



# SPOTLIGHT ON DEMENTIA RESEARCH

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Alzheimer Society of Canada

1. TREATMENT
2. DIAGNOSIS
3. RISK REDUCTION
4. LIVING WELL

Red

Face

Daisy



# 10 WARNING SIGNS

1

Memory loss

2

Difficulty with familiar tasks

3

Language problems

4

Disorientation

5

Poor judgment

6

Difficulty planning or problem solving

7

Misplacing things

8

Changes in mood and behaviour

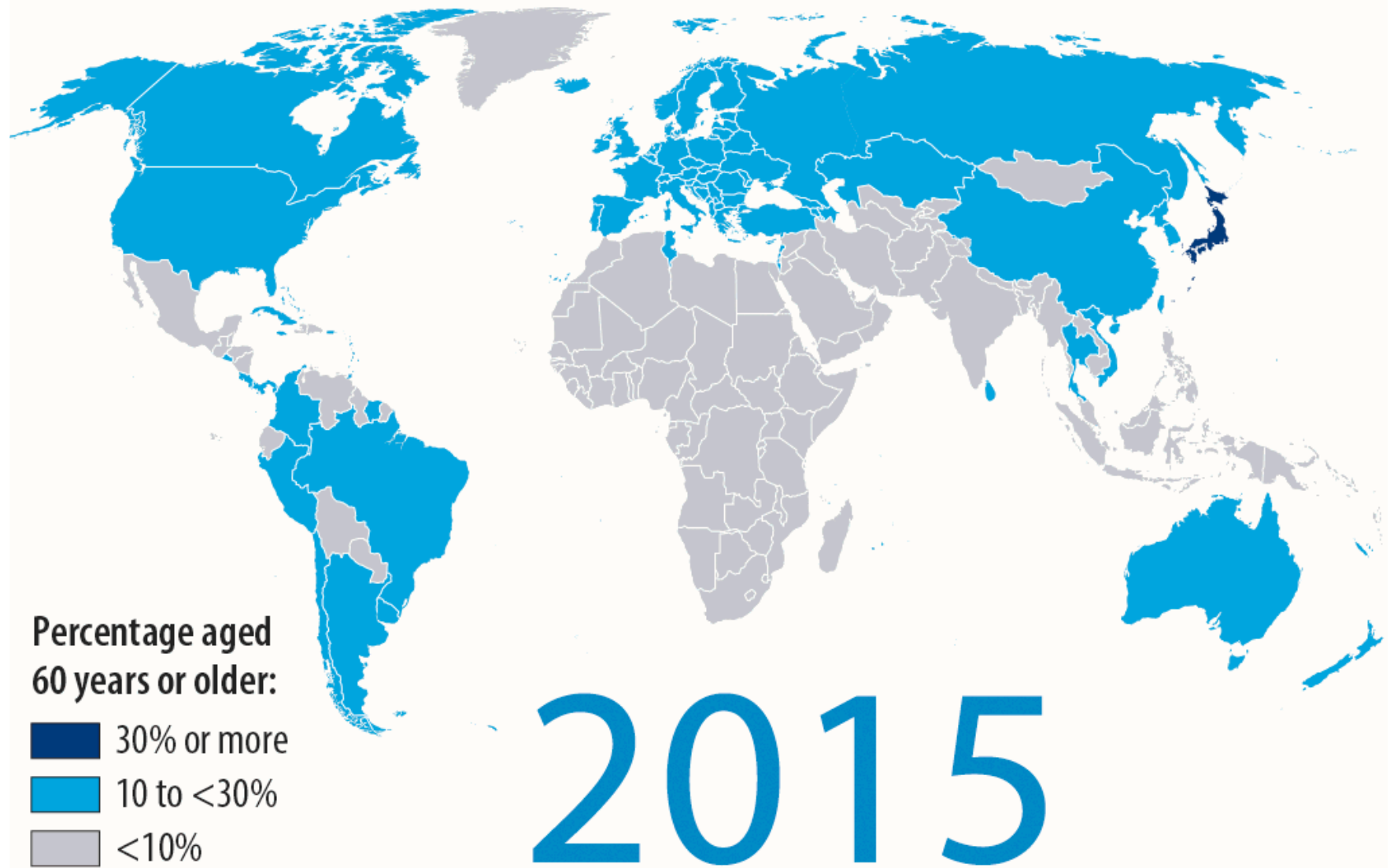
9

Changes in personality

10

Withdrawal from socializing

# Populations are getting older

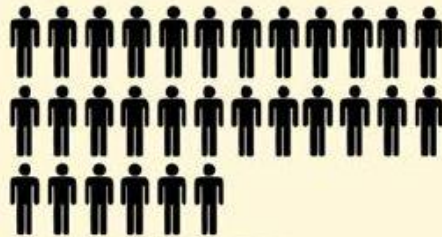


Source:WHO

# Alzheimer's Research in Canada

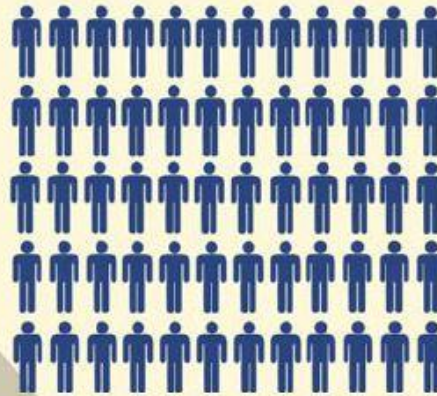
Canadians living with Alzheimer's and other dementias

