

**LETTER OF INTENT**  
**Transformational Research: Canada 2018**

**DEADLINE: Thursday, December 7, 2017, 2:00 p.m. EST**  
 Applicants will be notified of Proposal invitations in April 2017.

***This Letter of Intent is an example only. Do not complete this paper application.***  
 Please submit the Letter of Intent online through the Institute's grant management system  
 at <https://weston.smartsimple.ca/welcome/neuroscience>

**Principal Applicant:**

**Project Title:**

**Applicant Details**

Team Members	Organizations	Primary Contact Information	Role in Project	Estimated Time Spent on Project
1. Salutation:	Primary Organization:	Address:	<input type="checkbox"/> Principal Applicant	%
First Name:	Position Title:	Phone:	<input type="checkbox"/> Co-Applicant	
Last Name:	Other Affiliations/ Position Titles:	Email:	<input type="checkbox"/> Collaborator	
2. Salutation:	Primary Organization:	Address:	<input type="checkbox"/> Principal Applicant	%
First Name:	Position Title:	Phone:	<input type="checkbox"/> Co-Applicant	
Last Name:	Other Affiliations/ Position Titles:	Email:	<input type="checkbox"/> Collaborator	

*Note: Projects are not limited to two team members as laid out on this sample application form; projects may include as many team members as needed for the successful execution of the project.*

## Application Overview

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### 1. Keywords to describe the proposed work:

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#### **New for 2018:**

- Translational research using humans or human samples/data is in scope, except for clinical trials or clinical trial sub-studies which should be submitted to the Early-Phase Clinical Trials or Rapid Response programs.
- The Institute has updated which **tools** are in scope. Please see below to ensure your project is in scope.

#### **The Institute defines neurodegenerative diseases of aging to include:**

- Alzheimer's disease
- Dementia with Lewy bodies
- Frontotemporal dementia
- Multiple system atrophy
- Parkinson's disease
- Progressive supranuclear palsy
- Vascular contributions to the above diseases (not stroke-mediated vascular disease)
- Prodromes to the above diseases, including
  - Mild cognitive impairment as prodromal to Alzheimer's disease
  - REM sleep behaviour disorder as prodromal to Parkinson's disease

Proposed projects may relate to any disease(s) but must have impact on the diseases above and will be adjudicated based on their potential impact on these diseases.

#### **The Institute defines translational research to be:**

Applied research towards developing therapeutics for the prevention and/or treatment of human disease. For example, for small molecule drug development, this includes target validation to Phase IIa clinical trials. Basic/discovery research, including but not limited to understanding disease mechanisms and discovering genes implicated in disease, is not in scope.

#### **The Institute defines therapeutics to be:**

A pharmacological approach (including small molecules, biologics, cell therapies and vaccines, including drug repositioning and repurposing), medical device, surgical intervention, or magnetic or electrical brain stimulation. Therapeutics can be for symptomatic relief, disease modification, or prevention.

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Complementary approaches such as exercise, acupuncture, music, dietary and nutritional supplements are not considered therapeutics. Identification of novel therapeutics is in scope (e.g., high throughput compound screens); however, identification of novel targets is out of scope. Identification of therapeutic targets is not in scope, including genes implicated in disease.

**The Institute defines tools to be:**

Items that accelerates development of therapeutics, e.g., imaging techniques or reagents, biomarkers, and diagnostics.

- Tools must have direct impact on the translational development of therapeutics (as defined by the Institute, i.e., target validation to phase IIa clinical trials) for neurodegenerative diseases of aging and will be valued only on their ability to do this.
  - Any value the tools contribute to basic research will not be taken into consideration. For example, tools will not be valued for their ability to identify new targets or understand disease mechanisms.
- Projects covering only the discovery/identification of a tool are out of scope.

**Notes about biomarkers:**

- Biomarkers must be being developed for human disease diagnosis, prognosis, for patient stratification to clinical trials or to predict response to therapies (surrogate for a clinical endpoint).
  - Biomarkers should measure pathology of the disease (e.g., fluid, imaging or tissue biopsy derived biomarkers) and not be based on behavioural phenotypes (e.g., gait or grip strength).
  - Genetic biomarkers including somatic mutations, SNPs, epigenetics and gene products are in scope if they meet the other eligibility criteria.
- If the project includes biomarker identification:
  - The project must also include experiments to validate the biomarker.
  - All the samples/data necessary for identification and validation must already be available/collected unless there is sufficient justification to collect new samples/data (e.g., samples cannot be stored).
  - Validation of biomarkers must occur in a well-characterized human subjects/samples/data. This validation must be in samples/data from different subjects than those used to identify the biomarker.
  - Post mortem tissue can only be used for validation of biomarkers previously identified in living subjects.

