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Camilo de la Fuente-Sandoval: Glutamate as biomarker of treatment response in early-stage schizophrenia

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Dr. Camilo de la Fuente-Sandoval, honored with the Schizophrenia International Research Society's prestigious 2024 Global Schizophrenia Award, has transformed early psychosis research through groundbreaking neuroimaging studies at Mexico's Instituto Nacional de Neurología y Neurocirugía (INNN). His pioneering MRI spectroscopy investigations in antipsychotic-naïve individuals experiencing their first episode of psychosis have profoundly influenced our current understanding of the neurochemical alterations linked to psychosis onset and subsequent antipsychotic treatment. His Laboratory of Experimental Psychiatry has become a beacon for innovative schizophrenia research in Latin America, supported by prestigious funding from the U.S. National Institutes of Health, the Secretariat of Science, Humanities, Technology, and Innovation, UC MEXUS-CONACyT, and multiple Mexican scientific agencies. The Genomic Press Interview reveals how this distinguished scientist channeled personal experiences into scientific excellence, establishing comprehensive clinical programs that provide free care while advancing personalized medicine approaches. His seminal discoveries demonstrating elevated glutamate levels in the associative striatum of first-episode psychosis patients, which normalize after effective treatment, have opened new avenues for biomarker development and targeted interventions. Leading international collaborations including the ENIGMA Clinical High Risk for Psychosis Working Group, Dr. de la Fuente-Sandoval bridges translational neuroscience and global mental health, offering unprecedented insights into schizophrenia within resource-limited contexts. His visionary work combining neuroimaging, electrophysiology, cognition, and inflammation markers represents a paradigm shift toward precision psychiatry, inspiring a new generation of researchers across the Global South while fundamentally advancing our understanding of psychosis mechanisms and treatment response prediction.

Part 1: Camilo de la Fuente-Sandoval – Life and Career

Where were you born, and where do you live now?
I was born in Chillán, Chile. I live now in Tlalpan, a southern area of Mexico City.

Could you give us a glimpse into your personal history, emphasizing the pivotal moments that first kindled your passion for science?
My father was a doctor and conducted research in Chile, his home country. The abrupt journey to Mexico, for political reasons, cut this career short and was something that always stayed very present in me. Upon starting the psychiatry residency, I was captivated by the study of psychosis.

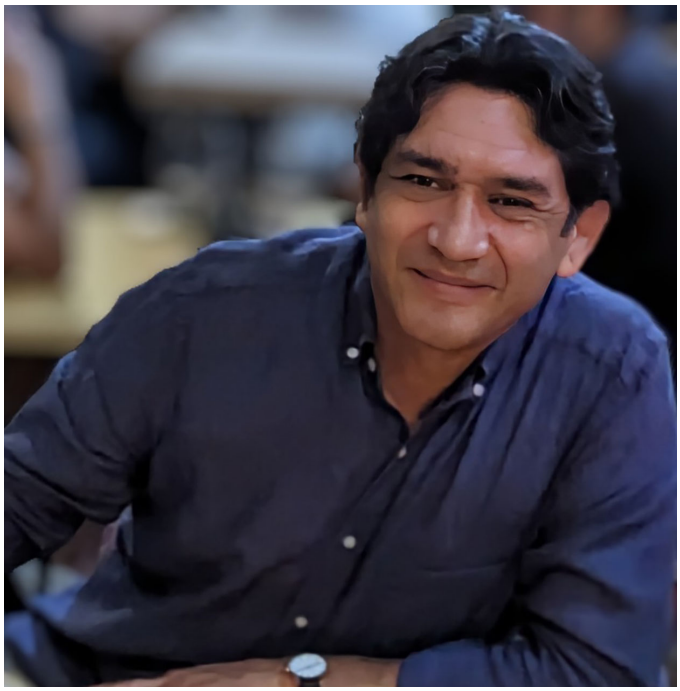

Figure 1. Camilo de la Fuente-Sandoval, MD, PhD, Instituto Nacional de Neurología y Neurocirugía, Mexico.

A fellow resident, Ariel Graff-Guerrero, had completed a master's in neurosciences before starting the specialty course. He was a vital guide during the early stages of my career as a researcher.

Please share with us what initially piqued your interest in your favorite research or professional focus area.
Since I started residency, patients with psychosis have captivated me.

We would like to know more about your career trajectory leading up to your most relevant leadership role. What defining moments channeled you toward that leadership responsibility?
After our first spectroscopy study in both clinical high-risk for psychosis subjects and first-episode psychosis patients, I was offered a position to start a lab here at the INNN. That was a big motivation to search for funding opportunities and start growing this incipient research group.

