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Consuelo Walss-Bass: Why does my sister have schizophrenia and I do not? Understanding how a person's unique genetic makeup interacts with their environment to shape behavior is one of the final frontiers in medicine

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In this Genomic Press Interview, Dr. Consuelo Walss-Bass, a groundbreaking researcher in psychiatric genetics, explores the fundamental question that has shaped her scientific journey: "Why does my sister have schizophrenia and I do not?" As the John S. Dunn Foundation Distinguished Chair in Psychiatry at the University of Texas Health Science Center at Houston, Dr. Walss-Bass has dedicated her career to unraveling the complex biological mechanisms underlying severe mental health disorders. Her groundbreaking work integrates genomic, proteomic, and clinical research to translate genetic discoveries into practical applications for patient care. Born and educated in Torreón, Mexico, Dr. Walss-Bass overcame significant barriers in engineering to become a distinguished scientist, establishing the UTHealth-Houston Brain Collection as an invaluable resource for studying the molecular foundations of mental illness. Her innovative work with induced pluripotent stem cells has opened new avenues for personalized psychiatric medicine, while her integrated approach to understanding how genetic makeup interacts with environmental factors represents one of the most promising frontiers in psychiatry. Beyond her research contributions, she demonstrates a profound commitment to mentoring the next generation of scientists, particularly those from underrepresented backgrounds. Through this comprehensive interview, Dr. Walss-Bass shares insights into both her personal connection to mental illness that motivated her transition from cancer research to psychiatric genetics and her vision for destigmatizing mental health disorders by uncovering their biological underpinnings, ultimately aiming to improve diagnosis, treatment, and public understanding of conditions like schizophrenia and bipolar disorder.

Figure 1. Consuelo (Chelo) Walss-Bass, MS, PhD, University of Texas Health Science Center at Houston, USA.

Part 1: Consuelo Walss-Bass – Life and Career

Could you give us a glimpse into your personal history, emphasizing the pivotal moments that first kindled your passion for science?

I discovered my love for science during middle school, when my chemistry professor introduced the atom; I could picture the electrons in their orbitals in my mind. I also loved biology and was amazed by how a microscopic cellular organism functioned intricately. I wanted to study biochemistry, the combination of chemistry and biology, but no biochemistry degree was offered in my hometown of Torreon, Mexico. My father did not have the money to send me to college elsewhere, and the fact that at that time, girls my age did not usually leave home in Mexico pushed me to pursue the closest thing available at the university in Torreon: Chemical Engineering. I actually liked engineering and thought I would get a job in industry after college, but I soon found a harsh reality: back then, no industrial company in Torreon would hire a woman engineer. So, I decided to go to the U.S. and pursue a Master's Degree in Chemistry. I was nervous about leaving my family, my friends, and my country, so I decided to go to the University of Texas in San Antonio because I had a close childhood friend who lived in San Antonio, and this was not too far from home. It was during my master's that I found out I loved doing research and working with my thesis mentor on nucleotide-metal complexes. I also rediscovered my passion for biochemistry. My next step was to pursue a Ph.D. in Biochemistry at San Antonio's Health Sciences Center. After all these years, it is still amazing that life allowed me to fulfill my childhood dreams of becoming a biochemist.

Please share with us what initially piqued your interest in your favorite research or professional focus area.

Until the end of my PhD, I did not have a plan for my future. I loved to learn new things, and I loved science, so it had been natural for me to continue studying as long as I could. For my dissertation, I worked on cancer-related

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Figure 2. The Walss Family, a source of strength and inspiration. From left to right: Mom, sister Jenny, Chelo, brother Leo, sister Paty, Dad.

research. It was not until I was about to finish that I knew I had to look for a postdoctoral fellowship and that this would likely be what I would do for the rest of my life. I decided to do psychiatric research. My mother has schizophrenia. I wanted to know: what caused this? Why did she behave the way she did? However, my mentors did not like my decision. "There is no basic science research going on in psychiatry", they said. "What are you going to do?" They thought that pursuing this path would be the end of my career. I looked up to my mentors, and I knew they had my best interest in mind, but I decided to follow my heart. This was one of the best decisions I have ever made. I joined the Department of Psychiatry as a postdoctoral fellow in 2001, when the human genome was about to be fully sequenced, and the search for causative genes in psychiatry was about to take off. It turned out I was in the right place at the right time. Because of my training in basic science research, I started collaborating with many clinicians in the department to correlate their patient's clinical measures with genetics, and I was soon promoted to Assistant Professor. This has been the basis of my work ever since, researching the interface between the bench and the bedside.

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?

I believe a defining moment in my career was my decision to combine the psychiatric genetics training I received as a postdoctoral fellow with my graduate training in protein biochemistry and cellular biology to be able to investigate the functional relevance of genetic variants that were starting to be implicated in psychiatric disorders, and this allowed me to become an independent investigator.

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?

I took an 8 month break after finishing my PhD. I was initially concerned the break was too long and that it would be hard to come back to research. However, this turned out to be a very good decision because I was really burnt out at the time. Taking a break allowed me to refocus, get my energy back, and think about what I wanted to do next. It was during this break that I made the final decision to follow my heart and change the direction of my career from cancer to psychiatric genetics.

