An Overview of the Canadian Longitudinal Study on Aging

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Waterloo, Ontario, Canada

September 29, 2014

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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

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Our Aim

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

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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

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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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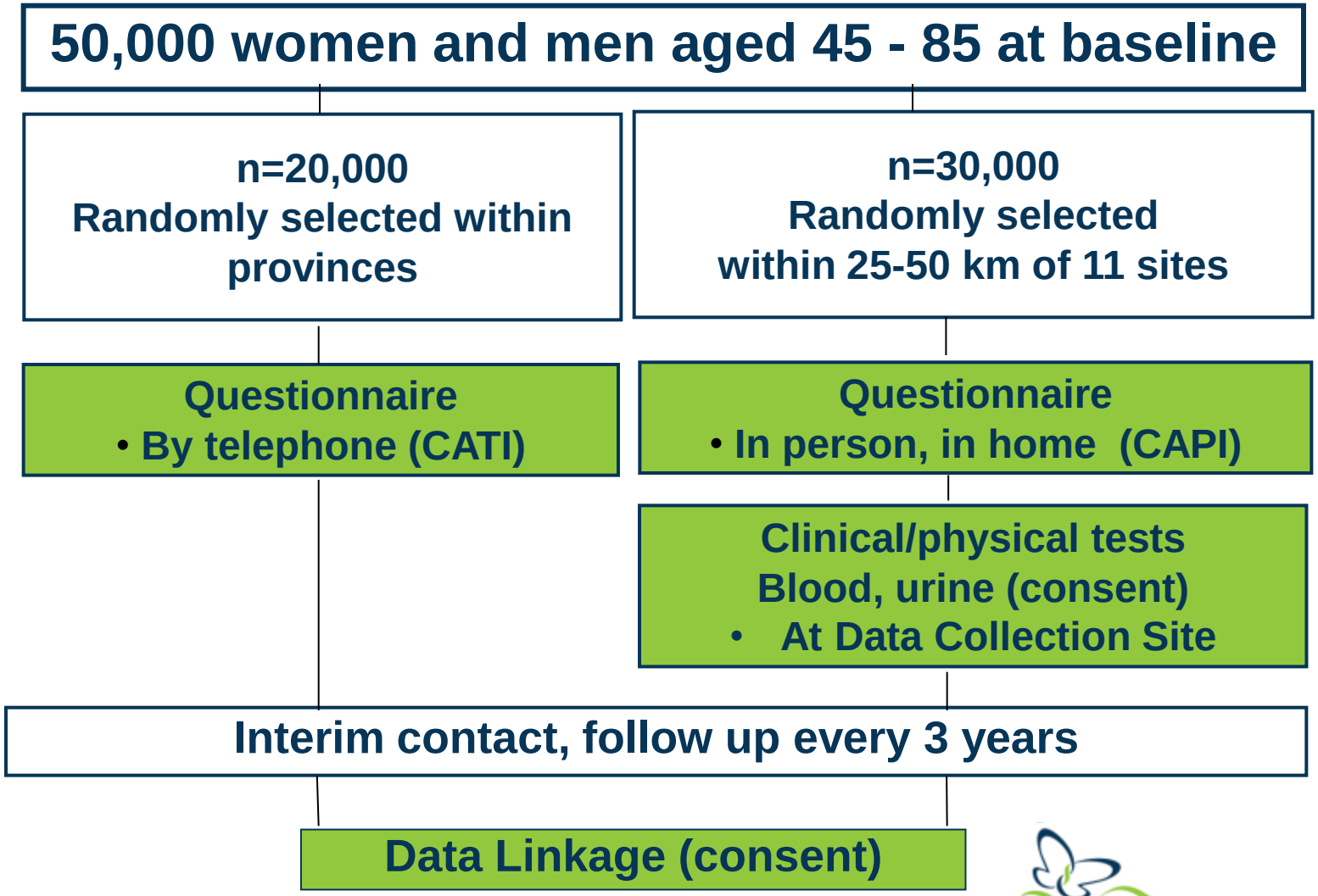
Study Overview