2011



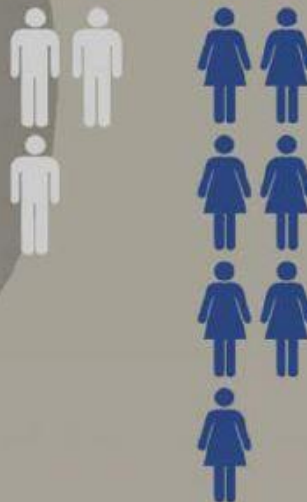
x 25 000 =  
**747 000**

2031



x 25 000 =  
**1.4 Million**

Men vs. Women



**72% Women**

Statistics supplied by:  
Alzheimer Society of Canada

## funding

**\$214**  
**Million**

CIHR funding for dementia  
research over the last  
10 years

Economic cost  
of dementia

2011



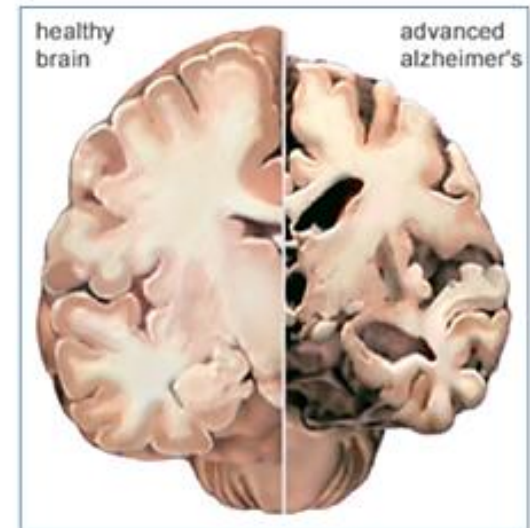
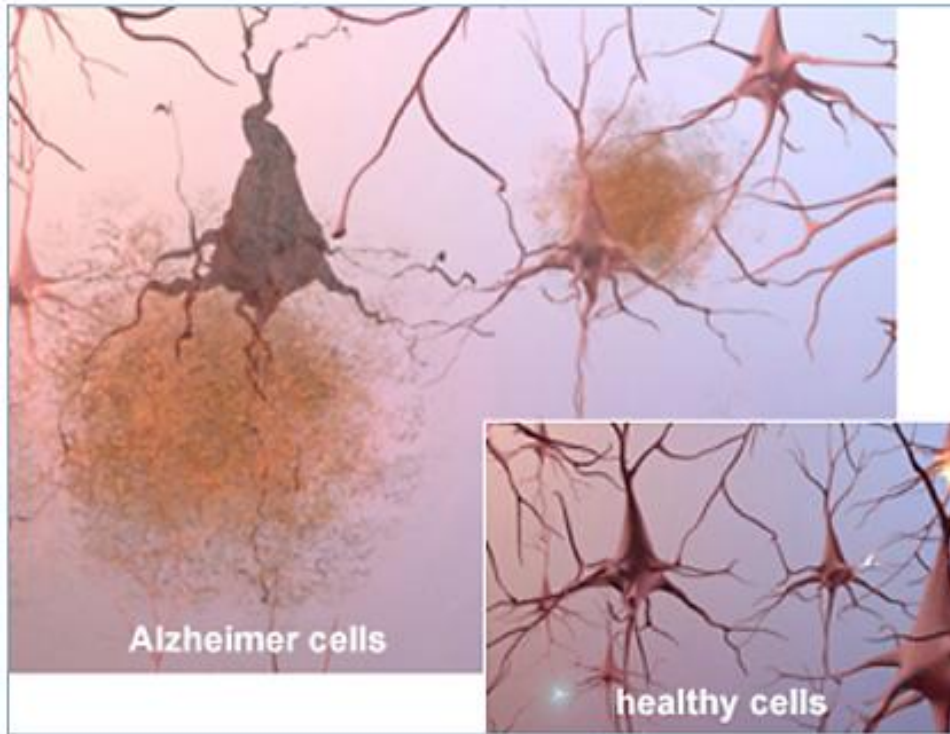
**\$33 Billion**

2040



**\$293 Billion**







SOCIÉTÉ ALZHEIMER SOCIETY

TREATMENT

# Current Treatment

## Cholinesterase inhibitors

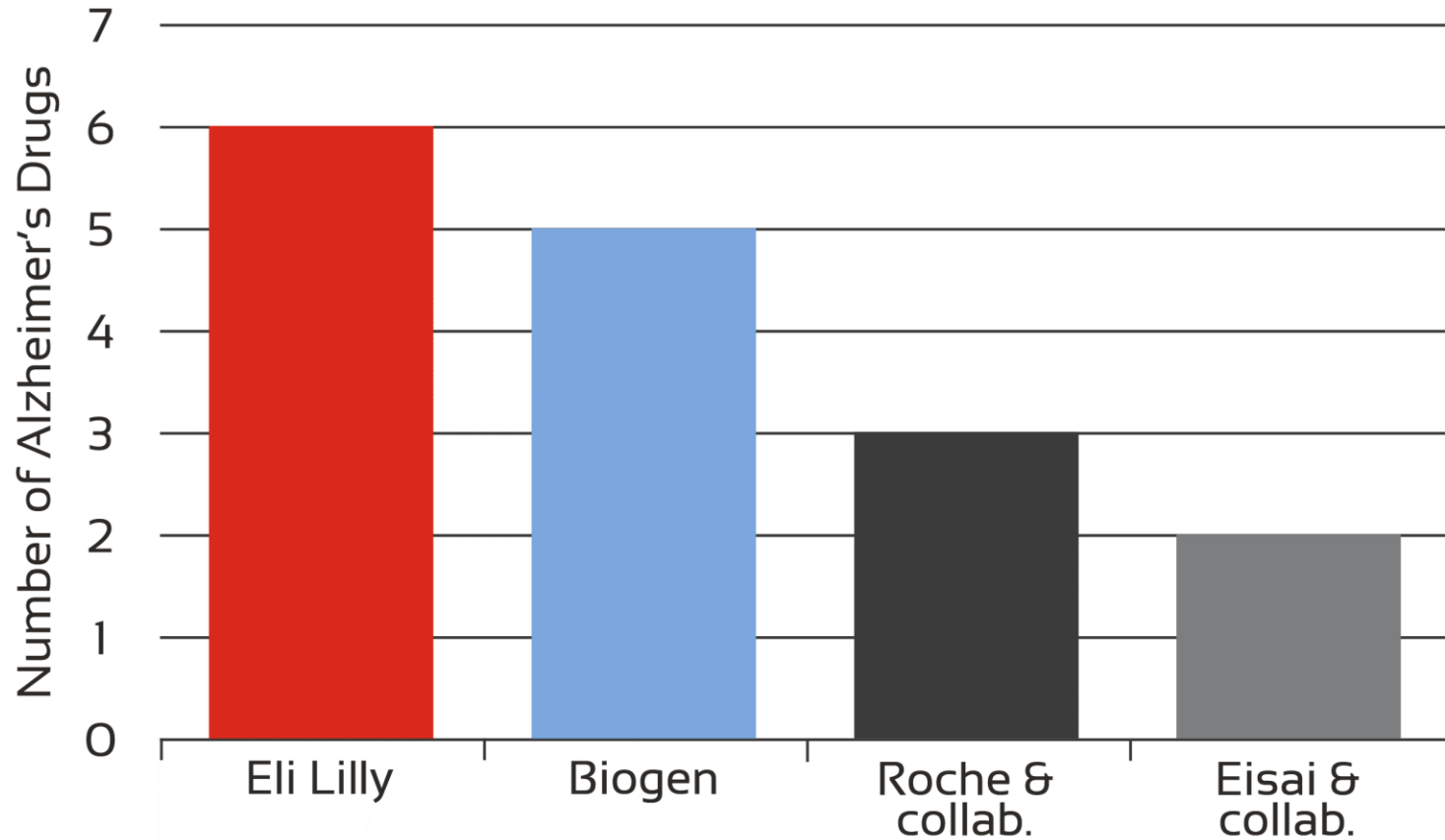
Increase the amount of acetylcholine in the brain to support better cell-to-cell communication

## NMDA receptor antagonists

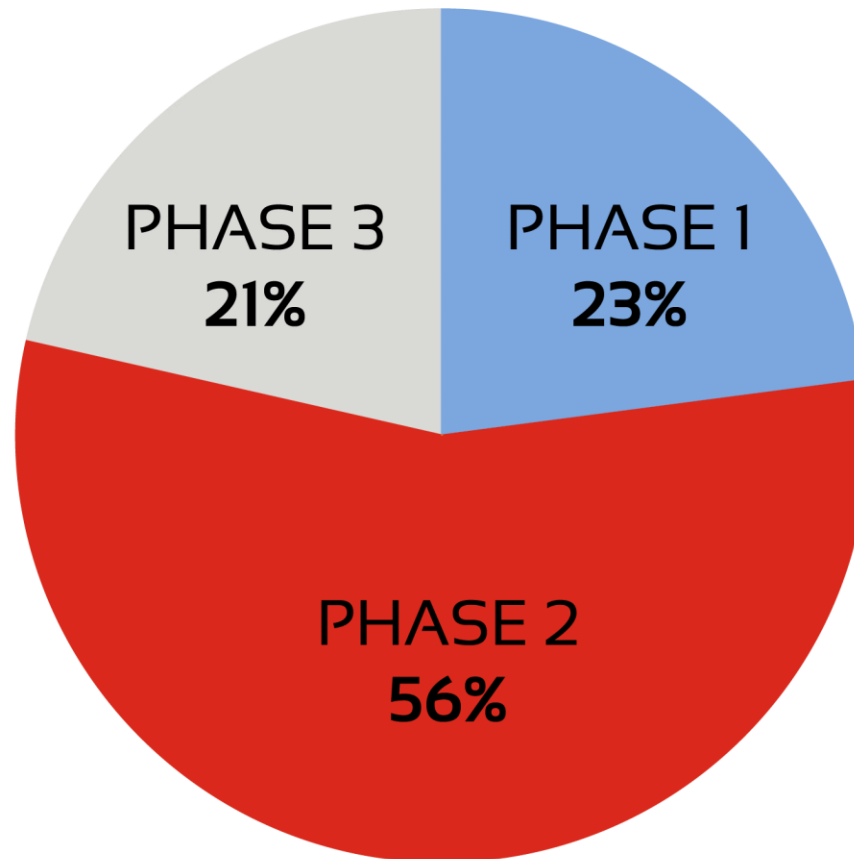
Alters the way in which the brain cells communicate to support better communication

