

Media Release

2021 Klaus J. Jacobs Research Prizes endowed with CHF 2 million go to early life and learning researchers

Zurich, September 21, 2021 – For the first time and in context of the global pandemic, the Jacobs Foundation bestows two Klaus J. Jacobs Research Prizes in one year. The prestigious prizes go to Harvard Medical School Professor Charles A. Nelson and Stanford University Professor Daniel L. Schwartz. Together, their outstanding scientific achievements offer a more complete view of the foundations of early brain development, how early adversity impacts later learning and cognition, and how a better understanding of healthy cognitive functioning can inform educational success at all ages. The two prizes, each endowed with one million Swiss Francs, will be presented on November 19, 2021.

«We are delighted to bestow two 2021 Klaus J. Jacobs Research Prizes to two acclaimed experts who have pushed scientific boundaries to identify unique chances for improving children's education and lives», says Simon Sommer, Co-CEO of the Jacobs Foundation. «Robust science and evidence-based ideas for learning and development need to play a key role at school level and in public policy.»

Charles A. Nelson - 2021 Klaus J. Jacobs Research Prize Recipient

Harvard Medical School Professor Charles A. Nelson receives the 2021 Klaus J. Jacobs Research Prize for his groundbreaking research on the impacts of childhood adversities on brain development, behavioral disorders, and social stability. His 20-year seminal study with the Bucharest Early Intervention Project, demonstrated that many of the deleterious effects of adversity can be prevented and reversed with screening and early interventions.

His studies of the effects of childhood adversity have been instrumental in changing adoption, refugee, and poverty programs around the globe, and his findings have prompted many other researchers in cognitive science, public health, and social science to further examine specific aspects of biological and social disorders related to adversities from war to parental abuse.

Impacts of Early Adversity

Nelson is Professor of Pediatrics and Neuroscience and Professor of Psychology in the Department of Psychiatry at Harvard Medical School, and Professor of Education in the Harvard Graduate School of Education. He also holds the Richard David Scott Chair in Pediatric Developmental Medicine Research at Boston Children's Hospital, and he serves as Director of Research in the Division of Developmental Medicine.

In his work with the Bucharest Early Intervention Project (BEIP), Nelson has demonstrated over the past 20 years that children experiencing early and prolonged psychosocial deprivation suffer permanent impairments and delays to neural, biological, and psychological development. Importantly, if institutionalized children are removed from such environments before the age of ~2 years, many of these deleterious effects can be reversed.

“My work on early adversity has woven itself into the policies and practices of both educators and lawmakers such that both professions now pay careful attention to children’s early environments,” says Prof. Nelson. “In a variety of areas, this has led to shifts in policy that have benefited children. A recent example from the U.S. concerns policies the Biden administration has advanced to countermand the Trump administration policy of separating children from their parents at the U.S.-Mexican border.”

Expanding Challenges

More recently, Nelson has turned to the harms done to children by domestic violence, maltreatment, and malnutrition, in studies such as the *Bangladesh Early Adversity Neuroimaging Project (BEAN)*, which is focused on infants and young children growing up in an urban slum in Dhaka, Bangladesh. The study has demonstrated that these adversities can lead to reduced brain volume, altered brain connectivity, and poor overall cognitive performance.

In the next 5 years, Nelson will continue to study the neural underpinnings of critical periods in childhood development and how and whether critical periods lost to adversity can be restored through therapeutic intervention. “Understanding how to rescue a critical period has important implications for developing more effective treatment strategies for children who have been deprived of key experiences or have been exposed to adverse experiences in the first years of life,” explains Nelson.

Daniel L. Schwartz - 2021 Klaus J. Jacobs Research Prize Recipient

Stanford University Professor Daniel L. Schwartz receives the 2021 Klaus J. Jacobs Research Prize for his studies addressing cognitive questions through innovative learning experiments, bringing new insight to areas of educational research such as lecturing, transfer—where learners can apply knowledge or skills mastered in one context to a different context—and assessment. Schwartz is a leader in the developing field bridging cognitive psychology and education; among his discoveries is a new theoretical concept linking the perception of symmetry to learning negative numbers.

His transformative work has been widely applied by educators, in part through his book *The ABCs of How We Learn: 26 Scientifically Proven Approaches, How They Work, and When to Use Them*, and other media.

Innovative Experiments

Schwartz is the I. James Quillen Dean and Nomellini & Olivier Professor of Educational Technology at Stanford. He leads Stanford’s Transforming Learning Accelerator, a major interdisciplinary initiative advancing the science and design of learning to bring effective and equitable solutions to the world.

His studies have broken new theoretical ground in educational research, exemplified by his study of how children learn negative numbers, a unique, decade-long project that used functional magnetic resonance imaging (fMRI) brain research, mathematical modeling, classroom data, and innovative teaching technologies. More broadly, says Schwartz, he is interested in “how can we design environments that help students generate and learn new ideas, and even more foundational, how can we design lessons that enable students to learn on their own when there is not a teacher telling them what to do and learn?”

AI for Education

In working toward these goals, Schwartz has invented an artificial intelligence-based technology called a Teachable Agent (TA), a graphical computer character that students teach. His research demonstrates that students who work with a Teachable Agent learn more and spend more time in learning activities as a result. In the next 5 years, Schwartz plans to extend his research on TAs that support learning to reason between data and claims. “The current work will create a highly useable and scalable TA with an underlying intelligence architecture that can be leveraged broadly,” says Schwartz, adding that “if ultimately successful, the work will result in an engaging and effective way to increase scientific literacy, for example, for learning and reasoning about pandemics.”

The Klaus J. Jacobs Awards

In honor of its founder, entrepreneur Klaus J. Jacobs, the Jacobs Foundation bestows awards for exceptional achievements in research and practice in the field of child and youth development since 2009.

For more on the awards, visit: [Klaus J. Jacobs Awards - Jacobs Foundation](#)

The **Klaus J. Jacobs Research Prize** is endowed with 1 million Swiss francs and honors scientific achievements that are of exceptional social relevance in promoting learning and development of children and youth. The Jacobs Foundation attaches great importance to practical application of scientific findings achieved through interdisciplinary research.

About the Jacobs Foundation

Headquartered in Zurich, Switzerland, the Jacobs Foundation is one of the world's leading foundations in the field of child and youth development. Established by entrepreneur Klaus J. Jacobs and his family in 1989, the Foundation's current endowment is valued at approximately CHF 7 billion. As an internationally active organization, the Jacobs Foundation commits an average annual budget of CHF 55 million to support research and programs in the fields of learning and child and youth development.

The Foundation is committed to scientific excellence and evidence-based research.

Media contact

Alexandra Guentzer

Chief Communications Officer

alexandra.guentzer@jacobsfoundation.org

T +41 (0)79 821 74 29

<https://jacobsfoundation.org/en/>