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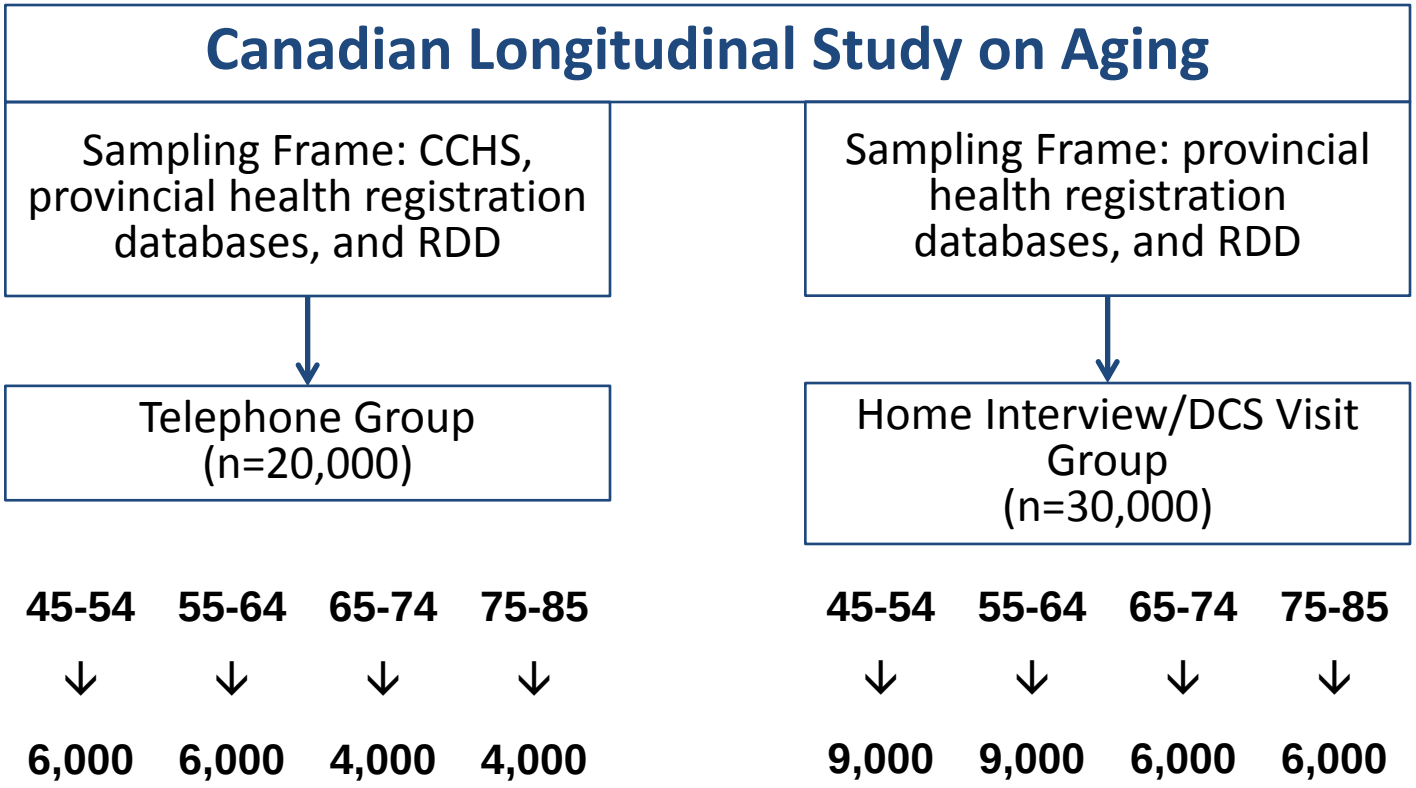
CLSA Sampling