# Notable Companies By Number of Alzheimer's Drugs in Development

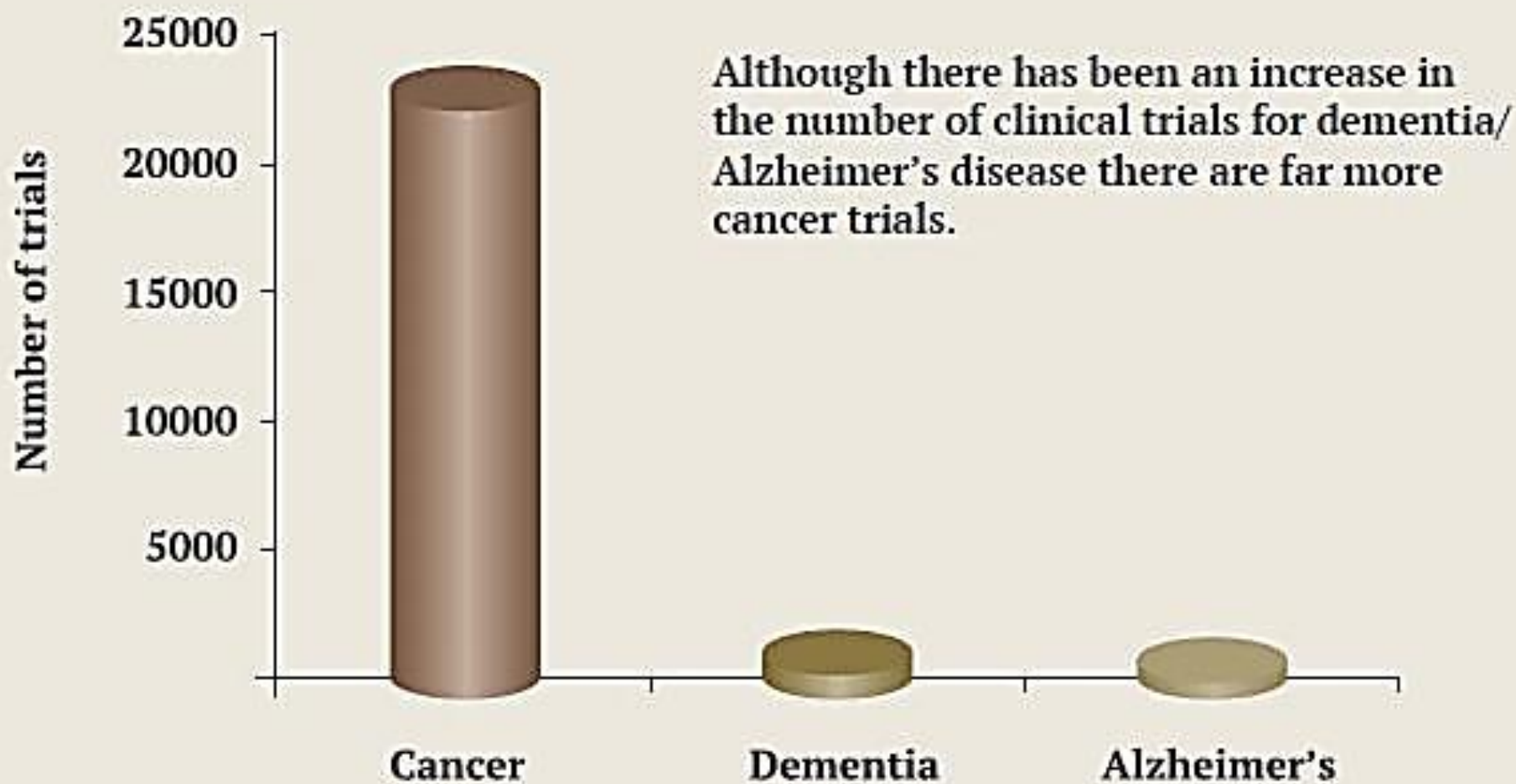
(AS OF SEPT 13, 2019)



# Number of Alzheimer's Drugs in Development (AS OF FEB, 2019)

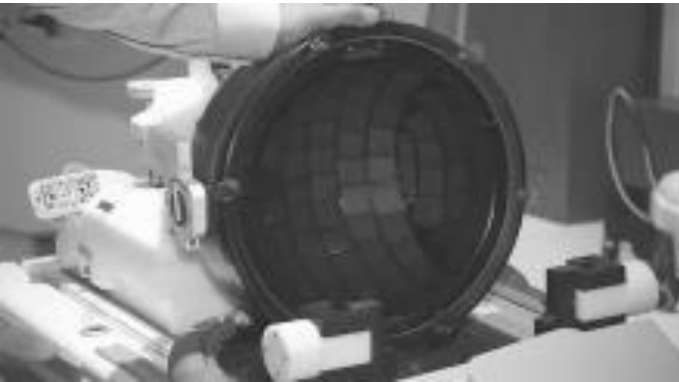
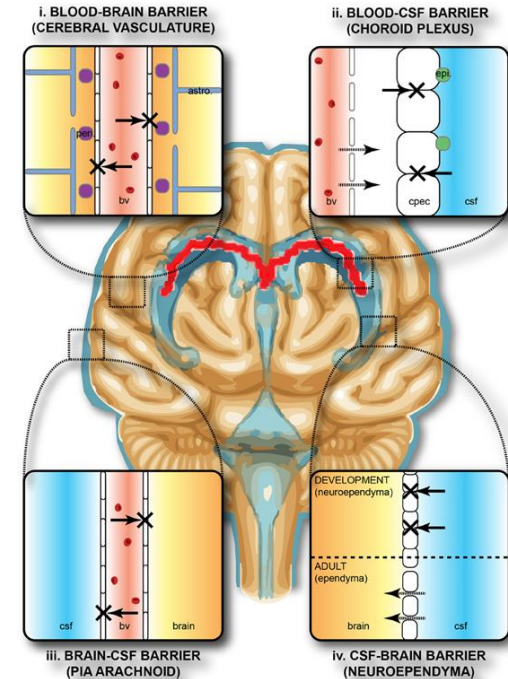


