

# The Canadian Longitudinal Study of Aging: Advancing the Understanding of Aging and Diseases through Interdisciplinary Research

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Application for Optimal Aging*

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# Lead Investigators

- Parminder Raina, McMaster (Lead PI)
- Christina Wolfson, McGill (Co-PI)
- Susan Kirkland, Dalhousie (Co-PI)

# Milestones

2001: Aylmer Meeting and RFA launch

2002: Response to RFA and funding of CLSA protocol development

- CLSA recognized as strategic initiative of FRSQ geriatric reseau – funding provided

2004: Submission of CLSA protocol for international review

2004: Submission of, and funding for, Phase I of developmental studies

2006: Submission of Canada Foundation for Innovation application

2006: Submission of, and funding for, Phase II (80%) developmental studies

# Networks and Collaborations

- Established network of researchers
  - McMaster, McGill and Dalhousie
  - Support from 26 academic institutions
  - 180 co-investigators
    - 80 investigators played the major role in content development
  - International Collaborations
- Statistics Canada, Health Canada, PHAC, HRSD
- Support from CIHR and its Institutes (IA), FRSQ Geriatric Réseau

# Scientific Evidence

- Our review identified around 70 longitudinal studies worldwide
  - Majority of these studies were studying people over the age of 65
  - Many of these 70 studies on aging collect lot of information on social factors or retirement but lack detailed information on health, especially clinical and biological measures or vice versa

# Scientific Evidence

- Very few studies have looked at the aging process from a mid-life to old age perspective
- Very few population-based studies that capture the changing individual within a changing context and incorporate multiple levels of inquiry, the cell, the individual and society
- Very few studies have focused on how individuals cope or adapt to changing circumstances and how it impacts their well-being

# Policy Needs

- ▶ Changing demographics #1 priority of Canadian Federal and Provincial Governments
- ▶ Healthy aging is important to the Canadian public and policy makers
- ▶ Canada differs from other countries in its:
  - ▶ health and social policy
  - ▶ health care delivery systems
  - ▶ climate, environment, geography, and
  - ▶ retirement policy and pension programs
- ▶ Seniors of tomorrow have different needs and expectations
  - ▶ major implications & challenges for the health care system and for social programs

# The Canadian Longitudinal Study on Aging (CLSA)

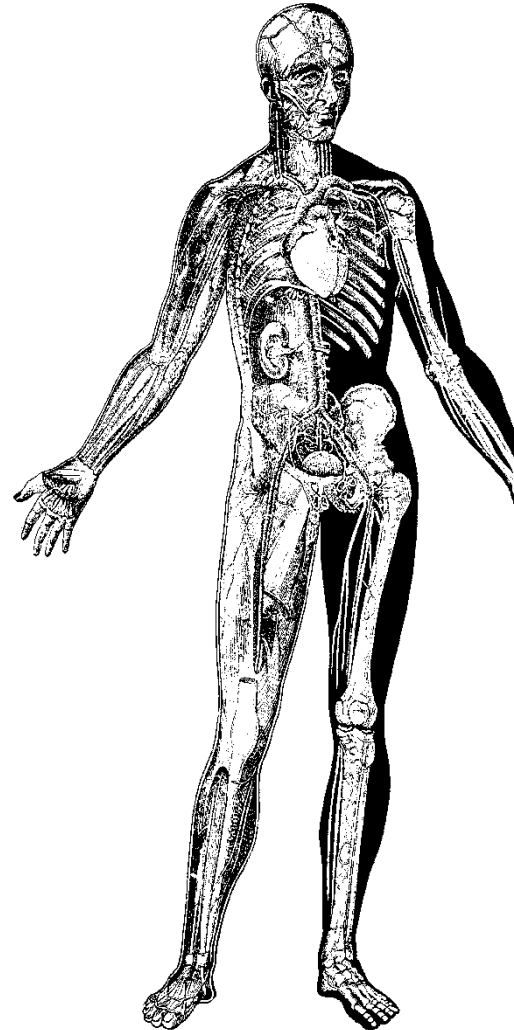
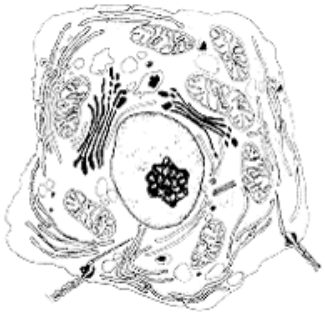
- ▶ A key component of the Canadian Lifelong Health Initiative, a strategic initiative of CIHR
  - ▶ The Canadian National Birth Cohort
  - ▶ The Canadian Longitudinal Study on Aging
- ▶ More than 160 researchers - 26 institutions
- ▶ Multidisciplinary - biology, genetics, medicine, psychology, sociology, demography, economics, epidemiology, nursing, nutrition, health services, biostatistics, population health