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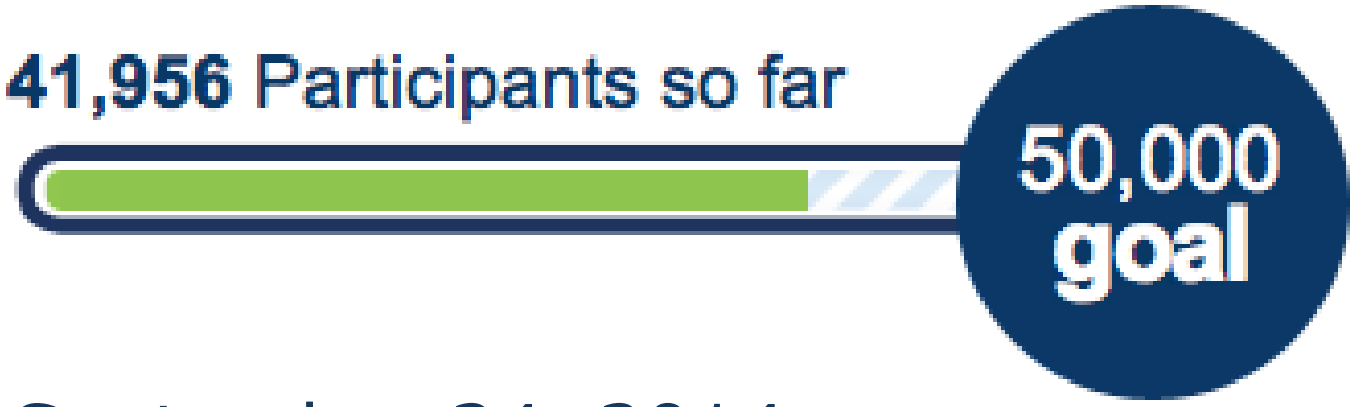

