



# **An Overview of the Canadian Longitudinal Study on Aging**

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# Canadian Longitudinal Study on Aging (CLSA)

- Strategic initiative of CIHR
- More than 160 researchers – 26 institutions
- Multidisciplinary – biology, genetics, medicine, psychology, sociology, demography, economics, epidemiology, nursing, nutrition, health services, biostatistics, population health



Photo: Health Canada



Canadian Longitudinal Study on Aging  
Étude longitudinale canadienne sur le vieillissement



# Our Aim

**To study aging as a dynamic process and the inter-relationship among intrinsic and extrinsic factors from mid-life to older age.**



**clsa élc**  
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# Selected Research Goals

- The progression of **health** from middle age to early old age to older old age (healthy aging)
- The determinants of **well-being and quality of life**
- Risk factors (including genetics) of **chronic diseases**
- **Social participation, social relationships and caregiving** in an aging population
- The examination of socioeconomic and health **inequalities** in an aging population
- **Retirement and post-retirement** labour market activity
- **Cognitive functioning and mental health**
- **Disability** and the compression of morbidity



Photo: Horia Varlan



# Depth and Breadth of CLSA

## PHYSICAL & COGNITIVE MEASUREMENTS

- Height & weight
- Waist and hip measurements
- Bioimpedence
- Arterial pressure
- Mean heart rate
- Grip strength, timed up-and-go, chair raise, 4-m walk
- Standing balance
- Vision
- Hearing
- Spirometry
- Bone density
- Aortic calcification
- ECG
- Carotid intima-media thickness
- Cognitive assessment

## HEALTH INFORMATION

- Chronic disease symptoms (11 chronic conditions)
- Medication intake & compliance
- Women's health
- Self-reported health service use
- Oral health
- Preventative health
- Administrative data linkage health services & drugs
- Other administrative databases

## PSYCHOSOCIAL

- Social participation
- Social networks and support
- Caregiving and care receiving
- Mood, psychological distress
- Coping, adaptation
- Work-to-retirement transitions
- Job-demand/effort reward
- Retirement planning
- Social inequalities
- Mobility-lifespace
- Built environments
- Wealth

## LIFESTYLE & SOCIODEMOGRAPHIC

- Smoking
- Alcohol consumption
- Physical activity
- Nutrition
- Birth location
- Ethnicity/race/gender
- Marital status
- Education
- Income