# Overall Aims of the CLSA

- To examine aging as a dynamic process.
- To investigate the inter-relationship among intrinsic and extrinsic factors from mid life to older age.
- To capture the transitions, trajectories and profiles of aging: successful aging.
- To provide infrastructure and build capacity for sustained high quality research on aging in Canada.

# Innovation - Cell to Society



- ▶ Mid life to old age
- ▶ Quantitative traits
  - ▶ Physical
  - ▶ Social
  - ▶ Psychological
- ▶ Gene-environment interactions
- ▶ Disease, disability, psychosocial consequences
- ▶ Adaptation

# Priority Areas for CLSA

- Neurological/Brain Function
  - Cognitive impairment
  - Dementias/AD
  - Parkinson's disease
  - Stroke
- Musculoskeletal
- Respiratory
- Metabolic
- Cardiovascular
- Psychosocial and behavioral environment
- Health and social care environment
- Economic environment

# Focus of Measurement

## Biomedical

- Activities of daily living/disability/injuries
- Frailty/co-morbidities
- Chronic diseases
- Cognitive function
- Injuries
- Mental Health
- Oral health
- Vision, hearing
- Medications
- Health Care Use
- Institutional care
- Genetics/Biology
- Nutrition

## Psychosocial

- Lifestyle/behaviours
- Social networks and social support
- Values and meaning
- Everyday competence, adaptive functioning, coping
- Personality, emotion, psychopathology
- Work to retirement transitions
- Structural inequalities
- Built environments/physical environment
- Economics
- Healthy aging and well being
- Linkage to secondary data bases

# Example Research Questions: Cognition

- Is decline in cognitive functioning (memory, executive function and psychomotor speed) in mid and later life associated with subsequent adverse health related (or biological) outcomes?
- Is decline in cognition (memory, executive function and psychomotor speed) in mid and later life associated with changes in social participation?

# Example Research Questions: Cognition

- How do individuals with cognitive change adapt to maintain performance in everyday functioning?
- Are general lifestyle activities (e.g. physical activities, social activities, domestic activities, community service, etc) associated with cognitive functioning and/or change in cognition over time after adjustment for sensory impairment?

# Example Research Questions

- How do cognitive functions mediate or moderate relations between biological/physical status and adaptive functioning and/or social participation?
- Are changes over time in cognition (memory, executive function and psychomotor speed) associated with specific biological states?

# CLSA Architecture



Data to be collected: 50,000-60,000 (at 10 sites)

Questionnaires, Biological, and Physical

Follow-up over 20 years

Every 3 years age 40-79; Every year age 80+



CLSA  
ELCV



# Study Architecture

- 50,000 individuals
- 20 year follow-up beginning in 2008
- Women and men between the ages of 40 and 85 at baseline
  - Boomers
    - Born between 1946 (62 y in 2008) and 1964 (44 y in 2008)
  - “pre” and “post” boomers
    - Born between 1923 and 1968
- Community dwelling at baseline
- Repeated assessment every 3 years
- Linkage to existing databases

# The Data

- Questionnaires administered over the phone *or* in person to all 50,000 participants
- Subgroup of 30,000 individuals selected to undergo in-depth “comprehensive” assessment over the course of the study
  - within a reachable distance of study sites that can support the data collection
- The *goal* is be able to “reassemble” the 50,000 to provide valid and reliable information on the full sample
  - at least with respect to common questionnaire data collected

# Data collection: Basic baseline and longitudinal

- Questionnaire data (50,000)
  - Telephone interviews **and/or** face-to-face
  - Common set of questions
    - demographics, social, economic, nutrition, lifestyle
- Linkage to existing data bases (50,000)
  - Administrative: physician services, hospitalizations, medications
  - Homecare, community services, mental health services
  - Mortality
  - Environmental, neighbourhood indicators
- Infrastructure needs
  - Computer assisted telephone interviews
  - Web based interviews