What habits and values did you develop during your academic studies or subsequent postdoctoral experiences that you uphold within your research environment?

My academic journey as a basic science researcher has taught me that a true scientist can pursue any area of research they want. Scientists should not put themselves in a box and should not be afraid of pursuing different areas of research. If they do not know how to do something, they can ask for help and collaborate with others who have expertise in that area. It is important not to be afraid to go where science leads. However, collaborating with others also means that one should not always insist on being the leader of a project or study. I have learned that being in the passenger seat is sometimes the best way to move forward and advance your own career.

Please tell us more about your current scholarly focal points within your chosen field of science.

Throughout my career I have used my diverse multidisciplinary training towards increasing the understanding of the biological underpinnings of mental health disorders. In addition to managing my research laboratory and all the work associated with it, I have had the honor of leading diverse programs. I highlight two examples here. 1) Upon my arrival at UTHealth Houston in 2014, in close collaboration with the Harris County Institute of Forensic Sciences, I established the UTHealth Houston Brain Collection, a state-of-the-science center for utilizing human postmortem brain, blood, and skin biopsies, to help study brain disorders. Brain tissue provides a crucial resource for understanding the biological causes of substance misuse and mental illness. We preserve high-quality tissue in combination with extensive clinical information to drive evidence-based research. This effort involves working closely with family members, medical examiners, toxicologists, and clinical psychologists to obtain detailed clinical and behavioral information that can be used to connect biological processes within defined brain circuitry with behavior and personality measures. The brain tissue, medical records, and clinical information are available to other investigators to perform research. 2) Because of my strong experience in working at the interface between basic and clinical sciences, I was recently named Director of the Biobehavioral Health Research Core at the Cizik Nursing Research Institute at UT Health Houston, charged with establishing a model of collaboration and dialogue between investigators working in the laboratory and nurses who are working directly with patients and are interested in doing research. In this role, I hope to help nurse scientists advance their research and become successful in obtaining funding to bridge biology with behavioral outcomes.

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

I am trained as a researcher and have a strong passion to work towards unraveling the mysteries underlying behavioral disorders. I want to find cures, I want to find better treatments, but I also want to identify what is causing these disorders so I can help explain this to people that are suffering from them, to families and to communities, and perhaps in this way demystify the experience of these illnesses for both patients and the public. I want to educate the community at large to reduce the stigma associated with these disorders, to help people see them as they do cancer or diabetes.

What do you most enjoy in your capacity as an academic or research leader?
What I enjoy the most is the opportunity to collaborate with scientists from all over the world. These collaborations provide a rich source of resources to advance my research and enrich my personal life because I have grown so much by learning from other people's backgrounds and experiences.

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?
I am passionate about mentoring students and encouraging them to pursue their dreams. Many students think that science is too hard and that they will not be able to go far in this field. I believe that by having a role model, students can see that they can achieve anything they strive for. I am particularly focused on mentoring women and underrepresented minorities.

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?
I love to read. It takes me a while to finish a book because I sometimes read a page repeatedly, trying to imagine and live out what I am reading.

Part 2: Consuelo Walss-Bass – Selected questions from the Proust Questionnaire[1]

What is your most marked characteristic?
Loyalty.

Among your talents, which one(s) give(s) you a competitive edge?
I am very good at doing puzzles. I can see things from different angles and put them together.

If you could change one thing about yourself, what would it be?
I have trouble enjoying the moment, not thinking about what I must do next. I want to be able to turn this off and just enjoy the ride more.

What is your current state of mind?
At peace.

What is your idea of perfect happiness?
Enjoying a cup of hot coffee in the morning.

When and where were you happiest? And why were so happy then?
I am the happiest right now. I have two amazing sons, a loving and supportive husband, and a great career.

What is your greatest fear?
That one of my sons will have schizophrenia.

What is your greatest regret?
Not recognizing my sister Paty needed help years before she was diagnosed with schizophrenia.

What are you most proud of?
My children.

What do you consider your greatest achievement?
Helping my sister Paty to be stable.

What or who is your greatest passion?
Social justice. I believe we still have a long way to go to achieve true equality for all, and I want to do whatever I can to help in this cause.

What is your favorite occupation (or activity)?
Reading a good book.

What is your greatest extravagance?
A day at the spa.

What is your most treasured possession?
My mind.

Where would you most like to live?
Somewhere where the temperature is never too hot or too cold.

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

What is the trait you most dislike in people?
Unwillingness to accept responsibility.

What do you consider the most overrated virtue?
None, we need to value all of them more.

What do you most value in your friends?
Getting an honest opinion from them, not what they think I want to hear.

Which living person do you most admire?
Pope Francis. His empathy.

Who are your heroes in real life?
My father. He taught me everything by saying very little.

If you could have dinner with any historical figure, who would it be and why?
Marie Curie. As a woman scientist she was a trailblazer, way ahead of her time.

Who are your favorite writers?
Charles Dickens and Alexandre Dumas.

Who are your heroes of fiction?
Superman. He was always ready to go to the rescue.

What aphorism or motto best encapsulates your life philosophy?
Do not leave for tomorrow what you can do today.

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[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.

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