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# Study Overview

**50,000 women and men aged 45 - 85 at baseline**

**n=20,000**  
**Randomly selected within provinces**

**Questionnaire**  
• **By telephone (CATI)**

**n=30,000**  
**Randomly selected within 25-50 km of 11 sites**

**Questionnaire**  
• **In person, in home (CAPI)**

**Clinical/physical tests**  
**Blood, urine (consent)**  
• **At Data Collection Site**

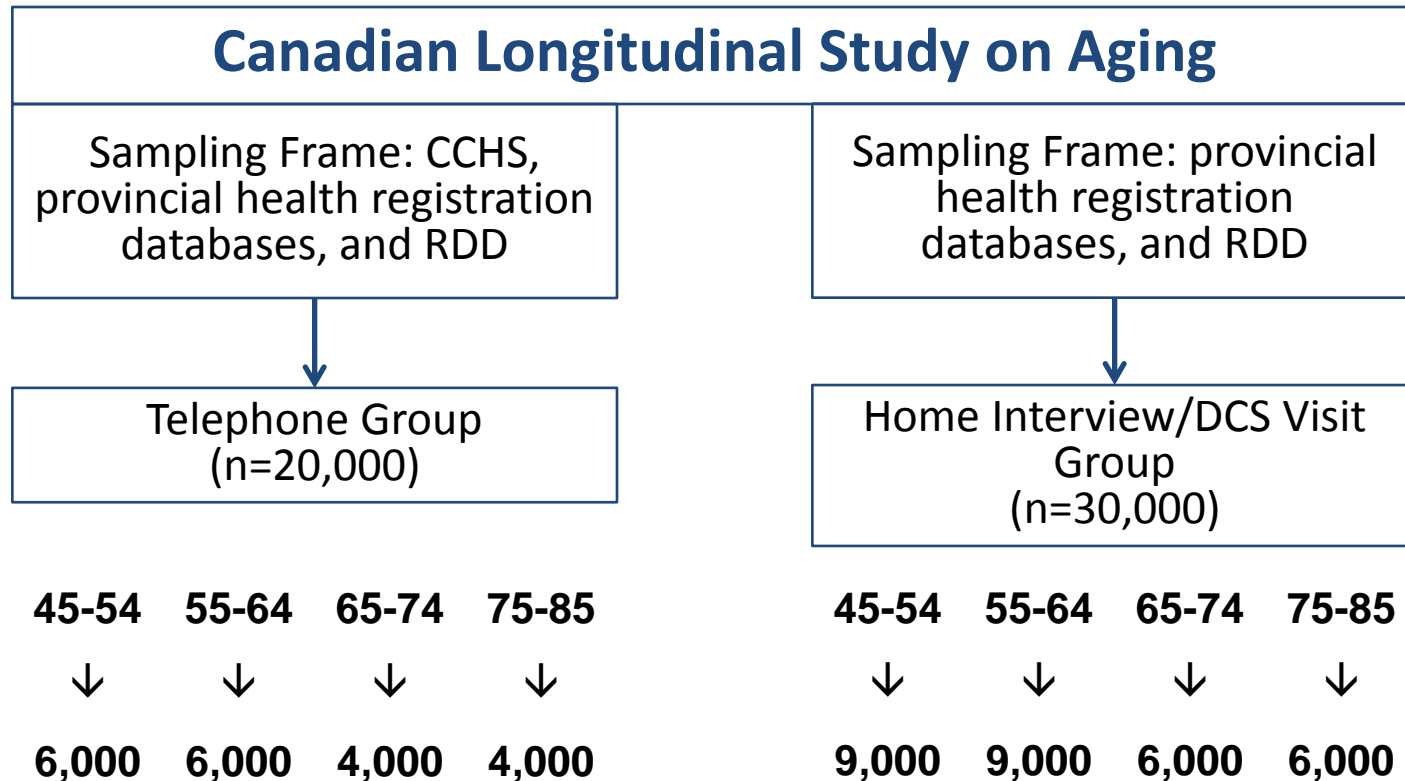
**Interim contact, follow up every 3 years**