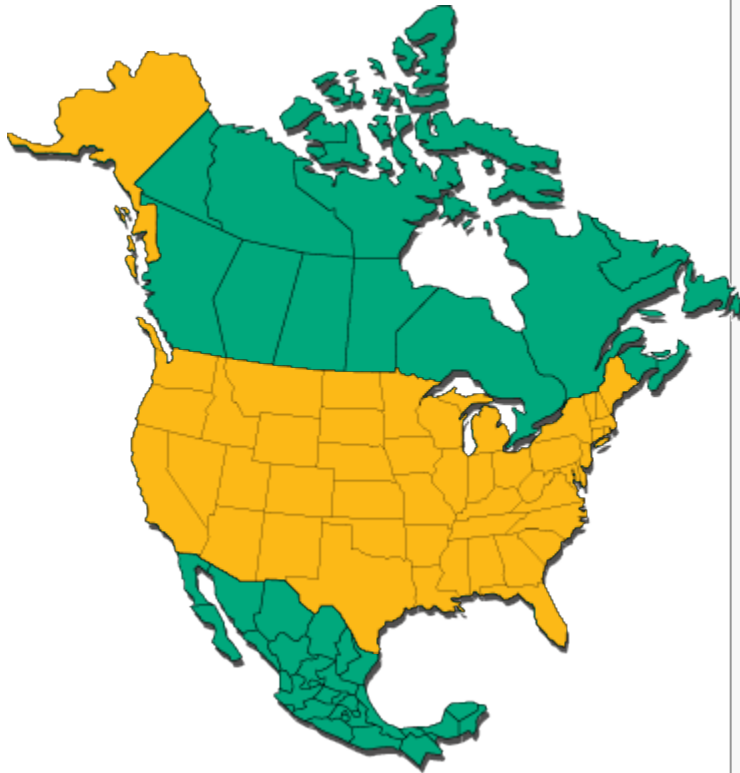
# Data collection: Comprehensive baseline and longitudinal

- Comprehensive (in-depth) assessment (30,000)
  - Additional questionnaire based information face-to-face
    - Social, behavioural, economic, nutrition, lifestyle
  - Clinical/physical assessment
    - Medical, neuropsychological, physical measures
  - Blood/urine samples
    - Blood chemistry panel, biomarkers, genetics, genomics
- Infrastructure needs
  - 10 sites across the country with the capability of high volume throughput

# Ethical, Legal, Societal Issues (ELSI)

- Lawyers
- Ethicists
- Philosophers
- Geneticists
- Epidemiologists
- Social scientists
- Privacy commissioner