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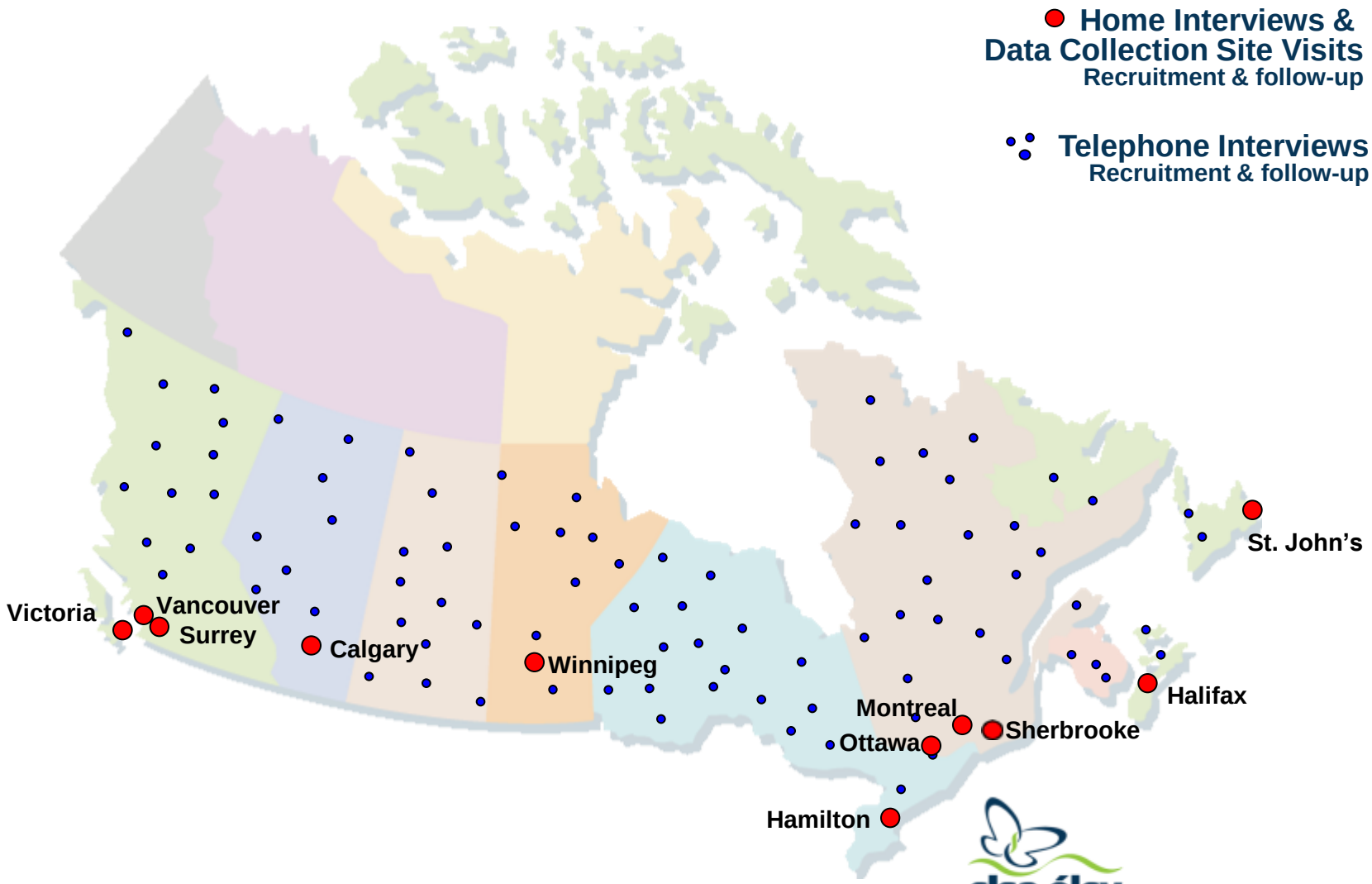
Participant recruitment