# Clinical Trials



# Moving Drugs Across the Blood-Brain Barrier

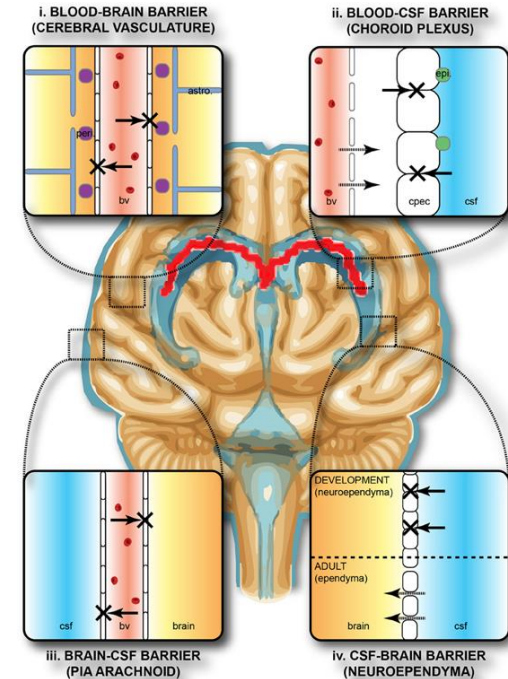
- Protective barriers of the brain that separates circulating blood from the brain and extracellular fluid in the central nervous system, difficult for drugs to cross
- Microbubbles are injected into the vein which travels to the brain in 30 seconds.
- Ultrasound waves are sent to a small area of the brain to shake the microbubbles, temporarily opening the blood brain barrier.





# What does this mean?

- The blood-brain barrier can be opened using focused ultrasound
- This trial follows 2 decades of technology development and lab experiments on mice, which also restored working memory and growth of new neurons
- If this phase proves successful, researchers may begin another trial to test small amounts of drugs into areas of the brain most affected by dementia.





## Sustained Inflammation in the brain – a link to Dementia

- Multiple studies demonstrating a sustained inflammatory response in the brain
- The brain's macrophages and immune cells have sustained activation seen post-mortem and in animal models
- Correlation studies show a link between stress and brain matter changes



What does  
this mean?

- Inflammation may have chronic effects on the brain's structure and cognition
- Can mean that anti-inflammatory medications could be a viable option for treatments of dementia
- Research needs to be done to understand if reducing stress during mid life can change the course of inflammation



# Synthetic Cannabinoid Treatment for Agitation in Alzheimer's Disease

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- Researchers looked at the potential benefits of nabilone, a synthetic cannabinoid in reducing agitation, pain and improved weight gain
- A 14-week clinical trial of 39 participants received nabilone for 6 weeks followed by 6 weeks of placebo



# Synthetic Cannabinoid Treatment for Agitation in Alzheimer's Disease

## FINDINGS

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- **Agitation improved** in those taking nabilone, compared to placebo
- Nabilone **improved overall behaviour symptoms**
- Nabilone may be an effective treatment for agitation, however the **risk of sedation** must be carefully monitored.
- **A larger clinical trial** will allow for findings on effectiveness and safety of nabilone to be confirmed.



# What does this mean?

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- Nabilone may be effective in treating agitation in people with Alzheimer's disease
- This study may offer guidance for physicians on the use of cannabinoids for AD.
- Additional studies are needed to investigate anticipated side effects associated with cannabinoids, such as sedating and worsening memory.
- Research in this area is expected to go a long way in supporting policies, and standards for practice that focus less on short term attempts.





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DIAGNOSIS

# Blood Biomarkers

Potential early indicators of a disease, can help with diagnosing or identifying risk

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## Blood diagnostic biomarkers



- Significant area of research assessing a range of diagnostic biomarkers including amyloid and tau
- Early results show promise as 'signatures' are developed

## Blood predictive biomarkers

- Several markers being researched, promising results from plasma clusterin
- Studied in 1532 participants showed an age-dependent association with increased risk of dementia

# What does this mean?

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- Blood biomarkers are still early stage and require cross-validation
- Are non-invasive and cost-effective compared to imaging or spinal fluid measures
- Can be used as a first-line screening tool or as part of a multistep process for diagnosing

# Eye Testing

## Blood flow and memory

- optical coherence tomography angiography
- blood flow in the retina is different as is the density of blood vessels for people with dementia
- thinner retinas are more likely to be associated with memory impairment

## Eye movement and memory

- changes in eye movement when viewing certain objects can indicate changes in the brain as a result of dementia, potentially before symptoms manifest

# What does this mean?

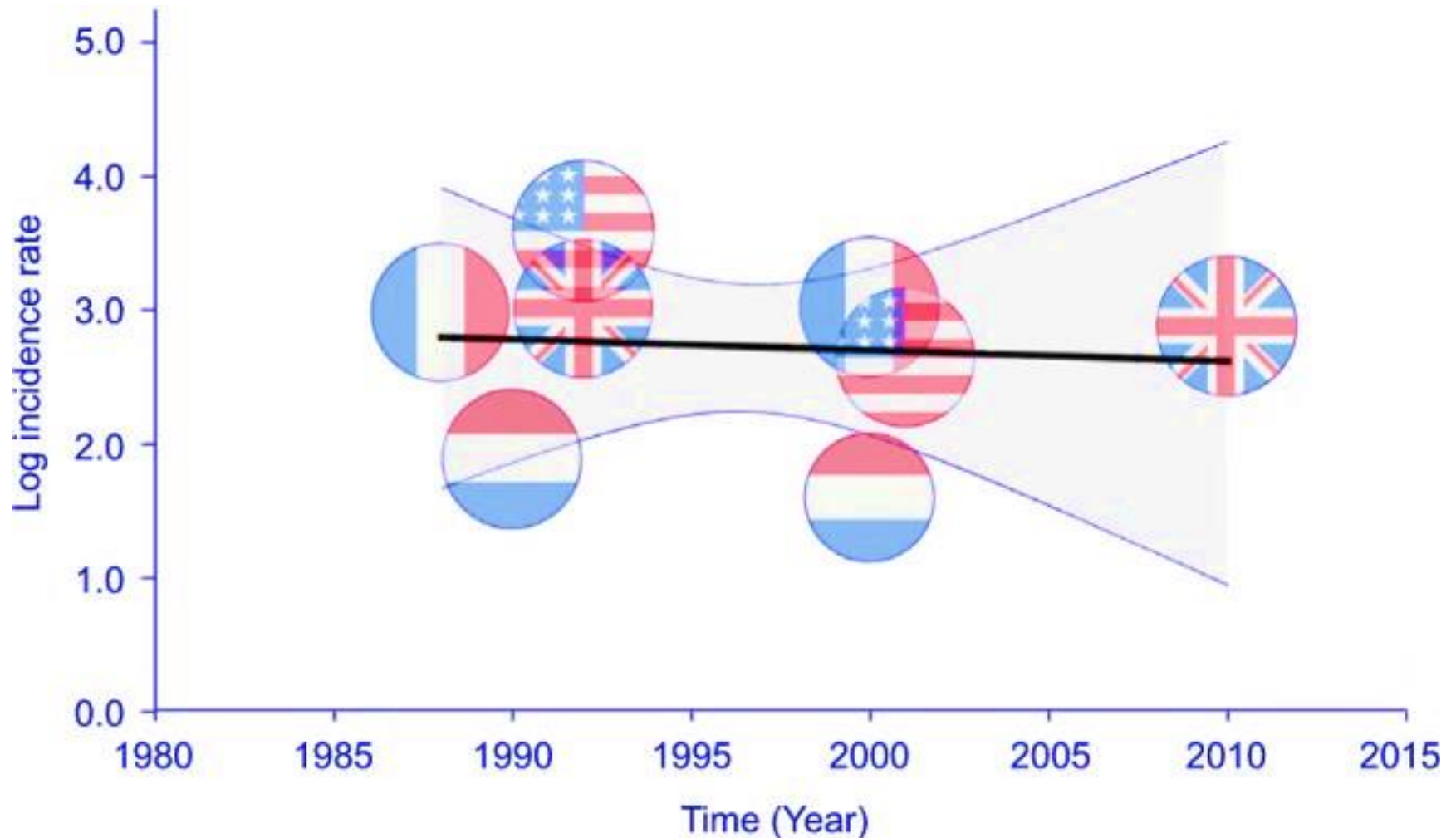
- It is possible that a non-invasive test to diagnose dementia early through eye-testing will be developed in the future
- Current studies are mainly correlation studies, more research needs to be done to make this available for diagnosing