**Data Linkage (consent)**



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# CLSA Sampling



**41,956** Participants so far

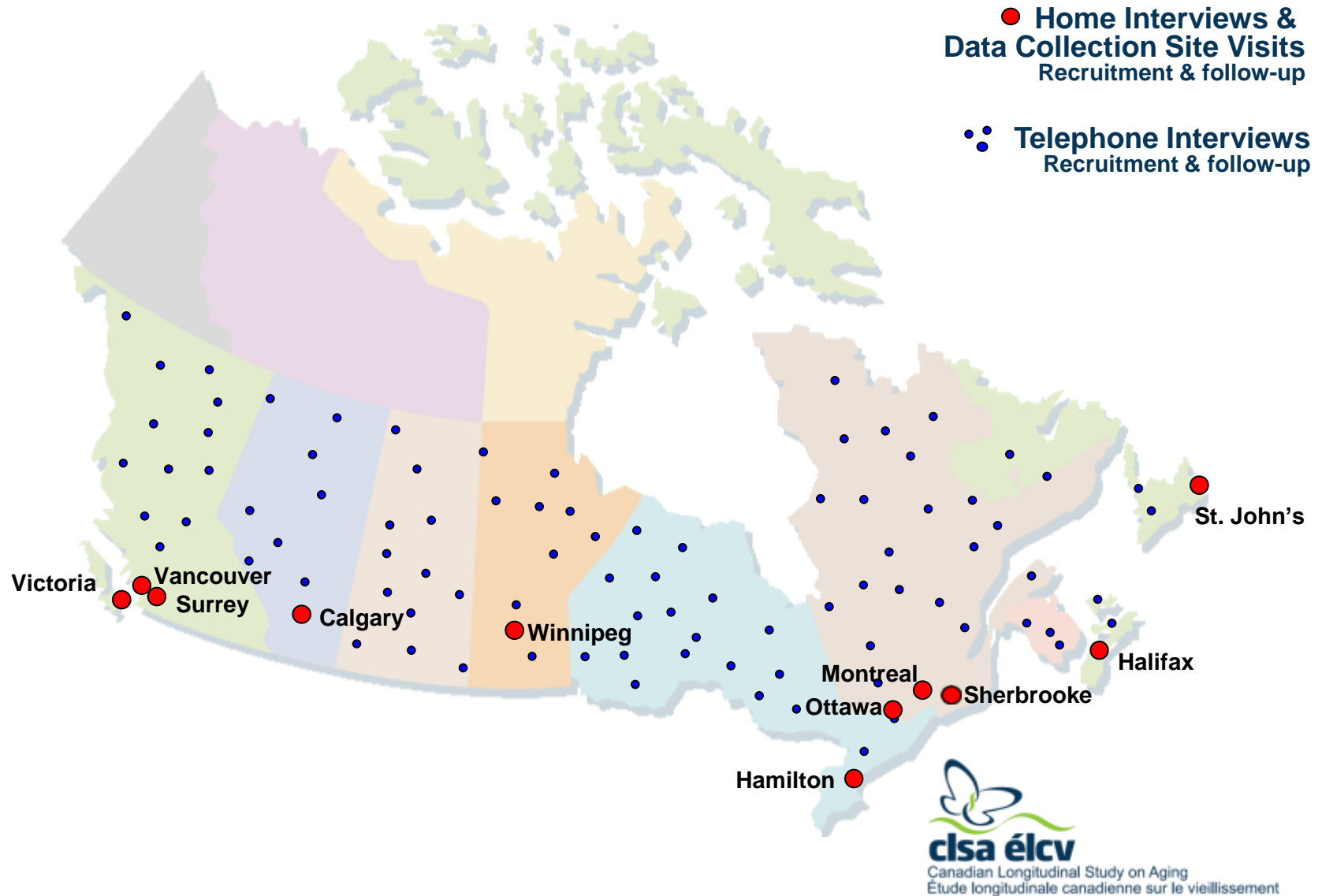


**50,000  
goal**

September 24, 2014



# Participant recruitment



# Recruitment & Data Collection

## Telephone Interviews

- Recruitment of 20,000 participants for telephone interviews:
  - ✓ Statistics Canada CCHS on Healthy Aging
  - ✓ Provincial Health Care Registries
  - ✓ Random Digit Dialing
- Baseline data collection 2010 to 2014
- Maintaining contact interviews initiated 2013
- First follow-up begins 2015



# Recruitment & Data Collection

## Home Interviews and Data Collection Site Visits

- Recruitment of 30,000 for Home Interviews and Data Collection Site Visits:
  - ✓ Provincial Health Care Registries
  - ✓ Random Digit Dialing
- Baseline data collection 2012 to 2015
- Maintaining Contact Interviews initiated 2014
- First follow-up begins 2015



# CLSA Data Collection

## At the Data Collection Site

### Physical Data Collected

- Bone Density, Body Composition
- Aortic Calcification
- ECG
- Carotid Intimal-Medial Thickness
- Pulmonary Function
- Vision and Hearing