# International Links



Womens Health and  
Aging Study - **USA**

Aging & Sexuality - **USA**

HRS - **USA**

British Birth Cohort - **UK**

UK Biobank - **UK**

ELSA - **UK**

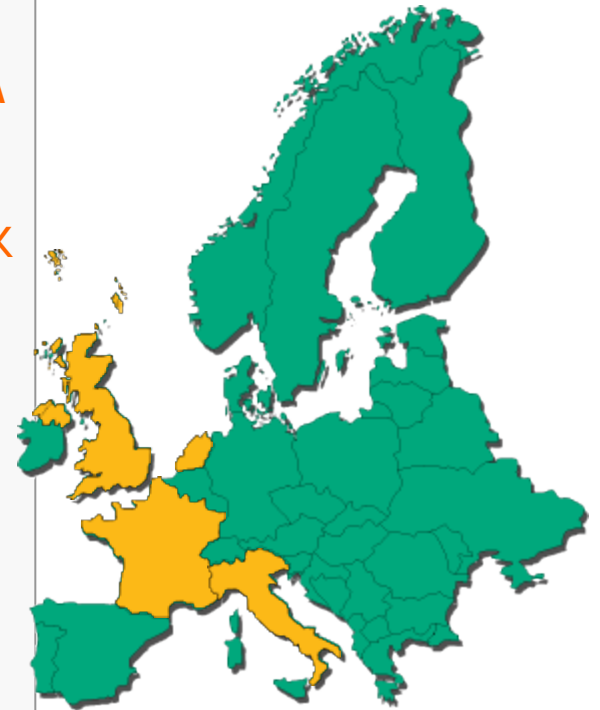
ALSPAC - **UK**

Cohorte Constances -  
**FRANCE**

LASA - **Amsterdam**

ILSA - **Italy**

InChianti - **Italy**





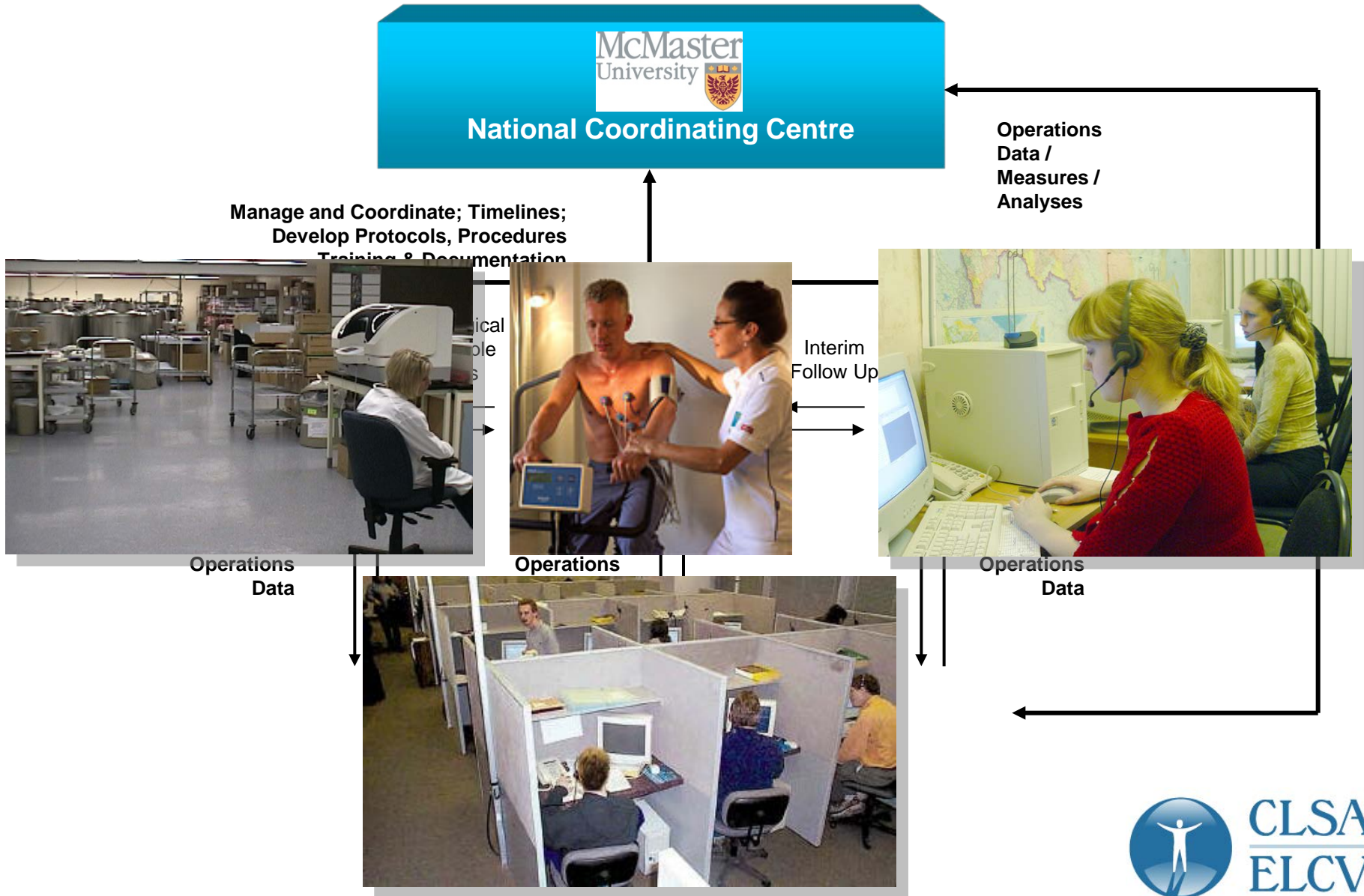
# Canada Foundation for Innovation Application for Infrastructure

# The Vision

- ▶ A national network of infrastructure to enable state-of-the-art longitudinal interdisciplinary population based research across Canada
- ▶ Once in place this network will support the *largest interdisciplinary* research project in aging conducted to date: the **Canadian Longitudinal Study on Aging**



# Core National Network of Facilities



# CURRENT ACTIVITIES

- Phase 2
  - Finalizing the measures
  - Interview/training manuals
  - Pilot studies
  - Pilot field test of the full CLSA in late 2007

# Collaboration with Statistics Canada

- CCHS 4.2 in 2008
  - Healthy Aging
  - CLSA team- CCHS content development
  - Inception Cohort for CLSA
  - Data access working group



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Website: [www.CLSA-ELCV.ca](http://www.CLSA-ELCV.ca)

