“I want professors of all disciplines to integrate the best of what we know about human development into their research, teaching and mentoring of graduate students. I want them to build new bridges between and among their disciplines that go beyond the old-fashioned interdisciplinary and multidisciplinary approaches. It is time to think ‘transdisciplinary’ if we are to make headway in meeting tomorrow’s big challenges.”

DR. J. FRASER MUSTARD
A Great Leap Forward in Understanding Early Human Development

The interplay between genes and the environment is critically important for the provision of health and well-being across the lifespan. Evidence is mounting that what happens to us in the first 2,000 days of life—from conception to age six—can be critical to our long-term well-being. However, as a society we still don’t do enough to provide every child the opportunity to have the best start in life by optimizing this important developmental period.

The Fraser Mustard Institute for Human Development (IHD) is a bold and necessary response to this challenge. IHD brings together University of Toronto researchers from a variety of disciplines—such as education, medicine, psychology, biology and social work—to connect in new ways and investigate how to make the most of these early years. The question is no longer whether very early life is pivotal in determining later-life learning, social functioning and overall health and well-being—we know it is. The questions are, rather: Which experiences and exposures are most important? Which genes, in interaction with which early environments, promote lifelong health and well-being? Which interactions put a person at the greatest risk? What practical interventions can make the most difference?

IHD has been created to approach these questions differently. It provides the means to generate new knowledge regarding early human development, breaking down academic silos and professional boundaries to develop innovative, transdisciplinary synergies. IHD will also enable the science of early human development to integrate with the design of our health and education programs. This will bring together those who are responsible for the well-being of our children—researchers, policy makers, educators, families and caregivers—in an active and equal partnership to create and share knowledge.

Modern societies that embrace this type of research—by creating policies and programs to support families—can reap the benefits with reduced chronic disease in adults, reduced costs for judicial and prison systems, and more literate and healthy adults who can make a positive contribution socially and economically.

U of T’s IHD is uniquely positioned to meet these challenges through an unprecedented combination of transdisciplinary collaboration and discovery that will make a lasting impact on generations of individuals.
IHD honours the trailblazing work of Dr. J. Fraser Mustard (1927-2011) in early human development and his leadership role in the conception and creation of the Institute.

Dr. Mustard was a towering figure in the arena of early childhood development. The Early Years Study—Reversing the Real Brain Drain, released in 1999 and co-written with the Honourable Margaret Norrie McCain for the Ontario government, drove awareness of the singular importance of investing in early childhood to entirely new levels, influencing everything from government policy to scientific research to educational practice.

Dr. Mustard’s passionate belief in the importance of early childhood development will likely form his greatest legacy. One of his final projects was to help plan and establish the Institute for Human Development—recognizing that a unique confluence was underway. Breakthroughs across genetics, population health, education and learning, child studies, mental health and other areas offered a tremendous opportunity to take a great leap forward in how we raise our children.

Dr. Mustard recognized that there were pockets of research activity occurring across many different institutions but siloed according to academic discipline. He saw that if we want to accelerate this process and ensure that findings are quickly mobilized, we need to focus researchers on a set of common challenges regarding human development.

Throughout his life, Dr. Mustard demonstrated an unquenchable spirit of innovation and inquiry in his pursuit to help others. We are honoured to dedicate the Fraser Mustard Institute for Human Development to his memory and legacy, and to carry forward his bold vision.

“If we can address needs of children early, rather than later, we can help each child reach their maximum potential. It also means we can equal the playing field for all children.”

DR. J. FRASER MUSTARD (MD 1953, LLD 1988) was a towering figure in the arena of early childhood development. One of his final projects was to help plan and establish the Institute for Human Development.
Adverse experiences can occur prenatally, in infancy, and in childhood. IHD aims to generate and use evidence-based research across many fields to identify the children who are at risk prior to the onset of problems and find ways to prevent negative health trajectories across the lifespan.