### Biological Data Collected

- Blood
- Urine



### Psychological Data Collected

- Neuropsychological Battery
- Performance Testing
- Anthropometric Measures



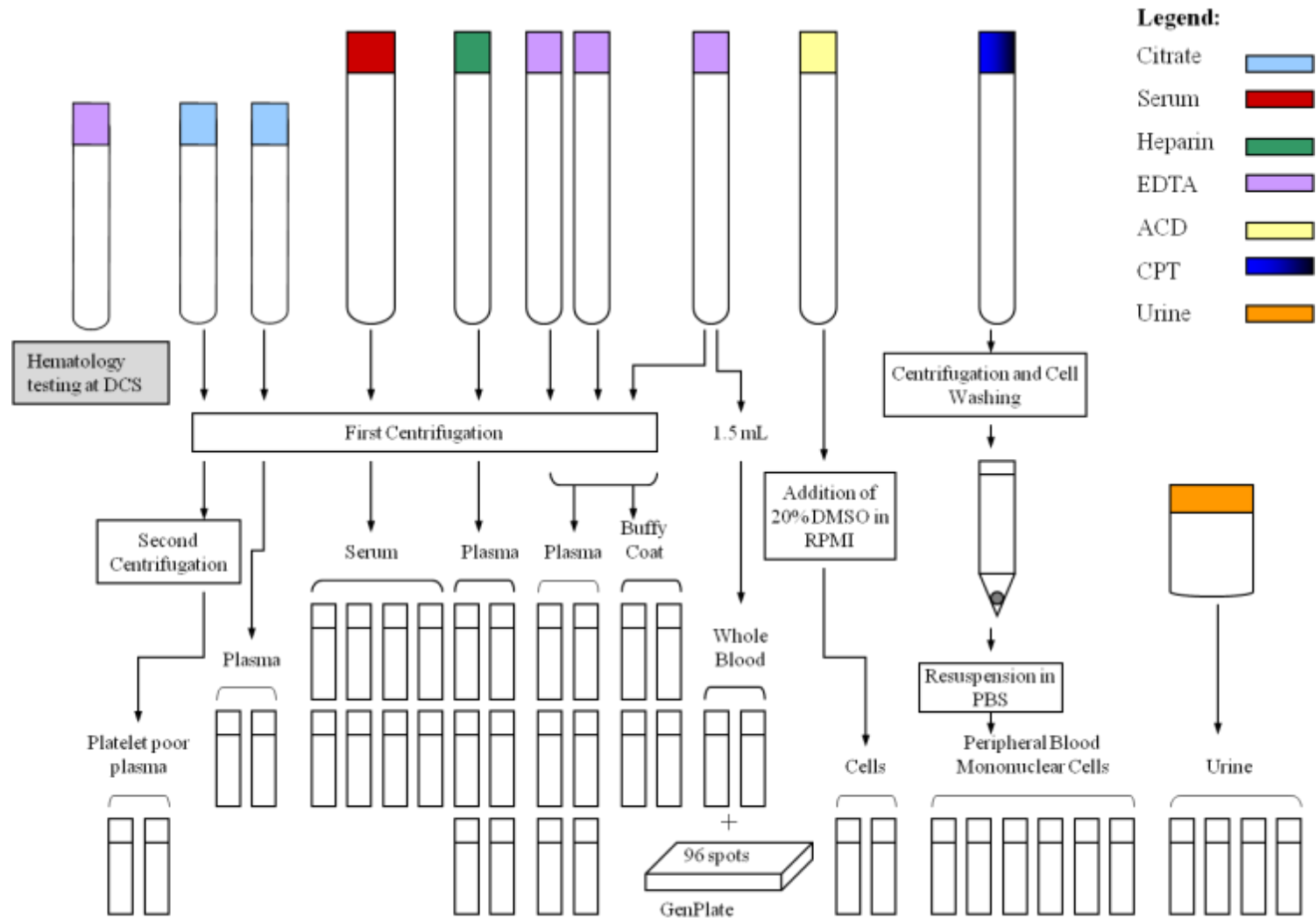
For more  
Information visit  
[www.clsa-elcv.ca](http://www.clsa-elcv.ca)



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# Biospecimen processing

42 aliquots per participant



# Proposed Analysis of baseline biomarkers

- Complete Blood Count (available)
- Proposed panel of biomarkers: albumin, ALT, creatinine, CRP, ferritin, hemoglobin A1C, lipids (cholesterol, HDL, Triglycerides, LDL), thyroid stimulating hormone, free T4, 25-hydroxyvitamin D
  - N~30,000 (Calgary Laboratory Services)
- Proposed genotyping: Affymetrix UKBiorepository array assay 820,967 SNPs
  - n=10,000 (McGill Genome Centre))
- Proposed epigenetic analysis: targeted age-associated CpG methylation using pyrosequencing and Sequenom EpiTyper
  - n=5,000 (UBC Genetics and Epigenetics Centre)



# Data and Biospecimen Access

- **Data and sample access is open**
  - All researchers have access to data
  - No preferential or exclusive access for any individual
- **Ethical and legal considerations**
  - How the data are used and for what purpose?
  - Public sector vs. private-sector access

