20-year study seeks to understand how we age and why we age differently

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A geriatric epidemiologist and Canada Research Chair in Geroscience at McMaster University, Parminder Raina (pictured) is leading the Canadian Longitudinal Study on Aging (CLSA), one of the largest and most comprehensive studies ever done on health and aging. Credit: McMaster University

Is 80 the new 60? It will be if Parminder Raina has his way.

A geriatric epidemiologist and Canada Research Chair in Geroscience at McMaster University, Raina is leading the [Canadian Longitudinal Study on Aging](#) (CLSA), one of the largest and most comprehensive studies ever done on health and aging. Its aim is to understand the factors that influence how we age and find ways to prevent, slow or cure [age-related diseases](#) so we can live healthier for longer.

With Canadians aged 85 and over now the fastest-growing segment of the population, Raina says studying how people age is more important than ever before.

"During the next two decades, the number of seniors will double," he says. "We now have more centenarians than ever before, and not all of them are senile and functionally dependent. Many live very full lives."

According to Raina, who holds the endowed Labarge Chair in Optimal Aging, understanding how we age, why we each age differently, and what causes disease and disability as we grow older is critical to our ability to develop programs and interventions that will stave off poor health and promote independent and healthy living for as long as possible.

With a national team of more than 160 researchers and collaborators, the CLSA is following more than 50,000 randomly selected men and women between the ages of 45 and 85 over a 20-year period to learn why some people live longer and others don't. Major funders of this project are the Canadian Institutes of Health Research (CIHR), the Canada Foundation for Innovation, the Ontario Ministry of Research and Innovation, and other participating provinces.

The McMaster Innovation Park is home to the CLSA national coordinating centre, and one of 11 data collection sites across the country. It's also where the 300 million anticipated bits of data from

blood and urine samples, cognitive and physical assessments, and interviews and questionnaires completed by participants will be sent and stored. Facilities include a state-of-the-art biobank containing 31 cryofreezers and a lab equipped with a high-throughput robotic workstation that can test for biomarkers associated with the aging process, as well as age-related diseases.

More than 38,000 Canadians have been recruited since 2011, and the study will reach its goal of 50,000 participants in 2015. The first wave of data – gleaned from telephone interviews with the first 20,000 CLSA participants – will be released this summer.

The CLSA collects information from participants every three years, either by phone or in person. Approximately 20,000 men and women take part in telephone interviews. The remaining participants visit data collection sites for comprehensive physical assessments, including blood and urine collection. This allows researchers to monitor changing biological, medical, psychological, social, lifestyle and economic aspects of people's lives.

"We want to know how each aspect – alone and in combination – impacts the health and development of disease and disability as people age," says Raina.

"Genetics plays a factor, we know, but there are other influences that can put us on one path versus another. Children leave home, people retire, there's economic gain or loss. Midlife brings all sorts of transitions, especially for women who are undergoing biological changes such as menopause. How do these transitions affect people's health, and how do they adapt? What role do communities, social support, and health systems play? How does living in an urban or rural environment impact the aging process?"

Raina says it's a cell-to-society approach that will yield a mine of rich data that can be used by researchers worldwide to examine diseases of the circulatory system, the brain, the musculoskeletal system, respiratory system and endocrine/ metabolic systems.

"We know that the changes in our body that come with aging represent a common risk factor for disease," says Raina who has conducted numerous leading-edge studies on aging and disease prevention.

"What we learn from this could tell us a lot about how chronic inflammation is linked to cancer, heart disease and Alzheimer's disease; how responses to stress can accelerate aging and risk of disease; how work history and wealth contribute to our health and well-being; and more."

Provided by McMaster University