Your Brain and Dementia
Belinda Goodenough
can a brain live without a healthy body?
How healthy is your brain
Memory for everyday objects

the 50 cent piece test
Our memory for detail on everyday objects is poor. Why?

Your brain is efficient complex amazing...
Your brain: dinner party “wow!” facts

Weighs about 1.36 kg (3 lbs)

Your skin weighs up to 3 times as much as your brain
your brain: dinner party “wow!” facts

uses 20% of total oxygen needs for your body

160,000 km blood vessels in your brain (100,000 miles)
your brain: dinner party “wow!” facts

composition

water  fat
(75%)  (60%)  

fattiest organ in your body

(p.s. waist and thighs are not organs)
your brain: dinner party “wow!” facts

100 billion neurons
(“nerve cells”)
A model of a neuron
your brain: dinner party “wow!” facts

100 billion neurons  supporting cells
(“nerve cells”)  (one per neuron)
Neuron (green) and supporting cell (red)
your brain: dinner party “wow!” facts

100 billion neurons  supporting cells
(“nerve cells”)  (one per neuron)

and lots of connections
(synapses)
up to 10,000 per neuron =

a thousand trillion synaptic links
in your brain: 1,000,000,000,000,000,000,000
Major lobes of H.R.H brain (neocortex)

- Parietal: sensory, spatial
- Frontal: problem solving, emotion
- Occipital: vision
- Temporal: hearing
Major subcortical parts of H.R.H brain

- Thalamus
- Hypothalamus
- Amygdala
- Hippocampus
What is Dementia
Dementia is **not one specific** disease

... describes symptoms of a **large group** of illnesses
Symptoms include:
memory loss
confusion
behaviour, emotion, “personality” changes

Brain function is affected enough to **interfere** with working or social life.
What is the difference between Dementia and Alzheimer’s Disease?
Most common type of dementia
Alzheimer's disease = 50% to 70% of diagnoses

Other types include:
• Vascular dementia
• Alcohol-related
• Dementia with Lewy bodies
• Fronto Temporal Dementia (FTD; - Picks disease)
• Dementia in other diseases
  e.g. Parkinson's disease, AIDS-related dementia
Dr. Aloysius "Alois" Alzheimer

Bavarian-born German psychiatrist / neuropathologist
Described first case in 1906

p.s. did not die from dementia
(Dec 1915, aged 51 - heart failure)
What causes Dementia
many causes ....

affect the brain in different ways....

determine symptoms experienced ...
e.g. Vascular dementia
associated with disease in blood vessels of brain –
affects blood circulation, causes damage

may appear similar to Alzheimer’s disease
A mix of Alzheimer’s disease/vascular dementia can occur
e.g. Alzheimer’s disease

associated with damage to the **hippocampus** and **temporal** and **parietal** lobes.
What is the “disease” in Alzheimer’s?

accumulation of two proteins into plaques and tangles:

amyloid    tau

Research aiming to understand this process and develop a treatment against it.
Healthy brain

Advanced Alzheimer’s Disease
I forget things

is it dementia
On your phone, where is location of Number 7
Please Wait For Dial Tone
Where is my phone?

Where is my thingammy?

Is this mine?

What is this...?

What is the number?

Have I called..?

How do I use ....?
Australia snapshot

NOW

342,800 living with dementia
1800 new cases each week: 1 per 6 minutes
2 million people involved in dementia care
3\textsuperscript{rd} leading cause of death (2\textsuperscript{nd} for women)
symptoms noticed by family 3 years before diagnosis

no cure
By the time this forum is over (3 hours) ...

30 more people in Australia will have a confirmed diagnosis of dementia

10,500 more molecules in just one plaque* in a brain affected by Alzheimer’s disease

*(abnormal cluster of protein fragments)
Can I dementia-proof my brain
2014 STAR RATINGS REPORT

Package
Home Loans

UnSW
Australia

Healthy Brains Positive Ageing

CHeBA
TRY OUR CURATED WEEKLY MENU

PACKAGE DEAL
recipe for brain health?

it’s a package deal
Be active
- physically
- mentally
- socially

Be proactive
- diet
- habits
Be active
(physically)
Ernestine Shepherd (born June 16, 1936) oldest competitive female bodybuilder*

74 years old

“out of shape” with age is an option, not a mandate

Johanna Quaa
(born November 20, 1925)
Oldest German Gymnast*

“old age is:
15 years older than I am”

86 years old

*Guinness Book of World Records: 2012
Be active
(mentally)
AUSTRALIA DAY
1) identify objects you see (occipital)
2) analyse relationships (occipital & parietal)
3) remember / compare (short-term memory: frontal & parietal)
4) listening / writing, (temporal, cerebellum)
Keywords:

Challenge, Enjoyable, New
Be active
(socially)
benefits of being socially connected include
• Lower rates of heart disease, blood pressure, dementia

negatives of poor social connected include
• More harm than no exercise/obesity
• = to 15 cigarettes a day/alcoholic
Be proactive 
(diet)
Healthy Eating Pyramid

Enjoy a variety of food and be active every day!
Mediterranean Diet Pyramid

*Adapted from Consumer Reports, Nov'94

Daily

Red meat - a few times per month in very small amounts

A few times per week

Olive Oil

Vegetables

Beans, Legumes, Nuts

Fruits

Fish

Cheese and yogurt

Sweets

Eggs, Poultry

Bread, pasta, rice, couscous, polenta, bulgur, other grains, and potatoes
And building the right food pyramid can take planning and persistence.

...so all we need to do is stack giant stone blocks here for the next 30 years.

Brilliant!

The greatest pyramid scheme of them all
If it helps your heart, chances are it will help your brain too.
When is it too late for my brain
Music, dance, diet key to slowing down dementia

Holistic approach could delay progression of degenerative brain disease, says professor

Jim Warren says he has learned "hundreds and hundreds" of tunes over the years. Photo / Chris Gorman
your brain: dinner party “wow!” facts

...you have only **ONE** brain

silkworm has 11 brains (uses only 5)

another test for yours...
How many animals? ....

Elephant
Gorilla
Horse
Dog
Cat
Mouse

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