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

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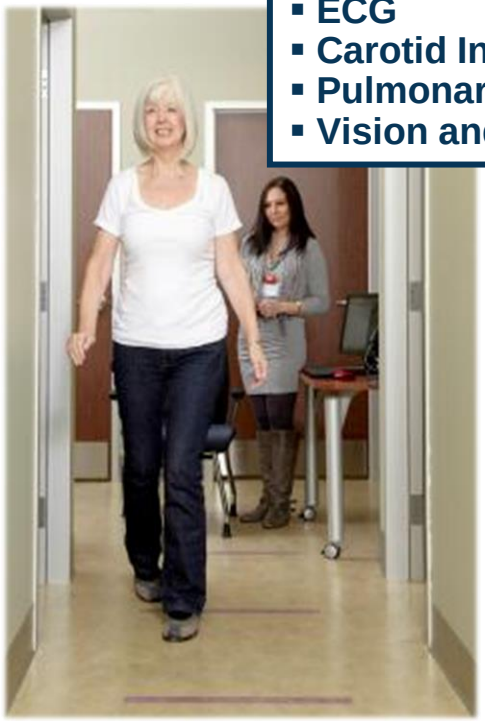
CLSA Data Collection

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

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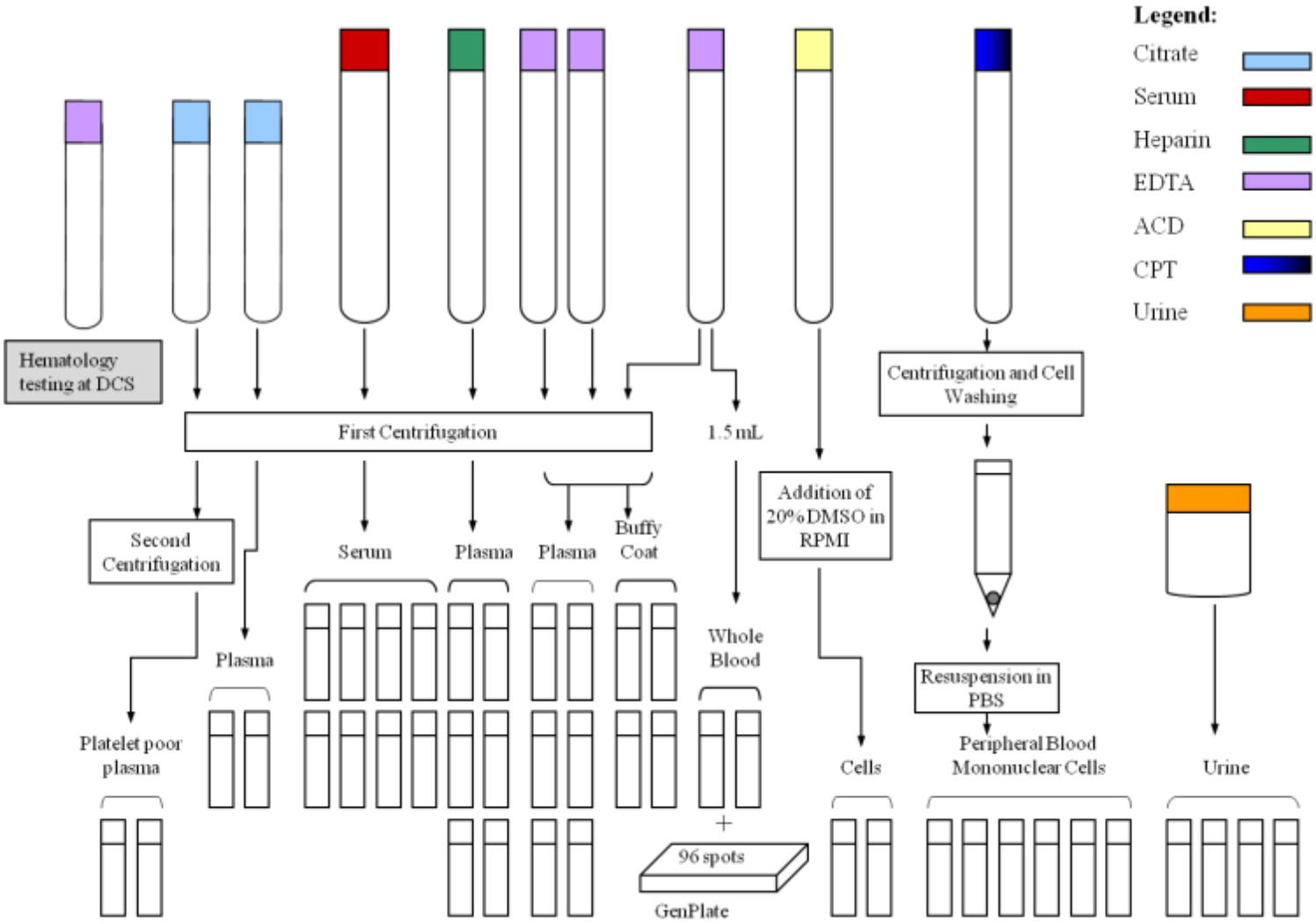
Biospecimen processing

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
  - 2nd release Winter 2015 to include cognitive scores (scoring ongoing), occupational classes (planned)
- 30,000 Data Collection Site Visits: anticipate 1st 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)
- Formal Review through the CLSA Data and Sample Access Committee
- Following approval, release requires data/biospecimen transfer agreements

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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