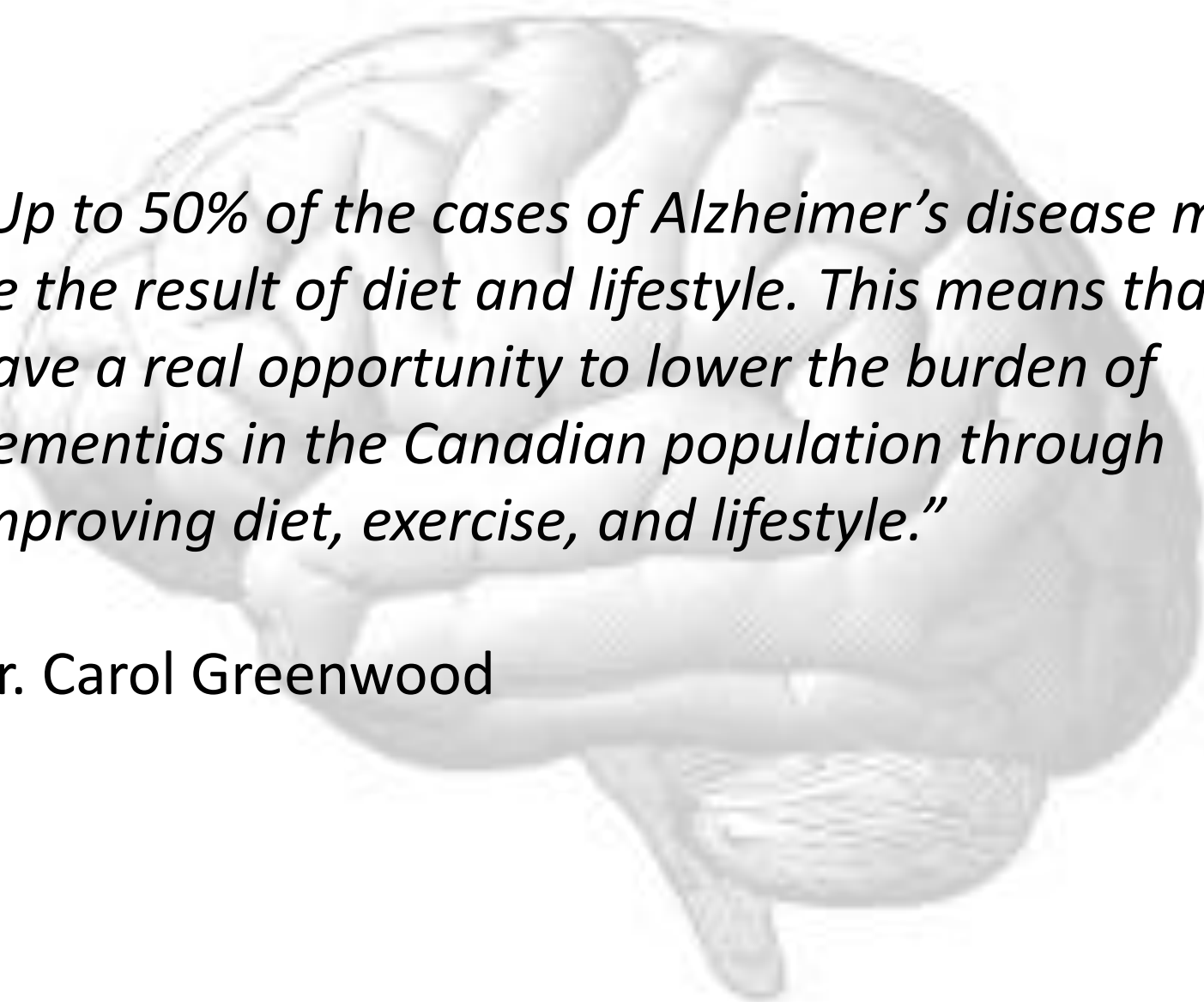
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REDUCING YOUR RISK



# Prevalence of Dementia Decreasing?



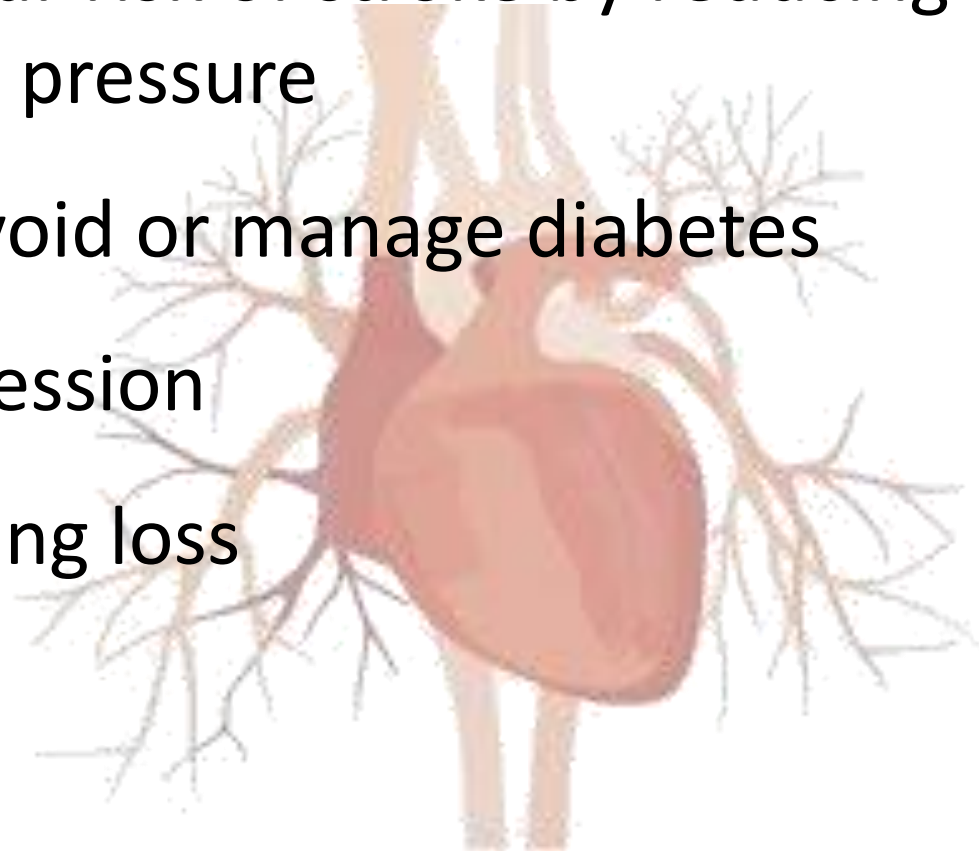


*“Up to 50% of the cases of Alzheimer’s disease may be the result of diet and lifestyle. This means that we have a real opportunity to lower the burden of dementias in the Canadian population through improving diet, exercise, and lifestyle.”*

