

# Alzheimer's Disease and Related Dementias

Dr. Darrell Mousseau  
University of Saskatchewan

## Overview

Research provides hope for people living with dementia. The vision of the Alzheimer Society of Saskatchewan is, “a world without Alzheimer’s disease and related dementias.” Supporting research is a priority for the Alzheimer Society of Saskatchewan.

The Alzheimer Society of Saskatchewan (ASOS) and the Saskatchewan Health Research Foundation (SHRF) are celebrating our 10-year partnership to fund the Saskatchewan Research Chair in Alzheimer’s Disease and Related Dementias. Dr. Darrell Mousseau, a University of Saskatchewan researcher, was awarded the Chair worth \$2 M over 10 years.





**Alzheimer Society**  
S A S K A T C H E W A N

**\$1 Million**

\$100,000 per year  
over 10 years



**SHRF**  
SASKATCHEWAN  
HEALTH RESEARCH  
FOUNDATION

**\$1 Million**

\$100,000 per year  
over 10 years

Infrastructure and support provided by **University of Saskatchewan**



**\$4+ Million**

Additional funding obtained  
during the tenure of the  
Saskatchewan Research Chair

## Mentorship and Collaboration

MSc students,  
graduated

8

Postdoctoral  
Fellows

5

Honour's  
students

22

Summer students  
(undergraduate)

23

PhD students,  
current

1

Technicians

5

High school  
students

26

Academic and  
community  
collaborators

10

## Sharing Knowledge

Posters

100+

Articles

39

Book  
chapters

2

Presentations  
(provincial  
and national)

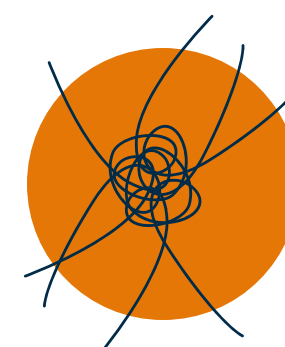
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# Discoveries and Impact



We have provided several reports that clearly show differences in the human male and female brain, and these differences speak to the potential for different disease processes between the sexes. Thus, there is likely no 'one size fits all' therapeutic for regulating amyloid levels in males and females and knowing this will help us to understand that we need to develop different therapeutics for each sex.



We have used our research funding to study phosphorylation on Tau protein that is a contributor to the Alzheimer's disease tangle pathology. We know that the expression of an enzyme that reduces the phosphorylation of many proteins and many pro-survival mechanisms within the cell is altered in the Alzheimer brain. We are the first research group to study the role of this enzyme in the context of Alzheimer's disease.



We know that there is increased risk of Alzheimer's disease associated with a class of antidepressant drugs that target the serotonin transporter. We can now show that these drugs block the removal of A $\beta$  from the cells, and because a transporter is blocked this leads to the accumulation of A $\beta$  within the cell.

Secondly, we have also shown that A $\beta$  can bind irreversibly to an enzyme that is important for depression causing it to be more active and to trigger oxidative stress which starts the process to kill the cell. We have been able to design small peptides that can block this process. This could lead to a means of identifying Alzheimer's disease much earlier or could be modified to be used as a therapeutic.



Our research has shown that not all A $\beta$  peptides are bad: indeed, our brain generates a number of A $\beta$  peptides of different length, and we have shown that shorter A $\beta$  peptides can protect against the longer peptides found in the Alzheimer brain. Using a therapeutic that indiscriminately targets all A $\beta$  peptides would have no clinical benefit as it would remove the bad A $\beta$ s, but also the good A $\beta$ s that are protective.

To learn more visit [alzheimer.ca/sk](http://alzheimer.ca/sk) or [shrf.ca](http://shrf.ca)

## Celebrating Success



“Funding research is critical to our vision and mission. When families are impacted by dementia, they want a diagnosis, they want to understand the disease so they can live well with dementia, following that they want a cure – not so much for themselves but for their children and grandchildren. Our partnership with SHRF and our donors to fund the Saskatchewan Research Chair has found additional pieces to help solve the Alzheimer’s disease and dementia puzzle.”

- Joanne Bracken, CEO  
Alzheimer Society of Saskatchewan

“Our partnership with ASOS was a first for SHRF and the Saskatchewan Research Chair program. It defined how SHRF and non-profits in the province could come together to support expertise and improve the impact of research for a particular health challenge. Darrell has not only been a success story for the Chair program, he has been an ambassador for SHRF and ASOS, and his work has been transformational in the area of Alzheimer’s disease and dementia research.”

- Patrick Odnokon, CEO  
Saskatchewan Health Research Foundation



“Clearly the Saskatchewan Research Chair has been a major benefit to me, my research and the University of Saskatchewan, but what is most important is the impact of the research and the contributions we were able to make that will lead to future research findings.”

- Dr. Darrell Mousseau  
University of Saskatchewan

## Inspiring Hope

As the Saskatchewan Research Chair in Alzheimer’s Disease and Related Dementias comes to an end, both organizations want to thank Dr. Mousseau for his efforts that have advanced our knowledge of the disease and provided the basis for future research. We know your continued work will provide even more answers that will move research in the area forward. It is this work that strengthens our hope for earlier detection, better treatments, and fulfilling the vision of “a world without Alzheimer’s disease and related dementias.”