IHD researchers will focus on the interactions between genes and social, linguistic, cultural and economic environments. The objective is to understand how developmental paths contribute to disorders such as childhood obesity and developmental difficulties in cognitive, self-regulatory, emotional and social functioning.

The ultimate goal is to uncover and evaluate new diagnostic and prevention tools, as well as new education models and improved interventions to enhance learning, social functioning and physical and mental health.
IHD will engage partners in a comprehensive “Knowledge to Action” strategy that will help inform evidence-based policy development towards improved health and well-being of our children.

The Institute is committed to ensuring that findings get into the hands of the people who need them: those charged with the health and well-being of children. To this end, the Institute will fully engage end users—families, clinicians, social workers, educators and policy makers. IHD will inform novel interventions which will then be applied to real world settings in the classroom or the clinic. The results of these interventions will be fed right back into basic research, creating a virtuous cycle of improvement that will be released to end users through health and education programs in communities.

No other place in the world combines discovery and translational research on this scale.

**KNOWLEDGE MOBILIZATION**

**Discovery, Research and Training Hand-in-Hand**

Dr. Suzanne Stewart is a member of the Yellowknife Dene First Nation and an Assistant Professor in the Department of Applied Psychology and Human Development at OISE. Working collaboratively within Indigenous and academic contexts, she is developing community-based learning models and research environments that are grounded in Indigenous paradigms of mental health and education.

At the Samuel Lunenfeld Research Institute at Mount Sinai Hospital, graduate student Richard Maganga is investigating how the early-life environment modifies a child’s DNA and the subsequent impact on health and well-being.

Dr. Stephen Matthews researches development of systems in the brain that regulate hormonal and behavioural responses to stress. His lab investigates how different fetal environments can alter the developmental trajectory of these systems, leading to lifelong changes in hypothalamic-pituitary-adrenal function—effects that are evident for multiple generations. A number of pathologies, including diabetes, hypertension and depression, have been associated with chronic changes in HPA function. Dr. Matthews is Chair of U of T’s Department of Physiology.
Developing Scholars in Human Development

Along with generating cutting-edge research and discovery, IHD’s vision is to build a robust undergraduate and graduate program in human development. As part of this strategy, new multi-level curricula will be embedded into undergraduate, graduate and professional development programs across the University, emphasizing the importance and diversity of early-life experiences that contribute to optimal human development.

A broad first-year course to introduce the concept of human development and its transdisciplinary nature will fuel interest among students working across a range of disciplines, from science to education to social work and policy. Similarly, a transdisciplinary graduate program will empower the next generation of researchers to move seamlessly across disciplines and sustain research and discovery in human development.

DR. HOWARD HU of U of T’s Dalla Lana School of Public Health is an internist and epidemiologist whose research focuses on the impacts of gene/environment interactions, the long-term effects of fetal exposure to lead and other chemical toxicants as well as interactions between aging and the environment.

DR. ALISON FLEMING’S research considers the role of different brain mechanisms, the influence of early experiences and how genetic, hormonal and sensory factors affect mothering in animals and humans. Dr. Fleming is with the Department of Psychology at the University of Toronto Mississauga and is a Canada Research Chair and Fellow of the Royal Society of Canada.

DR. STEPHEN LYE, professor of obstetrics and gynecology, is the inaugural Executive Director of the Fraser Mustard Institute for Human Development and Canada Research Chair in Improvement in Health and Function. A world authority in women’s and infants’ health, he is launching the Ontario Birth Study, which will be a major research resource for the IHD.
There are many opportunities to make a lasting contribution to the Fraser Mustard Institute for Human Development.

**TRAINING**

Students will play a key role in advancing IHD’s mission. The University will seek funding for graduate fellowships to develop the next generation of researchers in early human development. These fellowships will help ensure that we can attract students who have the greatest potential to contribute to our community of IHD scholars.

**RESEARCH**

World-class research will be a hallmark of IHD. Philanthropic support will provide critical seed funding for emerging priorities and transdisciplinary projects that will advance the field and strengthen the impact of our researchers.

