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## The Cambridge Centre for Neuropsychiatric Research



The Bahn Laboratory

'I have to succeed now. If not, all guns will be pointed'

Anna Fazackerley

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Anna Fazackerley meets an outspoken young scientist whose passion for studying mental illness at a molecular level is stirring up the research establishment and winning 'eccentric' backers



It was the Christmas holiday, but Sabine Bahn could not face getting out of bed. Her first major research funding application had been turned down by the Medical Research Council for being overly ambitious and too risky. The feedback was particularly galling - "great candidate, shame about the project".

But, to some, her ideas clearly had great potential. While Bahn was hiding under her duvet, Sir Keith Peters, the famously bullish regius professor of physic at Cambridge University who had taken Bahn under his wing, called Sir George Radda, chief executive of the MRC, to demand to know why his council had made such a mistake.

If one of her colleagues had not coaxed her out of bed after days of wallowing, Bahn might have given up. But she returned to work and persisted with her ideas, and the value of her research was recognised. Two years on from her painful rejection, she stepped off a plane from the US with a cheque for \$1 million from a man who believed in backing "wild horses".

Bahn, 39, a psychiatrist by training, has set up the Centre for Neuropsychiatric Research at Cambridge with the ultimate aim of developing diagnostic tests and therapeutic agents for schizophrenia and bipolar affective disorder.

Bahn's is no casual mission. She grew up in Germany with a father who suffered from

bipolar disorder. She is determined to raise the standard of research in this area and to bring mental disorders out of the shadows. "I want to address the stigmatisation," she says. "As a child, we were not allowed to talk about it. My father just disappeared into the house. That is how it still is now."

"This is not a choice: it is a vocation. I fell in love with this problem, and now I can't leave it alone. I work very hard. It is all-consuming."

Bahn's research focuses on the patient, and she gets regular reminders of her ultimate goal from the weekly clinics she runs for bipolar sufferers and heroin addicts. "I go away glowing because you can make a difference with so little," she explains. "You can see someone starting to get their life back."

She approaches her work as she does everything else, with refreshing frankness. She admits to a certain admiration for her heroin addict patients, in whom she recognises the same entrepreneurial spirit that drives her. "They cannot just wait for gratification. It is a full-time job funding and satisfying a heroin addiction. If you put someone on methadone, what do they do all day? They were really busy when they had to find their drugs."

Bahn is keen to shake up neuropsychiatric research. She is frustrated that little is known about the molecular or genetic basis of mental illnesses, arguing that the discipline remains descriptive and woolly. "Hopefully at some point there will be a paradigm shift, but at the moment it is a rather 19th-century approach to science," she explains. "Everyone has a pet hypothesis that they defend. But if you set out to try to prove a hypothesis, you are biased when you interpret the data."

The big-name scientists at the centre will not cow her, she declares.

"Established researchers get many of the big grants, but by (the age of) 50 or 60 you are often already stuck in your hypothesis. You may no longer be looking at things with fresh eyes."

Such iconoclasm means that Bahn does not slot neatly into the UK research system. As a colleague joked to her: "They're trying to press you into a mould, and you stick out at all ends."

Yet this is exactly what endeared her to her American benefactor - Theodore Stanley of the Stanley Medical Research Foundation. Stanley's son was initially diagnosed with schizophrenia but is now recognised as having bipolar disorder. Stanley is investing millions of dollars in the search for a cure for his son and others like him, and he is relying on Bahn to push the science in the direction of diagnostics and drugs.

Bahn describes the day, not long after the MRC rejected her funding application, when she was invited to present to this "eccentric" foundation. "I gave a talk and I was desperately nervous. But afterwards, all the people were really impressed. That was quite something."

That "something" turned into a rolling grant - a cheque for \$500,000 (£288,000) twice a year. Most striking, this was an investment in Bahn herself and not in any particular research project.

"It's an enormous thing," she laughs. But winning this extraordinary grant had a similar effect to not getting that MRC grant years before. "I was so shocked I was almost depressed afterwards, and I wanted to stay in bed. I felt so responsible - I had to really achieve. They trusted me before I had really achieved anything."

Now, however, Stanley's loyalty is a huge incentive. "I work much, much harder because they have invested so much faith in me," she adds.

Bahn flew back from her US trip with postmortem brain samples in her luggage that were perhaps more important than the cash. The foundation has access to a bank of 700 brains that belonged to patients with schizophrenia and manic depression, as well as many samples from twins. "(Stanley) has all these samples and he knows each relative. Yet he gives them to me to use. That is a faith relationship. I feel accepted as a friend," she says.



With the help of the Stanley Foundation, Bahn hopes that her work will reach the clinic in eight years. A key mission is to find new ways to diagnose schizophrenia and to identify people who are at risk. "In schizophrenia, parents often notice their adolescents are not quite right.

They are more withdrawn and moody," Bahn explains. "But is this just teenage hormones or something more sinister? All we can do at the moment is wait until they become overtly psychotic."

Bahn dreams of developing a biochemical test that could put an end to the waiting and arrest the disease in the early stages. Biomarkers could also mean more targeted treatment for schizophrenia sufferers, instead of the drug lottery that they face now. They would allow doctors to adjust schizophrenics' medication in the same way that diabetics are able to monitor their insulin levels. "At the moment, the drugs are too much for some and too little for others. And there is a range of drugs, but no rule for what you use first - it is trial and error, although it is also dictated by resources," she explains.

Bahn's team works towards these goals in a startlingly pink laboratory in the middle of the typically grey Institute of Biotechnology at Cambridge.

When Bahn moved in, she commandeered a willing research student who helped her scrub the "filthy" floors and paint the drab walls in her favourite colour. She does not believe in conforming, even when it comes to the research infrastructure.

In the lab, the walls - or more likely Bahn herself - seem to have a remarkable effect. People are busy, but they are smiling.

Nonetheless, Bahn's non-traditional approach must rankle in some corners of academe. "I

do not have the submissive gene. I am very outspoken. I sometimes say things in a very clear way and people are offended. Then I wake up and worry about it in the middle of the night," she admits. "I know that when my hand goes up at a conference, some people look as though they want to hide."

However, she has no illusions about her position. As a young female researcher, she has set the bar intimidatingly high.

"It is dangerous, of course. I have to be so damned successful now," she smiles. "If I am not, all guns will be pointed."

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