

Iris Sommer—unravelling biological mechanisms of psychiatric disorders

When Iris Sommer retires, she wants to leave behind a new treatment for psychiatric illness that really makes a difference. “I realise this is easier said than done,” she tells *The Lancet Psychiatry*. “In neurology, we understand underlying mechanisms so much better than before. But in psychiatry, we are still trying to understand even the basic mechanisms behind many conditions.”

Now director of the Research Institute of Brain and Cognition at University Medical Center Groningen, Groningen, Netherlands, Sommer’s career has always crossed the boundaries between neurology and psychiatry “I began doing research in the first year of medical school. I always like to ask why, rather than just learn the facts” she says. At medical school in Amsterdam she worked on research projects on depression in patients with Parkinson’s and Alzheimer’s disease.

Her first clinical work was with patients with Parkinson’s disease, but her fascination with psychosis made her choose to become a psychiatrist, and she trained with Rene Kahn (now chair of psychiatry at Mount Sinai, New York, NY, USA). Her PhD and much of her clinical work since has been on understanding schizophrenia. Her first publication as a PhD student was in *The Lancet*, reporting on the phenomenon of cerebral mirror-imaging, a consequence of monozygotic twinning. During her PhD was also when she and her husband (Robert Schoevers) had their two children. “I found that research was much more flexible than clinic work with a young family” she says.

For much of the last two decades she studied auditory hallucinations and established a “Voices Clinic” at the University of Utrecht, Utrecht, Netherlands to help these patients. Her team discovered that when patients hear voices, there is language activity mainly in the right hemisphere, in contrast to normal language, which involves mainly the left. More recently, in collaboration with Kenneth Hugdahl at the University of Bergen, Bergen, Norway (where she was a visiting professor), they discovered that a specific area of the brain activates just before a voice is heard, and then deactivates again shortly before the voice stops. “It’s almost like a switch,” Sommer explains. “We are currently writing up the results and looking at ways to target that switch, to turn the voices off.” Simultaneously, she performs clinical trials to optimise treatment for people with schizophrenia, with one recently published in this journal.

In 2016, Sommer’s career changed direction when she took up a post at the Department of Biomedical Sciences at the University Medical Center Groningen. The facilities in this new location allow her to study cellular

and molecular brain mechanisms that might underpin psychiatric disorders. “Many mechanisms could play a role in multiple psychiatric symptoms across different diagnoses. When investigating cellular and molecular mechanisms, it makes sense to broaden the scope to also include bipolar disorder, unipolar depression and even neurological diseases like Parkinson’s and Alzheimer’s disease.”

Her team is now studying how the microbiome might influence cognition, which could be relevant for various psychiatric and neurological disorders. An ongoing study is analysing the effects of providing nine bacterial strains that improve gut barrier function for patients with bipolar disorder or schizophrenia. “The microbiome is something we can manipulate easily” she explains.

Sommer’s team, including PhD student Janna de Boer, is developing a biomarker based on the quantitative analysis of spontaneous speech. Such a biomarker could facilitate diagnosis of psychiatric disorders and alert patients to relapses. “The acoustics, linguistics, grammar and prosody all change when people develop a psychiatric disorder. Specific speech characteristics provide information about the type and severity of that disorder” explains Sommer.

She also initiated and leads the nationwide HAMLETT consortium, a large treatment study for people with a first episode of psychosis, who are followed up for 10 years. This consortium not only yields information on the clinical course of psychosis and the influence of antipsychotic medication, but it also unites most psychosis centres in the Netherlands, providing a close circle for implementation of new findings.

Outside her lab she is a bestselling scientific writer, now finishing her fourth book on different aspects of the brain and brain disorders. A book reviewer called her the Dutch Oliver Sacks, an author that she admires and with whom she wrote a case report for *The Lancet*.

“Iris is one of the most creative and knowledgeable enthusiastic persons I have ever met. She is the queen of research on hallucinations,” says Hugdahl. “Her enthusiasm and positive approach to science has deeply impressed me, but perhaps equally much the way she cares for people. When my wife passed away three years ago, Iris invited me to spend time with her research group because ‘we need to cheer you up’, which she did by inviting me to her home and discussing science while walking her dog in the evenings.”

Tony Kirby



Helle Vrijens

For more on Iris Sommer’s PhD publication see *Lancet* 1999; 354: 1445–46

For more on brain processing of auditory hallucinations see *Brain* 2008; 131: 3169–77

For more on schizophrenia treatment research see *Articles Lancet Psychiatry* 2018; 5: 797–807

For more on spontaneous speech as a biomarker see *NPJ Schizophr* 2020; 6: 10. DOI:10.1038/s41537-020-0099-3

For the Case Report with Oliver Sacks see *Lancet* 2014; 384: 1998