**PROGRAM DEVELOPMENT**

IHD will feature innovative programs at the undergraduate and graduate level that will be vital to educating the next generation of scholars in early human development. Private support will help ensure the pedagogical goals of these programs are fully realized.

**INSTITUTE FUNDING**

To meet IHD’s potential, the Institute will need to build a robust core infrastructure, enhancing IHD’s ability to work effectively with its partners in education, health care and the community at large. The University is seeking private funding to ensure IHD researchers have the collaborative infrastructure necessary to disseminate knowledge and learning broadly.
Dr. Marla B. Sokolowski (BSc 1977, PhD 1981) is the inaugural Academic Director of the IHD. Her work on genes in fruit flies has important implications for how genes interact with the environment, and how similar genes function in humans. Dr. Sokolowski is a University Professor in the Department of Ecology and Evolutionary Biology at the Faculty of Arts & Science. She is also a Canada Research Chair, a Fellow of the Royal Society of Canada and Co-director of the Experience-Based Brain and Biological Development program at the Canadian Institute for Advanced Research.

IHD SCHOLARS

The University of Toronto: Unmatched Expertise in Human Development

Understanding the mechanisms and facets of human development requires an excellent breadth and depth of knowledge across diverse disciplines. The University of Toronto is one of the few institutions in the world fortunate enough to possess the necessary range of expertise to tackle this challenge.

The IHD research leaders highlighted here are among the University’s many scholars at the frontiers of physiology, biology, medicine, nutrition, child studies, education, pedagogy, psychology, social sciences and mathematical and computational sciences. Many of them lead research centres that are world renowned in their own right.

IHD researchers are situated on all three U of T campuses and across the Toronto region’s vast network of health care institutions. Collectively these scholars make U of T an international powerhouse in this emerging field and an ideal site for the Fraser Mustard Institute for Human Development.

Dr. Jennifer Jenkins’ key area of research concerns the emotion processes in children and in family life that help us to understand psychopathology in children. Dr. Jenkins is with the Department of Applied Psychology and Human Development at OISE and holds the Atkinson Chair in Early Child Development & Education.

Dr. Marla B. Sokolowski (BSc 1977, PhD 1981) is the inaugural Academic Director of the IHD. Her work on genes in fruit flies has important implications for how genes interact with the environment, and how similar genes function in humans. Dr. Sokolowski is a University Professor in the Department of Ecology and Evolutionary Biology at the Faculty of Arts & Science. She is also a Canada Research Chair, a Fellow of the Royal Society of Canada and Co-director of the Experience-Based Brain and Biological Development program at the Canadian Institute for Advanced Research.
Dr. Carl Corter’s research focuses on integrated early childhood services in the community, including child care and kindergarten, as well as on parenting and parental involvement in school and other services. He collaborated on Toronto First Duty: Early Learning and Care for Every Child, a universal early learning and care program model. Dr. Corter is with the Dr. Eric Jackman Institute of Child Study and the Department of Applied Psychology and Human Development at OISE.

GLOBAL LEADERSHIP

Building IHD into a World-Leading Institute

Our aim is to establish the Fraser Mustard Institute for Human Development as a global leader in innovation, knowledge mobilization and enhanced child outcomes through a focus on maximizing the potential for every child and achieving lifelong improvements in health, learning and social functioning.

Philanthropic investment offers partnership in a project with a scope broader than any to emerge from the University of Toronto in years. Findings from the Institute will transcend disciplines and resonate throughout the fields of health care, education, social work, law enforcement, the judiciary, parenting and government policy, to name a few.

Support for this important initiative has enormous potential to change lives.

“Investing in the education of the educators is an essential precursor to investing in the early education of children.”

THE HON. MARGARET NORRIE MCCAIN (BSc 1955) is a tireless advocate for early childhood development in Canada. She is co-author of three Early Years studies. Early Years Study 3, released in November 2011, was co-authored with Dr. Fraser Mustard and Kerry McCuaig. These landmark studies provide the social, economic and scientific rationale for investments in early childhood education.