An identified biomarker is defined by the Institute as one that meets the following 4 conditions:

- Specific item(s) or signature to be measured can be defined;
  - For e.g.,
    - Presence of a particular bacterium

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- Disease-specific EEG signature
  - Specific brain structure with reduced volume
  - Single protein increased
  - Precisely defined fingerprint
    - If the biomarker is a fingerprint of a family of proteins or a signature of brain volume changes, the precise fingerprint or signature to be replicated must be previously determined. For e.g., omics studies for the purpose of identifying biomarker patterns or signatures are out of scope.
  - Exact identities of multiple individual factors that may be useful individually or as a specific composite
    - It is not in scope to know that a family of proteins is affected or that brain volume is changed overall, if the specific item or signature that is the biomarker cannot yet be specified. For example, a single protein is not considered an identified biomarker if only the family of proteins were previously identified to be affected.
  - In what it will be detected (e.g., which tissue/fluid), using what assay, and for what disease, can be clearly stated;
  - Specific item(s) (or signature) to be measured has been shown to be detectable in humans or human-derived samples/data in the tissue/fluid to be tested;
  - Compelling data exists to justify moving to validation (as defined by the Institute).
    - The most compelling data is likely in humans or human-derived samples/data with a relevant disease
    - The most compelling data will likely allow for a power calculation
    - Data from pathophysiologically relevant animal models could be considered if those animal data are compelling

Biomarker validation is defined by the Institute as:

- Testing a previously identified biomarker in a sufficient number of appropriate, comparable, well-characterized human subjects/samples/data to determine whether it is a sensitive and/or accurate biomarker.
  - If the proposed assay is different than the one used for initial biomarker identification, or if the assay will be used in a different type of specimen (e.g., different tissue/fluid or different species) then preliminary data must be provided to demonstrate that the assay works appropriately. For example, if a biomarker was identified using an assay in CSF and you are proposing to use the same assay to validate a biomarker in blood, there must be preliminary data demonstrating the assay works in blood.
  - Replication studies are not considered to be validation, e.g., using subjects with a different disease stage, or subjects on different drug regime if that regime could affect the biomarker.

***For cognitive assessment tools and clinical assessment instruments:***

- If developing a cognitive assessment tool or a clinical assessment instrument, the tool must be evaluated on patients with a relevant disease.
  - E.g., development of a questionnaire to assess cognitive decline.

- Requires discussion of why the new assessment would be better than existing ones
- **Clinical trial:** Research in which one or more human subjects are prospectively assigned to one or more interventions to evaluate the effects of those interventions on health-related biomedical or behavioral outcomes.
- **Clinical trial sub-study:** A study investigating a question not addressed by the main trial and which may involve obtaining additional measurements and data collection from a sub-group of all participants from the main trial.

**2. What type of tool(s) or therapeutic(s) is being developed as the primary goal of the project?**

*(Please select only one - tool or therapeutic – that is being **developed** as the primary goal of the project, e.g., do not select “Animal model” unless you are developing a new animal model.)*

**Tool**

- Animal model
- Assay/screen
- Biomarker
- Cell line
- Clinical assessment instruments
- Diagnostic
- Imaging technique or reagent
- New method of drug delivery
- Probe
- Other *Please specify:*

**Therapeutic**

- Biologic
- Cell therapy
- Electrical brain stimulation
- Magnetic brain stimulation
- Medical device
- Small molecule
- Surgical intervention
- Vaccine
- Other *Please specify:*

If you selected ‘biomarker’ above, what is the primary purpose of the biomarker?

- Diagnostic – determine whether patients have a particular disease or disease subset
- Prognostic – indicate future clinical progression
- Predictive, for patient stratification to clinical trials – identify patients likely to respond (favourably or unfavourably) to a specific treatment
- Response to therapy – indicate that the biological response to a therapeutic intervention is associated with clinical benefit (i.e., surrogate for a clinical end point)

**3. If a tool is being developed, please specify the type of tool being proposed in the project. If the proposed tool is a biomarker, please provide one sentence to answer the following question, being as specific as possible: What biomarker in what tissue/fluid/location are you measuring, using what technique, for what purpose, in which disease? If you are not developing a tool, please type “None”.**