Dr. Carol Greenwood

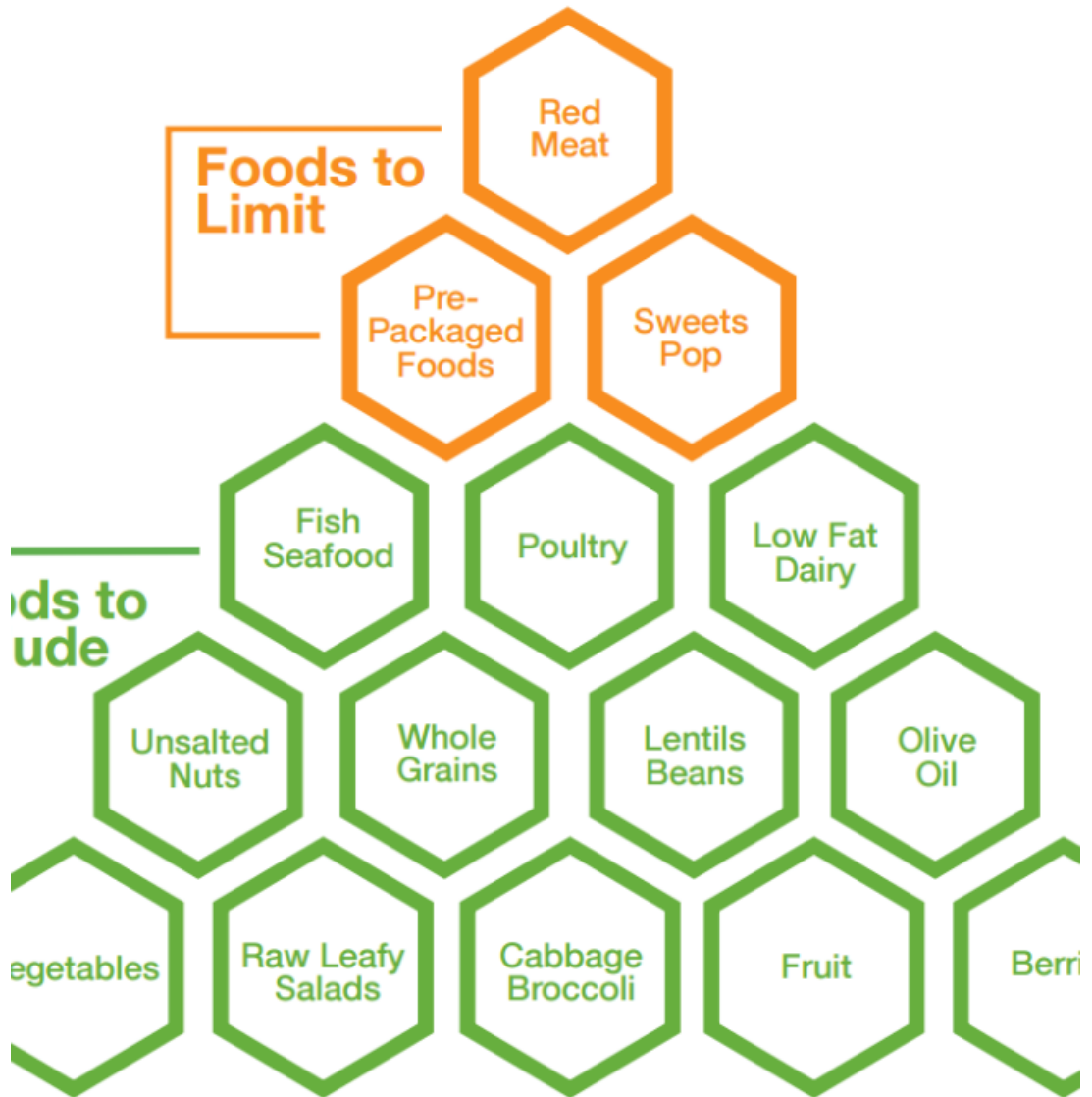
## Treat existing conditions:

- Reduce your risk of stroke by reducing high blood pressure
- Work to avoid or manage diabetes
- Treat depression
- Treat hearing loss



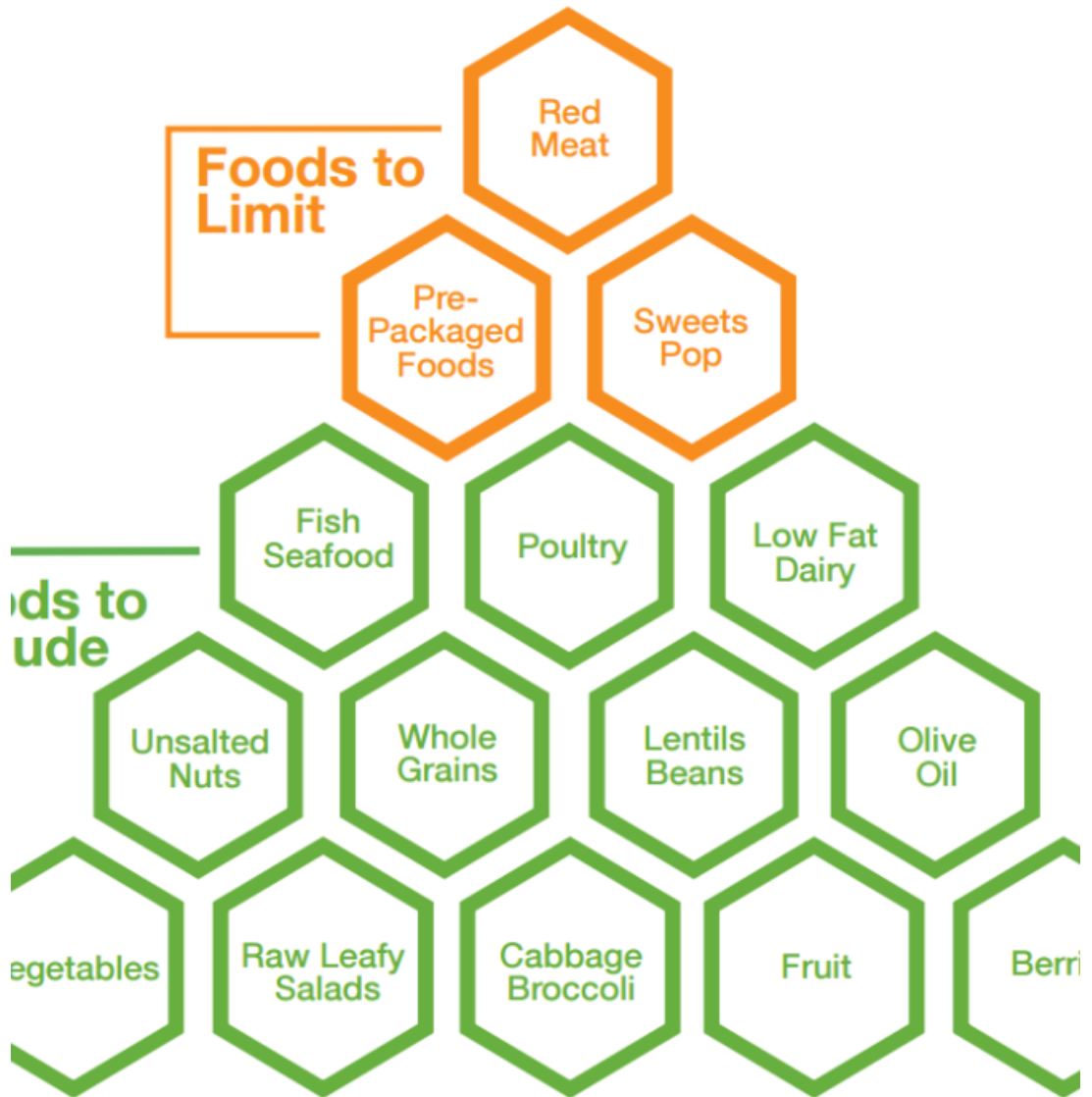
# Follow a Healthy Diet

- Adults 50+ who shifted to a recommended eating plan for 4yrs, did not experience memory loss
- After 4 months, performed as if they were 9 years younger on tests of reading and writing speed