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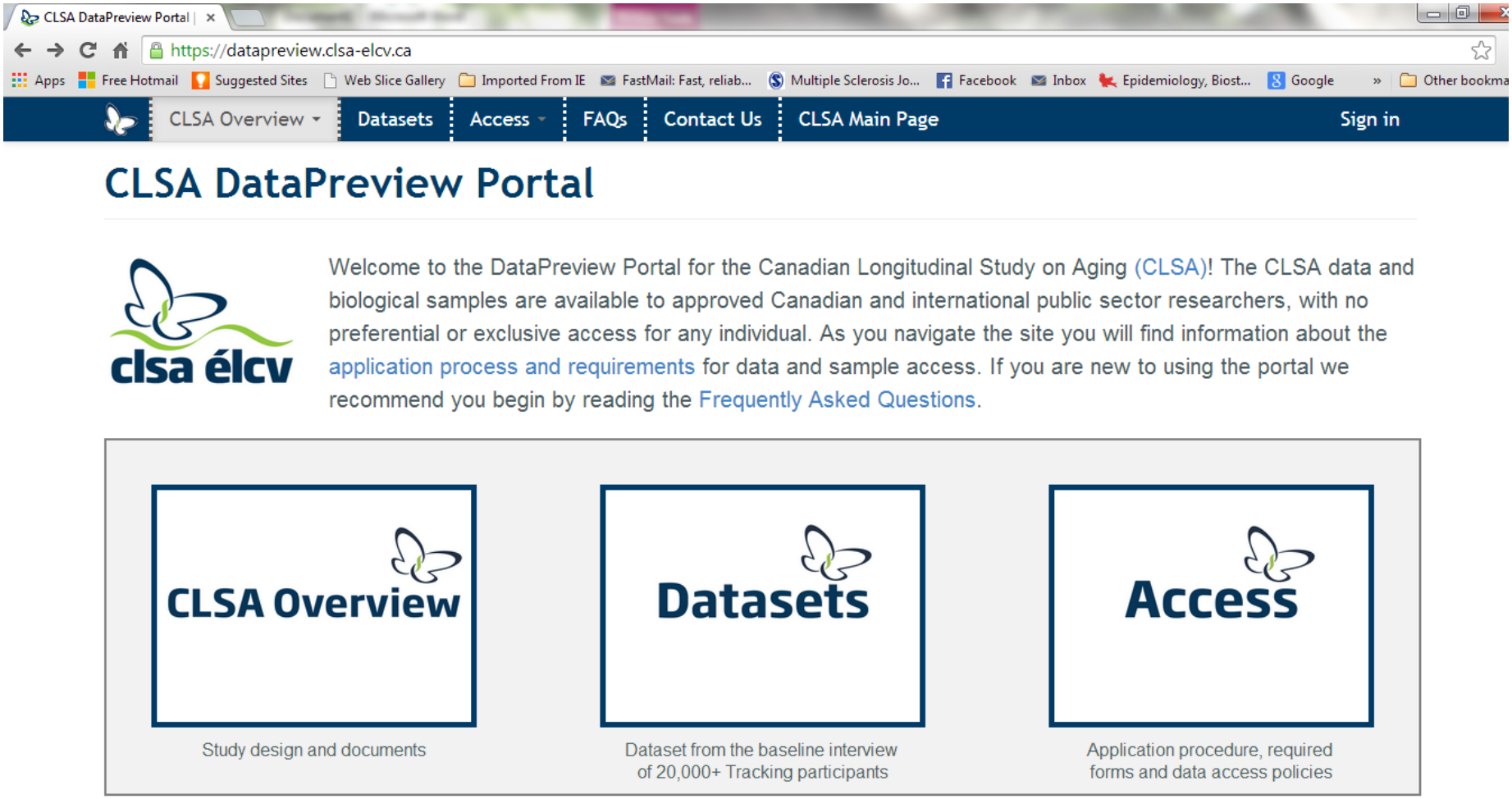
DataPreview Portal