**4. If a therapeutic is being developed as the primary goal of the project, what preclinical phase(s) of development does the project cover?**

*(Select only those that apply.)*

- |  |   |
|--|---|
| <input type="checkbox"/> Target validation           | <input type="checkbox"/> Safety and toxicity in animals |
| <input type="checkbox"/> Assay development           | <input type="checkbox"/> Efficacy in animals            |
| <input type="checkbox"/> Screening and hits to leads | <input type="checkbox"/> None                           |

Lead optimization

 Other *Please specify:*
**5. Research will have a significant impact in which neurodegenerative disease(s) of aging?**
*(Select only those that apply. There is no benefit to selecting more diseases.)*
 Alzheimer's disease

 Dementia with Lewy bodies

 Frontotemporal dementia

 Multiple system atrophy

 Parkinson's disease

 Progressive supranuclear palsy

 Vascular contributions to the listed diseases  
 (not stroke-mediated vascular disease)

 Prodromes to the listed diseases (please also  
 check the disease(s) to which your condition is a  
 prodrome)

**6. Relevance of proposed work to the Institute's mandate:** using the Institute's definitions (above), explain how the primary tool or therapeutic being developed in this project (as identified in question 2 above) is translational research, and will accelerate the development of therapeutics for neurodegenerative diseases of aging. For tools, this requires addressing how the tool will have immediate impact on accelerating translational research on therapeutics. *(maximum 200 words.)*

**7. What type of tool(s) and/or therapeutic(s) is being developed aside from the primary goal of the project?**

(E.g., do not select "Animal model" unless you are developing a new animal model. There is no benefit to selecting more items than fewer items. Select "None" if there are no tool(s) and/or therapeutic(s) being developed aside from the primary goal of the project.)

**Tool**
 Animal model

 Assay/screen

 Biomarker

 Cell line

 Clinical assessment instruments

 Diagnostic

 Imaging technique or reagent

 New method of drug delivery

 Probe

 Other *Please specify:*
**Therapeutic**
 Biologic

 Cell therapy

 Electrical brain stimulation

 Magnetic brain stimulation

 Medical device

 Small molecule

 Surgical intervention

 Vaccine

 Other *Please specify:*
 None

If you selected 'biomarker' above, what is the primary purpose of the biomarker?

 Diagnostic – determine whether patients have a particular disease or disease subset

 Prognostic – indicate future clinical progression

 Predictive, for patient stratification to clinical trials – identify patients likely to respond  
 (favourably or unfavourably) to a specific treatment

 Response to therapy – indicate that the biological response to a therapeutic intervention is  
 associated with clinical benefit (i.e., surrogate for a clinical end point)

Please provide one sentence to answer the following question, being as specific as possible. What biomarker in what tissue/fluid/location are you measuring, using what technique, for what purpose, in which disease?

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**8.** Have you applied to the Weston Brain Institute previously with similar proposed work? If so, specify the previous LOI title and program applied to. Please briefly explain how this LOI is different than the previously submitted work.  
(This information will not be used to assess the application.)

Yes *Please specify:*  
 No

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**9.** Have you applied to other funding agencies with the same proposed work?  
(This information will not be used to assess the application.)

Yes *Please specify:*  
 No

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**10.** Is this your first time applying for a neuroscience grant from the Weston Brain Institute?  
(This information will not be used to assess the application.)

Yes  
 No

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**11.** Is this your first application for a research grant specifically in the area of neurodegenerative diseases of aging?  
(This information will not be used to assess the application.)

Yes  
 No

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The adjudication committee for this program does not include Canadians. Please list the full names of any individuals located outside of Canada who are competitive with you and therefore should not review your application. Please do not exclude reviewers for other reasons as we are unable to honour those requests. Type "None" if you have no reviewer exclusion.  
(This information will not be used to assess the application.)

## Project Information

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**1. Central hypothesis, goals and specific aims:** (*maximum 500 words*)

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**2. Significance and impact:** Why is it important that the proposed work be carried out? How will successful completion of this work accelerate the development of therapeutics for neurodegenerative diseases of aging? (*maximum 200 words*)

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**3. Experimental approach:** Please outline how the proposed work will be carried out and interpreted, including clear go/no-go criteria. Please do not include background information (e.g., pathology, etiology or incidence/prevalence) of neurodegenerative diseases of aging. (*maximum 1300 words*)

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**4. Preliminary data:** Preliminary data that best supports the application should be uploaded as a PDF of maximum 1 page.

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**List of publications cited in the application:** Please include full citations with a complete author list and PMID.

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