going back again and again through the application process and having to get approval from 22 ethics committees. It was a long and painstaking process to train people to carry out the clinical work and engage volunteers."

The National Health and Medical Research Council (NHMRC) finally provided a $1.75m grant to start up the Bank, with further financial support from private backers – the Pratt Foundation, The Sylvia and Charles Viertel Charitable Foundation and Ramsay Health Care.

Pressed to name only one success of the Bank, Professor Carr nominates a study involving a regulatory gene, MIR137, associated with poor cognitive function and negative symptoms. He says it was important because the discovery demonstrated the potential of the Bank to uncover the different subtypes that make up the schizophrenias. (Significant Contributions, page 3).

Having firmly established the Bank as a vital resource providing genetic, neuroanatomical, cognitive and clinical information, the task now is to gain further funding to continue its work. The Bank is also set to become an important part of a national network of brain and mental health bio-banking facilities, which will further cement its role in schizophrenia research in Australia.

But the people who started the Bank are confident its greatest achievements are still to come. "Its real success will depend on what others do with what we started," says Professor Carr. The Bank's Manager, Dr Carmel Loughland agrees; "I'm sure the right people will come along as it evolves."

Donations also needed

The great contribution made by volunteers is a vital part of our research work but research only happens with financial support.

Have you considered donating?
If you would like to help contact us;
T: (02) 9295 8688
E: contact@schizophreniaresearch.org.au
or visit www.schizophreniaresearch.org.au and click on the donate button.

In This Issue

Trumping schizophrenia

It was just a simple card game with a pretend reward of $50 but it has the potential to provide real rewards for people with schizophrenia.

The game was part of a pioneering study which examined the ventral striatum, a critical part of the brain's reward centre responsible for much of our learning and motivation.

Conducted at the Schizophrenia Research Laboratory at the University of New South Wales, the study involved 32 volunteers, (16 had schizophrenia) who learned a card game that led to an expected reward of $50.

However, when the volunteers later played the game in a magnetic resonance imaging scanner, (MRI) the researchers changed the predictability of the game by altering the cards that resulted in the reward they expected to get.

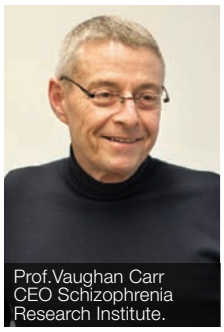
"People who didn't have schizophrenia were able to change and update their brains according to the new information but those with schizophrenia were not able to tell the difference between expected and unexpected rewards", said Dr Richard Morris, lead author and study designer.

"While some 50 to 60 percent of our daily activities are habitual, for the rest of the time we have to make choices to achieve new goals but people with schizophrenia have difficulty deciding what is beneficial for them and what is not."

The findings suggest new therapies which target the brain's reward centre could help improve the daily lives of people with schizophrenia by increasing motivation and helping to achieve new goals.

Dr Morris said medications have already been developed in animal trials that restore their goal direction processes but further studies are needed before clinical trials involving humans taking such medications can be conducted.

"You are still needed".



Prof.Vaughan Carr
CEO Schizophrenia Research Institute.

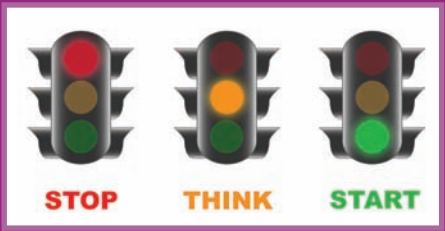
Dr Richard Morris best sums up the feelings of researchers who've been involved with volunteers at the Australian Schizophrenia Research Bank. He says that the people he got for his pioneering study (above) were a great group, interested in his project and generous with their time. His comments don't surprise me at all because it's something I hear all the time. Research work can be time consuming and intensive but as researchers, one of the things we try not to lose sight of is the effort put in by volunteers.

When we first started calling for volunteers for the Bank, we were so successful we had many more volunteers than staff. The response showed that people readily appreciated the important role research has in trying to prevent and cure schizophrenia.

It's very difficult to recruit volunteers with schizophrenia in sufficient numbers to enable scientists to answer pressing questions. Hallucinations and delusions can make it difficult for people to understand sufficiently to consent to research. Apathy, indifference and the leaden quality of negative symptoms can sap motivation to do anything, let alone participate in research. Confused thought processes and cognitive impairments can cause willing volunteers to forget their appointment times or attend at the wrong location or on the wrong day.