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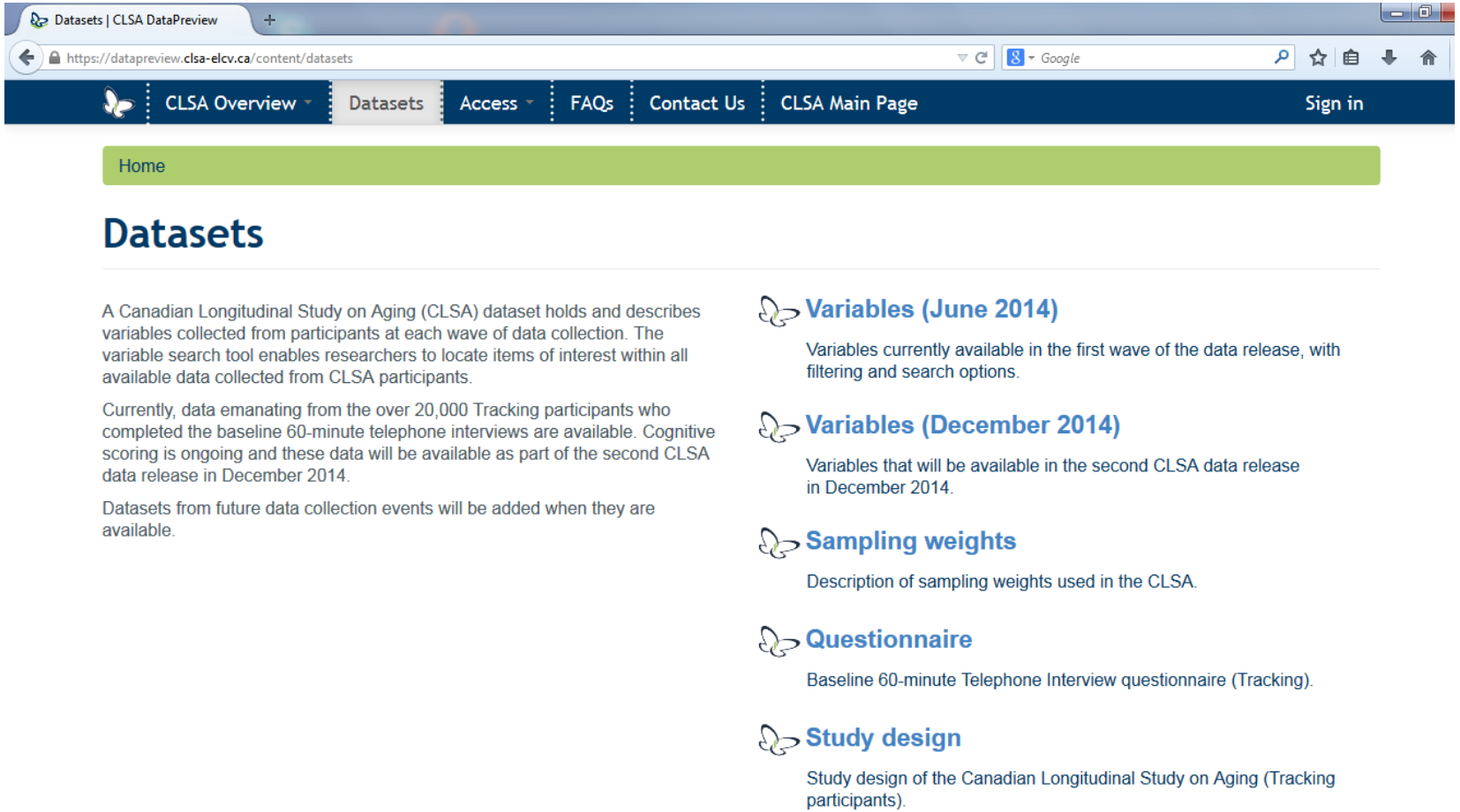