# What does this mean?

- Changing your diet can significantly lower your risk of dementia
- These diets are not only good for the heart, but also clearly linked to the brain



## Other Factors to Consider

- Exercise
- Sleep
- Social engagement
- Cognitive stimulation



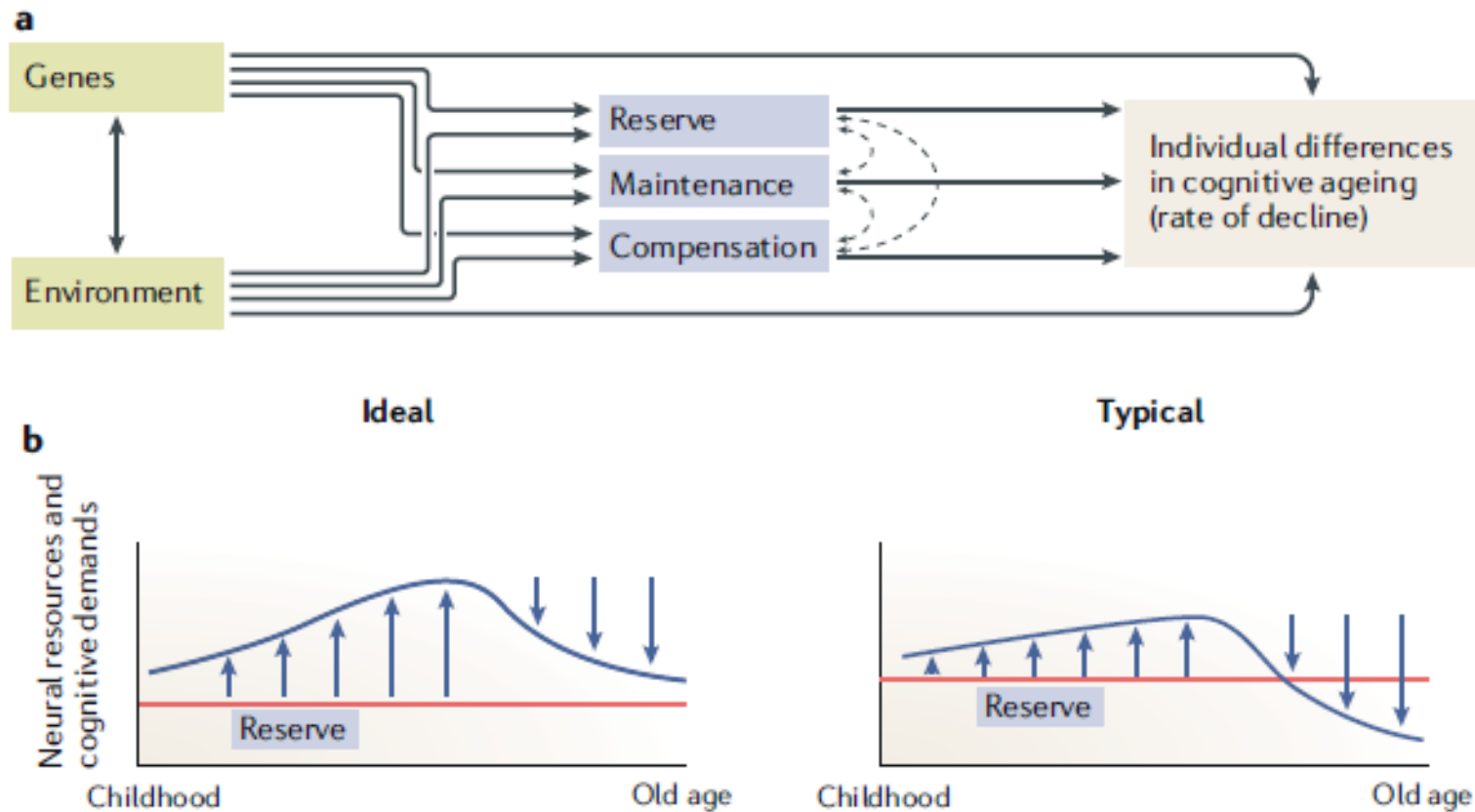
**What were those 3 words?**

Red

Face

Daisy

# Why does any of it matter?



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LIVING WELL WITH DEMENTIA



## Group Cognitive Stimulation Therapy and Exercise

- Is a range of activities that for general stimulation for concentration and thinking, usually in a social environment
- Shown to have good evidence for improving cognition, quality of life, memory and thinking scores
- [Minds in Motion](#) is an example of a program offered by the Alzheimer Society

## Emerging research – Music and Social Engagement

- Intergenerational choir
- Studying the impact of singing on social, physical and cognitive benefits
- Results are promising



Source: [Voices in Motion](#)



# ALZHEIMER SOCIETY RESEARCH PROGRAM

**CHANGING HOW WE INVEST IN  
RESEARCH – AND IN YOU**

Building Capacity. Sharing Knowledge. Improving Lives.

The Alzheimer Society Research Program is looking for big, bold, out-of-the-box ideas to find the causes of dementia and breakthrough solutions in care. We're investing more in new investigators to spark their ideas and build their careers. We're looking for candidates across all disciplines who want to tackle the biggest challenge of our time.

**Are you ready to apply?**



**NEW - PROOF OF CONCEPT GRANT:  
\$100,000 UP TO 5 YEARS**

Supports investigators with innovative, high-risk, high-yield approaches to research. (No existing hypotheses, please!)



**NEW INVESTIGATOR OPERATING GRANT:  
\$200,000 UP TO 4 YEARS**

Supports new investigators within the first four years of their first faculty position.

**FUNDING PRIORITIES**

**DISCOVERY**

**POLICY & HEALTH  
SYSTEMS CHANGE**

**EVALUATION OF  
COMMUNITY PROGRAMS**

**ETHICAL &  
LEGAL ISSUES**

**Apply in September 2019 at [alzheimer.ca/ASRP](http://alzheimer.ca/ASRP)**

# SOCIÉTÉ ALZHEIMER SOCIETY



**Roger Marple, Medicine Hat, AB  
2018 Quality of Life Panel**

*"I'm a big believer that research equals progress. If we are going to realize meaningful advancement towards living with dementia, it will be done through research."*



**Jim Mann, Surrey, BC  
2018 Biomedical Panel**

*"Participating in the Peer Review Panel was a fabulous experience. To hear the commitment in [the researchers'] voices when they were discussing each of the applications and the depth of knowledge each researcher has."*

## Citizen Reviewers

Including the voice of those living with and impacted by Alzheimer's Disease and dementia in our work.