What type of people do we need? There's no type, just a willingness to spend some time in an interview room, laboratory or scanner, and an awareness that everyone can make an important contribution to the advancement of knowledge that may lead some day to better treatments and opportunities for prevention.

How IS the brain wired?



Dr. Matt Hughes clearly remembers the volunteers who took part in his study, 'Stop-signal response inhibition in schizophrenia'.

In the group of 23, there were people with PhDs while others had multiple degrees. They all eagerly threw themselves into the study that looked at what parts of the brain respond to new, meaningful information that tells people to stop doing an action while in the process of doing it.

Every day we often have to quickly change our behaviour when we receive new information but people with schizophrenia have difficulty doing so, impairing their ability to control their thought and behaviour.

This difficulty has even been observed in children who have at least one parent with schizophrenia but do not have schizophrenia themselves; hence it may be a risk marker of developing schizophrenia.

The task of the volunteers, who included people without schizophrenia, was to press a button when they saw the letters O and X on a monitor, but further, not to press the button if they heard an audible tone sound just after the letters were presented on the screen.

The study showed that when people with schizophrenia heard the sound, they were considerably slower in processing the information to countermand the first visual signal to press the button. Dr. Hughes says the data suggest that the cognitive system of people with schizophrenia contains a processing bottleneck that impairs their decision making abilities, making it difficult for them to easily change their thought and behaviour. People without schizophrenia take this for granted.

Building on this first study, Dr Hughes is now exploring this difficulty using magnetoencephalography (MEG) at Swinburne University of Technology in Melbourne where he works as a Post-Doctoral Fellow.

The study was conducted at John Hunter Hospital and Newcastle University using volunteers from The Schizophrenia Research Bank.

A protein, a mouse and memory recall – their role in research.


Prof. Assen Jablensky

What's the connection between a mouse discovered 60 years ago and 437 people from the Australian Schizophrenia Research Bank?

Answer: the mouse gave its name to a protein that was at the centre of a unique research program involving the Bank's volunteers.

The study looked at the role of Reelin, a protein that is part of a network of genes and proteins that guide and regulate the correct positioning of cells in the brain during development. The Reelin name comes from the Reeler mouse which was found to have a deficiency of the brain protein.

Reelin not only plays a role in the early stages of the brain's development but continues to work in the adult brain. It has been implicated in brain disorders, including schizophrenia but previous research that examined only Reelin's part in any disorders has been inconclusive.

For the first time anywhere in the world, a group of Australian researchers, led by Professor Assen Jablensky at the Centre for Clinical Research in Neuropsychiatry, University of Western Australia, studied Reelin along with four other genes and encoding interacting proteins, which are believed to play a role in various psychiatric and degenerative disorders, such as Alzheimer's dementia. They wanted to find out how they worked together in the development of schizophrenia.

The volunteers carried out an extensive array of neurocognitivite tests targeting memory, attention and other aspects of cognitive function.

The study found that, while the individual genes have distinct roles in brain development, and in memory and learning in the adult, in schizophrenia they form a veritable molecular 'hub' with an impact on a particular, cognitively impaired variant of schizophrenia.

Interestingly, the study found that the same genetic variants were also associated with age-related memory decline in a large group of normal aging people, supporting a previous assumption that schizophrenia involves premature aging of the brain.

The findings open up the need for a larger population study.

nectar

'Sweet' news for researchers

Researchers will soon be able to find it easier to access the Australian Schizophrenia Research Bank's database and computer systems.

Under a project funded by the Federal Government, a team from the Schizophrenia Research Institute is working with Intersect, a specialist organisation that developed the database. As part of the National eResearch Collaboration Tools and Resources, NeCTAR, for short, the project will streamline and automate the systems underlying the Bank.

Being able to get easier access to the unique and valuable information and samples held in the Bank will enable researchers to better understand and treat schizophrenia.

A family commitment to volunteering

It would be easy to describe Simon Swinson as an old-hand volunteer; after all, he's been involved in about ten research projects. He describes his first experience as "a bit scary" because he was asked to go inside an MRI scanner but he's done so many of them since that he's perfectly relaxed. Simon's latest study involving cognitive functioning was "good fun".

The 49 year old from Newcastle, who was diagnosed with schizophrenia when he was 35, has good reason for making a long-term commitment to the Schizophrenia Research Bank. He has three relatives with schizophrenia; the latest his niece, was diagnosed at the age of 16.

