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Daniel Weinberger, MD, Director and CEO, The Lieber Institute for Brain Development

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LIEBER INSTITUTE for
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The Lieber Institute for Brain Development was founded in 2010 with an ambitious goal: to translate the latest discoveries in neurobiology and genetics into new treatments for schizophrenia and other brain disorders. Sadly, one of the institute's philanthropic founders, Connie Lieber, passed away in January 2016; in her honour the institute is now accepting nominations for the Constance Lieber Prize for Innovation in Developmental Neuroscience, a new \$100,000 prize that will be awarded in June of 2017. Dr. Daniel Weinberger, Director and Chief Executive Officer of the Johns Hopkins-affiliated non-profit, explains how Connie Lieber's vision continues to shape the institute's unique approach to psychiatric research.

Q: Who was Connie Lieber?

Connie Lieber was an unbelievably modest, generous and selfless individual who was deeply committed to understanding the biological origins of mental illness and using that information to improve people's lives. This was her life's mission. She and her husband Steve had a daughter with schizophrenia, and that inspired them to help create an organization now known as the Brain and Behavior Research Foundation, which has handed out more than \$320 million worth of small grants to investigators, mostly early career researchers, all over the world – I was a recipient of several. These launched careers, and Connie had a remarkable ability to know these people personally and to know their work.

Q: How did the Lieber Institute for Brain Development come about?

About 10 years ago, Connie and Steve felt that the time had come to create a bricks-and-mortar institution that would have a very clear purpose: to deliver new therapies for psychiatric illness. So, together with Milton and Tamar Maltz, they founded what is now the Lieber Institute for Brain Development, a freestanding, philanthropically funded institute devoted to understanding how genes related to schizophrenia and associated disorders influence brain development and how that information can be used to find new therapies. This is the only institute in the world focused exclusively on this mission with the biological, material and personnel resources committed to realizing this specific goal.

Q: How do I nominate someone for the Constance Lieber Prize for Innovation in Developmental Neuroscience?

The prize is meant to memorialize Connie's extraordinary life and contribution to biomedical research and her conviction that understanding brain development was critical for understanding mental illness. We've set an age limit on who's eligible to win because we want to recognize people who are still in the most productive times of their career. On the official prize website (clprize.libd.org) there's a form available to nominate qualifying individuals. Self-nominations are not accepted, and we encourage people to have a colleague who's a leader in the field make this nomination. The nominations have to be submitted by December 31st, and the winner will be announced at a symposium at the Johns Hopkins School of Medicine in June 2017. We have a selection committee comprised of leading developmental neuroscientists, and we look forward to reading about some extraordinary individuals who've had a really innovative impact.

Q: What's different about the Lieber Institute's approach to brain research?

Every institution in the world that's studying psychiatric illness is trying to use recent genetic discoveries to enrich the search for mechanisms of illness that might uncover new targets, but the main difference with us comes down to our material assets and our multidisciplinary faculty who share a common space and a common mission and goals. The Lieber Institute has the largest, most carefully curated repository of human brain tissues related to neuropsychiatric illness that has ever been assembled. We have over 2,200 human brain samples, and we are on track to collect 500 new brains each year. We have hundreds of brains of patients with developmental behaviour disorders, as well as hundreds of brains of normal individuals – from prenatal to old age – and these are brains that are processed and extensively characterized by one team of people, in contrast to most other brain repositories which are based on disparate sub-collections. The other unique thing we have are hundreds of human living cell lines that we've created from over 500 of these brains. So, we can now explore how genetic variation influences development in brain tissue and in cell models from specimens with the same genomes. That's an

important investment the Lieber Institute has made, and these are extraordinary biologic materials that we are ultimately sharing through our research with scientists around the world. These investments have led in a very short period to substantial progress in turning clinical genetic associations into molecular mechanisms and therapeutic targets, with two novel drugs expected to enter Phase II clinical trials within two to four years.

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Q: With years of experience leading research programs at the NIH, what has it taught you about how best to make meaningful clinical progress?

My scientific career has been focused on understanding the basic mechanisms of serious psychiatric illness at the level of the human brain, and one of the things I learned at NIH is to think outside the box. You have to be flexible and not get stuck in a paradigm – and the best way to do that is in an institutional setting that is multidisciplinary and not dominated by preoccupations of getting funded for one's personal science. This was in part what made me so excited about the Lieber's desire to create such an environment that's dynamic, flexible but strongly deliverable-oriented. If you came to visit us, you'd see that we live in a glass-house with open spaces and a physical environment that sends a strong message that there are no siloes here. Consistent with Connie and Steve Lieber's vision, diverse scientists from different facets of biomedical research are in the same space interacting with each other in real time on a daily basis, all striving to translate the newest discoveries about genes and brain development into novel strategies for identifying and validating novel drug targets.