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What is a decision or choice that seemed like a mistake at the time but ended up being valuable or transformative for your career or life?
After my residency, I pursued a master's in science despite being given an opportunity for a clinical job. That decision was constantly coming back and forth, and I wondered several times if it was the right choice.

What habits and values did you develop during your academic studies or subsequent postdoctoral experiences that you uphold within your research environment?
Be focused on a specific line of research and focus on the fidelity of the gathered data.

Please tell us more about your current scholarly focal points within your chosen field of science.
The laboratory is focused on developing reliable imaging markers that could help clinicians decide the best treatment for the patient, rather than relying on trial and error in young people with psychosis.

What impact do you hope to achieve in your field by focusing on specific research topics?
Personalized treatment in psychosis.

What do you most enjoy in your capacity as an academic or research leader?
Do what fascinates me the most and get paid for it, without the need for a private practice.

At Genomic Press, we prioritize fostering research endeavors based solely on their inherent merit, uninfluenced by geography or the researchers' personal or demographic traits. Are there particular cultural facets within the scientific community that warrant transformative scrutiny, or is there a cause within science that you feel strongly devoted to?
Situated in Mexico City, a large metropolitan area with a population of 22 million but very limited mental health resources, the INNN has access to large numbers of early and late psychosis subjects for their local or collaborative research studies. Since my entry as a researcher at INNN in November 2006, a research program has been initiated focused on the study of patients with a first episode of psychosis (PEP), as well as patients with schizophrenia who have not received antipsychotic medication. In addition to the experimental psychiatry laboratory, a clinic was established in the outpatient department of the institute for the follow-up of these patients, run by psychiatry specialists who are members of the laboratory. On the other hand, in the emergency department of the institute, a study algorithm was established for first-time patients. In addition to routine laboratory tests, a head CT scan is performed, and, according to clinical judgment, a lumbar puncture is also performed. In case no alterations are found, the case is evaluated at that moment in the laboratory, and the patient is invited to participate in research projects. These projects include, among other measurements, neuropsychological tests and an MRI study, which can also help in diagnosing a secondary cause. All these studies are conducted within the first 24 hours of the patient's admission to the emergency department, ensuring the immediate initiation of treatment.

In the case series at INNN, it has been reported that around 8% of PEP patients who visit the emergency department are found to have a secondary cause (such as viral encephalitis or autoimmune or metabolic diseases) that triggers the psychotic symptoms. At that moment, they are referred to the appropriate services for targeted management. This provides the patient with comprehensive clinical care, at no economic cost, which is not offered in other care centers in the country.

Outside professional confines, how do you prefer to allocate your leisure moments, or conversely, in what manner would you envision spending these moments given a choice?
My family and my friends are the other part of my life to which I dedicate most of my time. I devote my time to not prioritizing work over the rest.

Part 2: Camilo de la Fuente-Sandoval – Selected questions from the Proust Questionnaire[1]

What is your most marked characteristic?
Try to help those who need medical care, even if it is not related to my specialty.

Among your talents, which one(s) give(s) you a competitive edge?
Persistence.

If you could change one thing about yourself, what would it be?
Concede. Letting non-important things go sometimes.

What is your current state of mind?
Interestedness.

What is your idea of perfect happiness?
Doing what you love with the people you love.

When and where were you happiest? And why were so happy then?
In preparatory school. No worries about the present nor the future, constantly hanging out with friends, being in love for the first time.

What is your greatest fear?
Dementia.

What is your greatest regret?
Not pursuing things that were once very important in my life.

What are you most proud of?
My kids.

What do you consider your greatest achievement?
The line of work that was built from scratch.

What or who is your greatest passion?
Music, especially listening to it live.

What is your favorite occupation (or activity)?
Going to concerts.

What is your greatest extravagance?
My wife says getting her an MRI scan for my studies while we were dating.

What is your most treasured possession?
"Last night the wife said, 'Poor boy, when you're dead / You don't take nothing with you but your soul.'" [*Ed. note: These are lyrics from "The Ballad of John and Yoko" by The Beatles, 1969*]