# Baseline Data Release

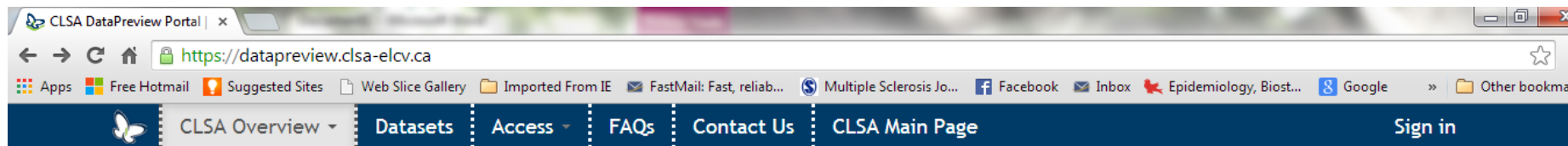
- 21,242 telephone interviews: Released June 2014
  - 2<sup>nd</sup> release Winter 2015 to include cognitive scores (scoring ongoing), occupational classes (planned)
- 30,000 Data Collection Site Visits: anticipate 1<sup>st</sup> release of data within 10 months of completed recruitment and baseline assessments ~Spring 2016
- Application-to-access process via CLSA DataPreview Portal ([www.clsa-elcv.ca](http://www.clsa-elcv.ca))
- Formal Review through the CLSA Data and Sample Access Committee
- Following approval, release requires data/biospecimen transfer agreements

# **Aim 1: Recruitment and Baseline Data Collection Data Release**

- DataPreview Portal soft launch June 2014
- Gateway to access for data\* and biospecimens
  - Meta data: data dictionaries, data collection tools
  - Documentation and application form
  - Variable search mechanism providing simple descriptive statistics for selected variables

\*Currently available for alphanumeric data

# DataPreview Portal



## CLSA DataPreview Portal



Welcome to the DataPreview Portal for the Canadian Longitudinal Study on Aging ([CLSA](#))! The CLSA data and biological samples are available to approved Canadian and international public sector researchers, with no preferential or exclusive access for any individual. As you navigate the site you will find information about the [application process and requirements](#) for data and sample access. If you are new to using the portal we recommend you begin by reading the [Frequently Asked Questions](#).



Study design and documents

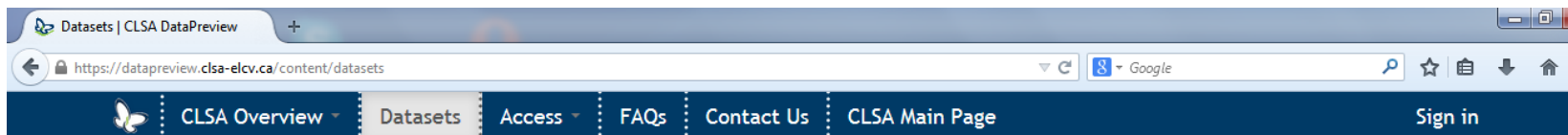


Dataset from the baseline interview  
of 20,000+ Tracking participants



Application procedure, required  
forms and data access policies

# DataPreview Portal



[Home](#)

## Datasets

A Canadian Longitudinal Study on Aging (CLSA) dataset holds and describes variables collected from participants at each wave of data collection. The variable search tool enables researchers to locate items of interest within all available data collected from CLSA participants.

Currently, data emanating from the over 20,000 Tracking participants who completed the baseline 60-minute telephone interviews are available. Cognitive scoring is ongoing and these data will be available as part of the second CLSA data release in December 2014.

Datasets from future data collection events will be added when they are available.



### Variables (June 2014)

Variables currently available in the first wave of the data release, with filtering and search options.



### Variables (December 2014)

Variables that will be available in the second CLSA data release in December 2014.



### Sampling weights

Description of sampling weights used in the CLSA.



### Questionnaire

Baseline 60-minute Telephone Interview questionnaire (Tracking).