Simon didn't need to think twice about taking up the call for volunteers. "It's important to take part in research because that's where the future for people with schizophrenia lies and where change will come from".

He's pleased with the contribution he's made and says he's ready whenever he's needed again.

Significant contributions to research by the Australian Schizophrenia Research Bank

- Discovery of a new gene (MIR137) that is particularly associated with a subtype of schizophrenia characterised by cognitive deficits and severe negative symptoms (flat emotional expression, apathy, withdrawal, etc).
- Discovery of a family of brain-enriched microRNA genes on chromosome 14q that are expressed differently in schizophrenia.
- Discovery that the long (axonal) fibres that connect nerve cells at a distance exhibit disruptions in their pattern of connectivity, with connections being more sparse and 20% less efficient in schizophrenia.
- Confirmation that two genes on chromosome 6p involved in mitochondria function are also associated with cognitive deficit in schizophrenia.
- Data from the Bank used to investigate the relationship between schizophrenia and adverse childhood events, such as parent or sibling loss, divorce or separation, poverty and various forms of abuse.

Volunteers needed for current studies.

If you are interested in any of the following studies, contact the Bank's Central Office on 1800 639 295 to find out if you are eligible to take part.

A positive experience to help others

Australians may be encouraged to agree to donate their organs after a new survey found that most families were satisfied with their decision to donate their next-of-kin's brain following coronial autopsy.

The study of next-of-kin-by the New South Wales Tissue Resource Centre, found that 98 percent of respondents were satisfied with the decision and most - 74 percent - were not unhappy when they received the call asking them to consent to donate their relative's tissue.

When asked the main reason for their donation, 66 percent wanted to help others or help research, while 24 percent said they were aware that their deceased relative had wanted to be an organ donor or they believed it was something he or she would have wanted.

The researchers said their findings reflected previous studies that found relatives who agreed to organ donation did not regret their decision, and in fact many derived comfort from the knowledge that their decision helped others.

The New South Wales Tissue Resource Centre, which is supported by the Schizophrenia Research Institute, collects and distributes central nervous system tissue to researchers studying disorders of the brain, including schizophrenia.

Current studies list

PROJECT	ASKED TO DO	WHO'S NEEDED	WHERE
Imaging genetics in schizophrenia and bipolar disorder: Adjudicating neurocognitive endophenotypes	Two visits: Cognitive assessments – questionnaire. Provide saliva and blood samples. MRI.	People with schizophrenia, people with bipolar disorder	St Vincent's Hospital. Darlinghurst or Neuroscience Research Australia. Randwick
Pilot study to assess an olfactory challenge test as a possible biomarker in schizophrenia	One visit: Questionnaires, including all medications and current symptoms. Low dose nasal spray. Smell identification test. Audio test.	People with schizophrenia	Hunter New England Area Health Service Newcastle
Auditory predictive modelling in schizophrenia and healthy controls	One or two visits: Hearing test. Clinical interview. Computer task. Recording of electrical brain potentials in response to sounds.	People with schizophrenia	University of Newcastle
Impaired anticipation of sensory events in schizophrenia	Two visits: Hearing test. Clinical interview to exclude history of psychosis. Computer task. Questionnaire. Reading and memory test. Recording of electrical brain potentials in response to sounds.	Relatives of people with schizophrenia	University of Newcastle
Social and non-social cognition in schizophrenia	One visit: Computer tasks. Verbal task. Questionnaire. Interview.	People with schizophrenia	Macquarie University Sydney
Migration and acculturation in schizophrenia	Questionnaire.	People with schizophrenia	By mail
The experience of hearing voices	One visit: Interview.	People with schizophrenia	Macquarie University
Pilot study of a healthy lifestyles low intensity telephone intervention for cardiovascular disease risk reduction among people with severe mental disorders: Healthy Lifestyles LITE	Telephone assessment.Telephone coaching sessions and internet based education.	People with schizophrenia	By telephone
Chronic schizophrenia and neurodegenerative diseases – a social cognition perspective	One or two visits: Interview Questionnaires. Viewing videos.	People with schizophrenia and relative or spouse	Royal Melbourne Hospital
Social judgement and schizophrenia	Memory and cognitive tests, computer tasks. Interview.	People with schizophrenia	Macquarie University
Determining the consequences of ventral striatum dysfunction in schizophrenia	Computer tasks for cognition and memory. Questionnaires. MRI.	People with schizophrenia	Brain and Mind Research Institute, Camperdown Sydney