[1]In the late nineteenth century, various questionnaires were a popular diversion designed to discover new things about old friends. What is now known as the 35-question Proust Questionnaire became famous after Marcel Proust's answers to these questions were found and published posthumously. Proust answered the questions twice, at ages 14 and 20. In 2003 Proust's handwritten answers were auctioned off for $130,000. Multiple other historical and contemporary figures have answered the Proust Questionnaire, including among others Karl Marx, Oscar Wilde, Arthur Conan Doyle, Fernando Pessoa, Stéphane Mallarmé, Paul Cézanne, Vladimir Nabokov, Kazuo Ishiguro, Catherine Deneuve, Sophia Loren, Gina Lollobrigida, Gloria Steinem, Pelé, Valentino, Yoko Ono, Elton John, Martin Scorsese, Pedro Almodóvar, Richard Branson, Jimmy Carter, David Chang, Spike Lee, Hugh Jackman, and Zendaya. The Proust Questionnaire is often used to interview celebrities: the idea is that by answering these questions, an individual will reveal his or her true nature. We have condensed the Proust Questionnaire by reducing the number of questions and slightly rewording some. These curated questions provide insights into the individual's inner world, ranging from notions of happiness and fear to aspirations and inspirations.

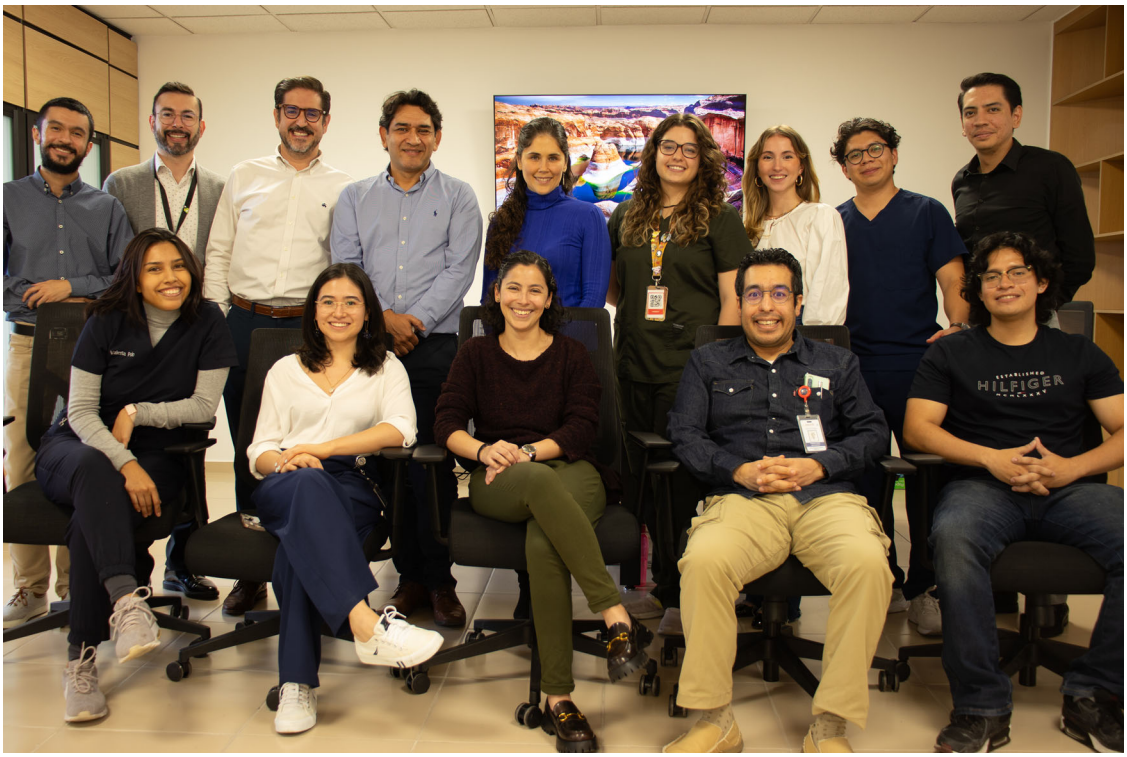

Figure 2. Camilo de la Fuente-Sandoval with the members of the Laboratory of Experimental Psychiatry.

Where would you most like to live?
In the woods.

What is the quality you most admire in people?
Empathy.

What is the trait you most dislike in people?
Dishonesty.

What do you consider the most overrated virtue?
Success.

What do you most value in your friends?
The care for each other.

Which living person do you most admire?
Several musicians. It would be hard to pick just one.

Who are your heroes in real life?
People who protest for fundamental changes in our society.

If you could have dinner with any historical figure, who would it be and why?
Gonzalo Martínez Corbalá, who was Mexico's ambassador to Chile during the 1973 military coup that overthrew President Salvador Allende.

Who are your favorite writers?
Julio Cortázar and Hermann Hesse.

Who are your heroes of fiction?
Sherlock Holmes.

What aphorism or motto best encapsulates your life philosophy?
We walked without looking for each other but knowing that we were walking to find each other.

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