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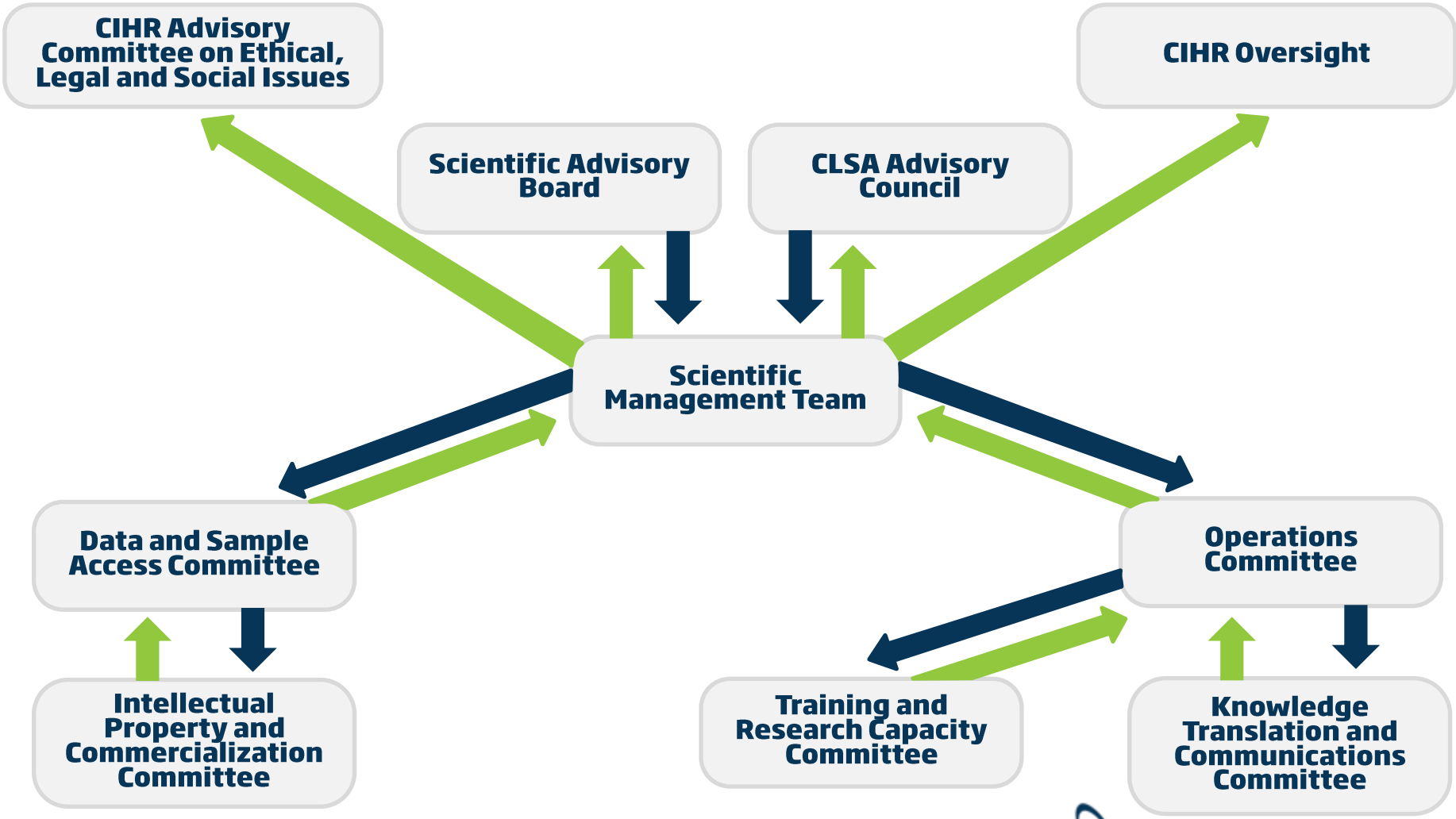
CLSA Governance Structure



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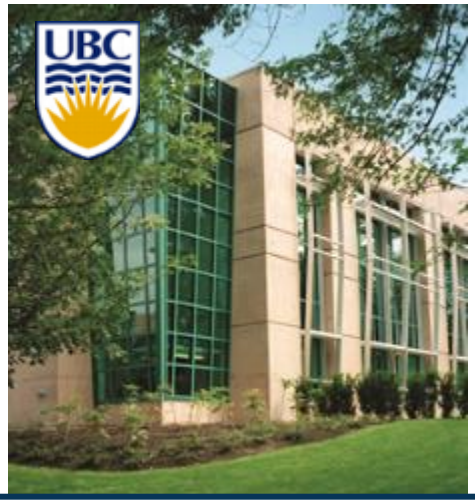
CLSA Infrastructure

4 Enabling Units

McMaster University

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

Lead Principal Investigator
Parminder Raina (McMaster)

Co-principal Investigator
Christina Wolfson (McGill)

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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