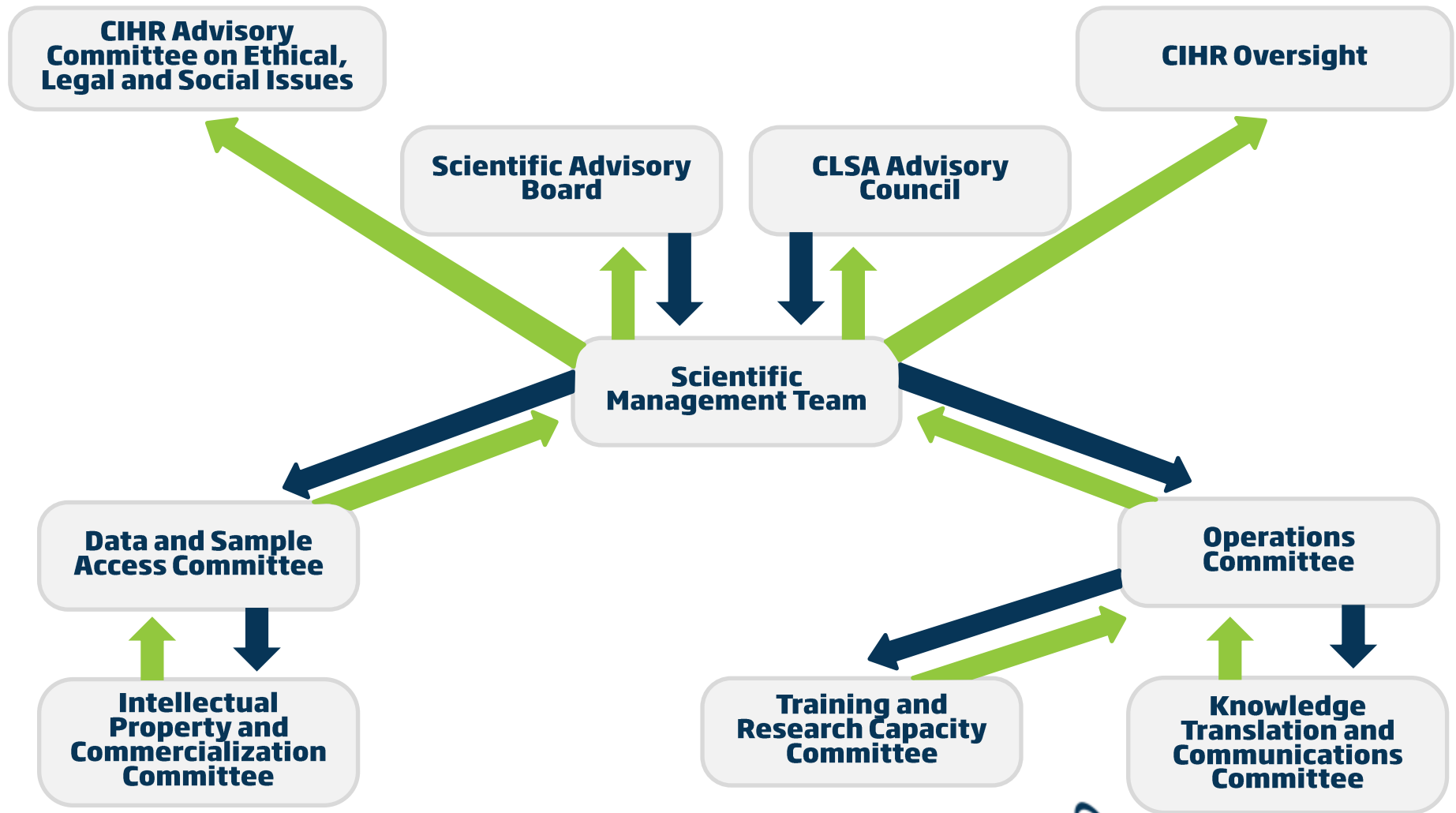
### Study design

Study design of the Canadian Longitudinal Study on Aging (Tracking participants).



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# CLSA Governance Structure





# CLSA Infrastructure

## 4 Enabling Units



**National Coordinating Centre (NCC)**  
Director: Parminder Raina



**Biorepository and Bioanalysis Centre (BBC)**  
Director: Cynthia Balion



**Genetics and Epigenetics Centre (GEC)**  
Directors: Michael Kobor and Michael Hayden



**Statistical Analysis Centre (SAC)**  
Director: Christina Wolfson

# Quality System

Assessments

Continual Improvement

Documents and Records

Information Management

Personnel

Equipment

Process  
Management

Stakeholder Focus

Managing Non-conforming  
Events

Purchasing/  
Inventory

Facilities and  
Safety

Organization



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# **CLSA Research Team**

## **Scientific Management Team**



**Co-principal Investigator  
Christina Wolfson (McGill)**



**Lead Principal Investigator  
Parminder Raina (McMaster)**



**Co-principal Investigator  
Susan Kirkland (Dalhousie)**



# CLSA Research Team

## Operations Committee and Scientific Leads



## Provincial & Institutional Partners



## Funders

Supported by the Government of Canada through the Canadian Institutes of Health Research and the Canada Foundation for Innovation.



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**Connect  
with us**

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