[Home](#) > [Research](#) > Alzheimer Society Research Portal

DONATE NOW

## RESEARCH

[The Alzheimer Society  
Research Program](#)[The Canadian Dementia  
Priority Setting Partnership  
study](#)[Participating in research](#)[Alzheimer Society  
Research Portal](#)[Reports on dementia](#)

## Welcome to the Alzheimer Society Research Portal



The Alzheimer Society Research Portal connects researchers with Canadians looking to participate in studies. This initiative will help to advance Canadian studies on Alzheimer's disease and other dementias.

[Participate in a study](#)**How do I participate in a study?**

To get involved in a specific study, please refer to the contact information on the studies listed below.

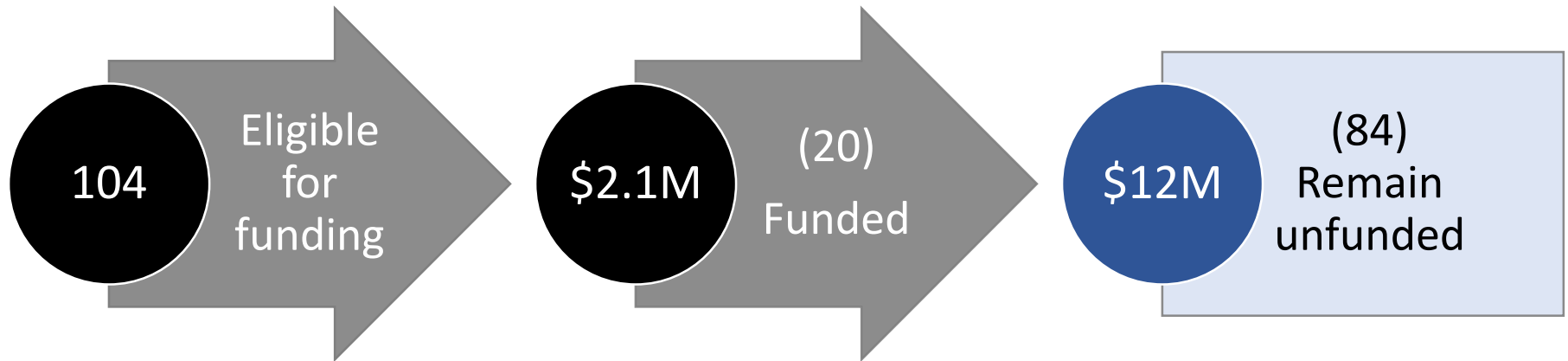
**Current studies:**[Canada-wide](#)[Researchers > find participants](#)**How do I submit a study?**

To submit a call for participants for your study, please complete and submit the [online application form](#).

**What information is included on the Research Portal?**

Each study listing includes:

# Need for Funding: 2019



# CCNA Phase II at a Glance

CCNA  
Canadian Consortium  
on Neurodegeneration  
in Aging



CCNV  
Conseil canadien en  
neurodégénérescence  
associée au vieillissement



## 310+ RESEARCHERS & CLINICIANS

Over 300 Canadian scientists in 19 research teams are collaborating on preventing, treating, and curing age-related neurodegenerative diseases (NDD).

## INDIGENOUS COGNITIVE HEALTH PROGRAM

Members of CCNA's Team 18 are working on Indigenous cognitive health, on supporting capacity building across CCNA, and are supporting CCNA researchers in exploring questions related to Indigenous health and healthcare.

## 3 THEMES and 19 TEAMS

**Theme 1:** Teams aim to identify and prevent the causes of NDD.

**Theme 2:** Teams aim to improve early detection and treatment of NDD.

**Theme 3:** Teams aim to improve the quality of healthcare and quality of life of those living with NDD.

## 4 NATIONAL PLATFORMS

The platforms enable teams to test their research hypotheses and foster collaborations by collecting, processing and pooling big data.

## 5 CROSS-CUTTING PROGRAMS

Cross-cutting Programs support the work of CCNA's 19 Teams, and accelerate idea uptake.

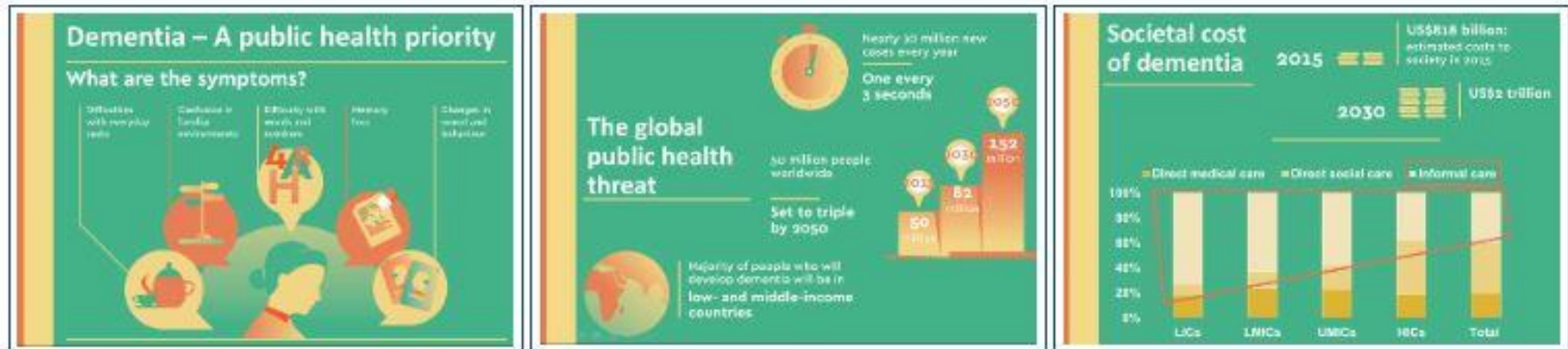
## PARTNER ORGANIZATIONS

CCNA is a Government of Canada initiative, also supported by several national, provincial and industry organizations.





## Global Dementia Observatory (GDO)



[Read more on the Global Dementia Observatory >](#)

## Browse the full list of indicators

Select an indicator or type some keywords...

## Action plan areas and key indicators



**PUBLIC HEALTH PRIORITY**  
Dementia as a public health priority



**AWARENESS**  
Dementia awareness and friendliness



**RISK REDUCTION**  
Dementia risk reduction



**DIAGNOSIS AND TREATMENT**  
Dementia diagnosis, treatment, care and support

# PROMISING RESEARCH IS OUT THERE

## BUT FUNDING IS NOT (CASE STUDY: ALZHEIMER'S)

### COMPARISON OF ALZHEIMER'S FUNDING

THE NATIONAL INSTITUTES OF HEALTH (NIH) PLANNED TO SPEND APPROXIMATELY

**\$500M/** ALZHEIMER'S COMPARED TO **\$5.5B/** CANCER **\$3B/** HIV/AIDS **\$2B/** HEART DISEASE

ON A PER PATIENT BASIS, NIH FUNDING FOR

HIV/AIDS IS 23X's AND CANCER IS 12X's > THAN THAT OF ALZHEIMER'S

### SURVEY OF SCIENTISTS

94%

SAY LACK OF FEDERAL FUNDING  
FOR BRAIN RESEARCH IS  
IMPEDING SCIENTIFIC DISCOVERY

91%

SAY THIS IS  
DRIVING SCIENTISTS FROM THE FIELD



## Q&A



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