



Research For a Better Age

Welcome

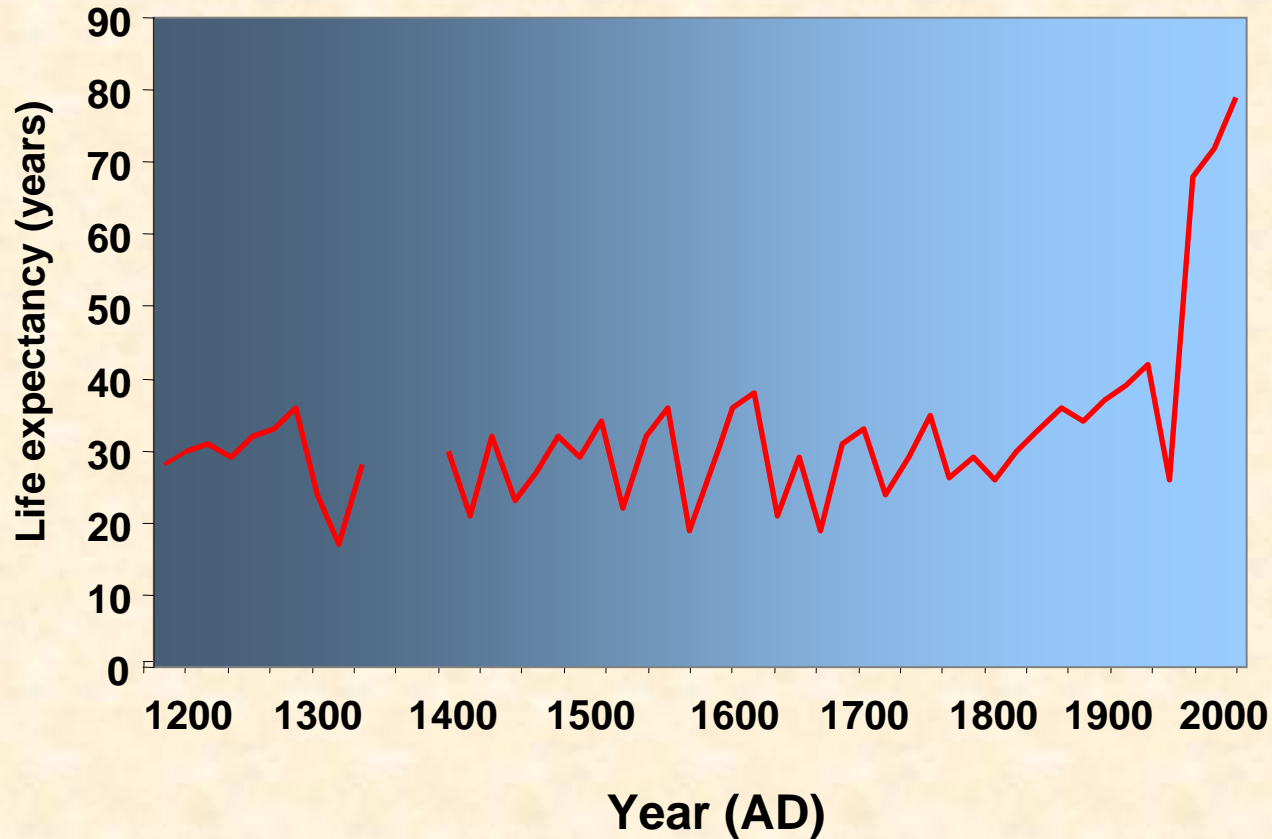
HELPTHEAGED WE WILL[®]

Research Into Ageing ™

The best place to start is the beginning

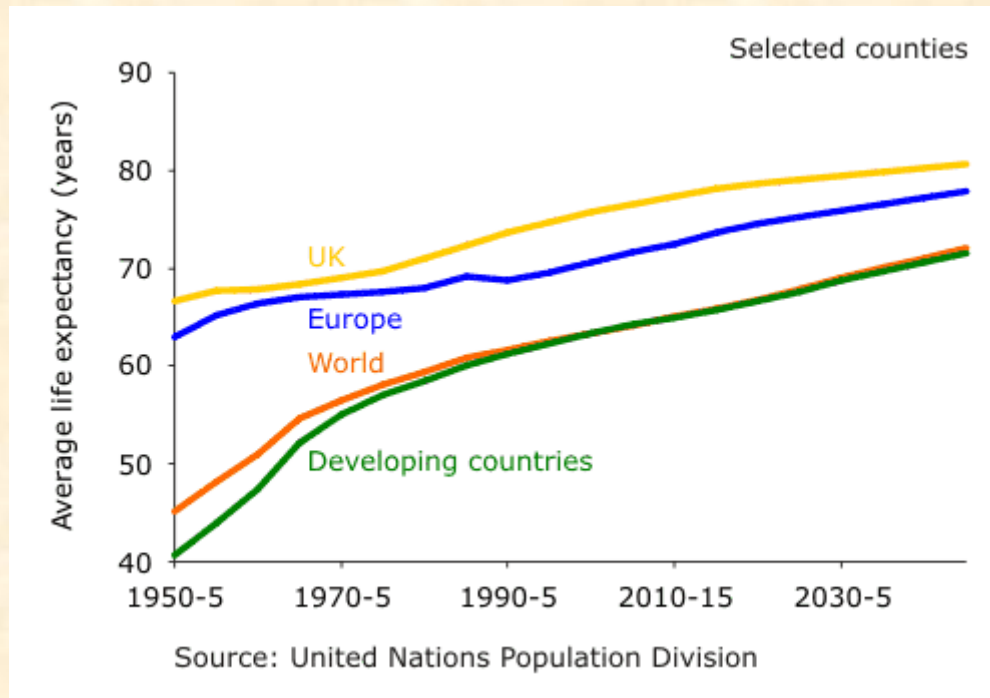
- In the beginning
- Life was very bad for most people most of the time
- Life was very short for most people most of the time
- Life expectancy is a good measure of whether things are getting better or not

Why are we here?



**Life expectancy has increased steadily
over the last century**

These trends are projected to continue



In 2050 about two billion people will be over the age of 65
(out of an estimated world population of about 9 billion)

However, maximum lifespan has not increased at all



Isocrates (4th-5th Century BC)

Died aged 98



"Buster" Martin

Born 1906 and still going

Being old is not a problem for Buster..but

- Growing older is associated with an increased chance of death (mortality)
- Growing older is associated with increased periods of time spent ill before death or recovery (morbidity)
- Morbidity is a miserable and expensive condition to find yourself in.
- Current morbidity costs are about £15-45 billion (total Government managed expenditure is ~£590 billion)

These figures mask the diversity
of the ageing population

Different styles of old age



Bored & depressed (9%)

- Poor
- Sick
- Miserable
- Watch lots of TV



Satisfied Innovators (17%)

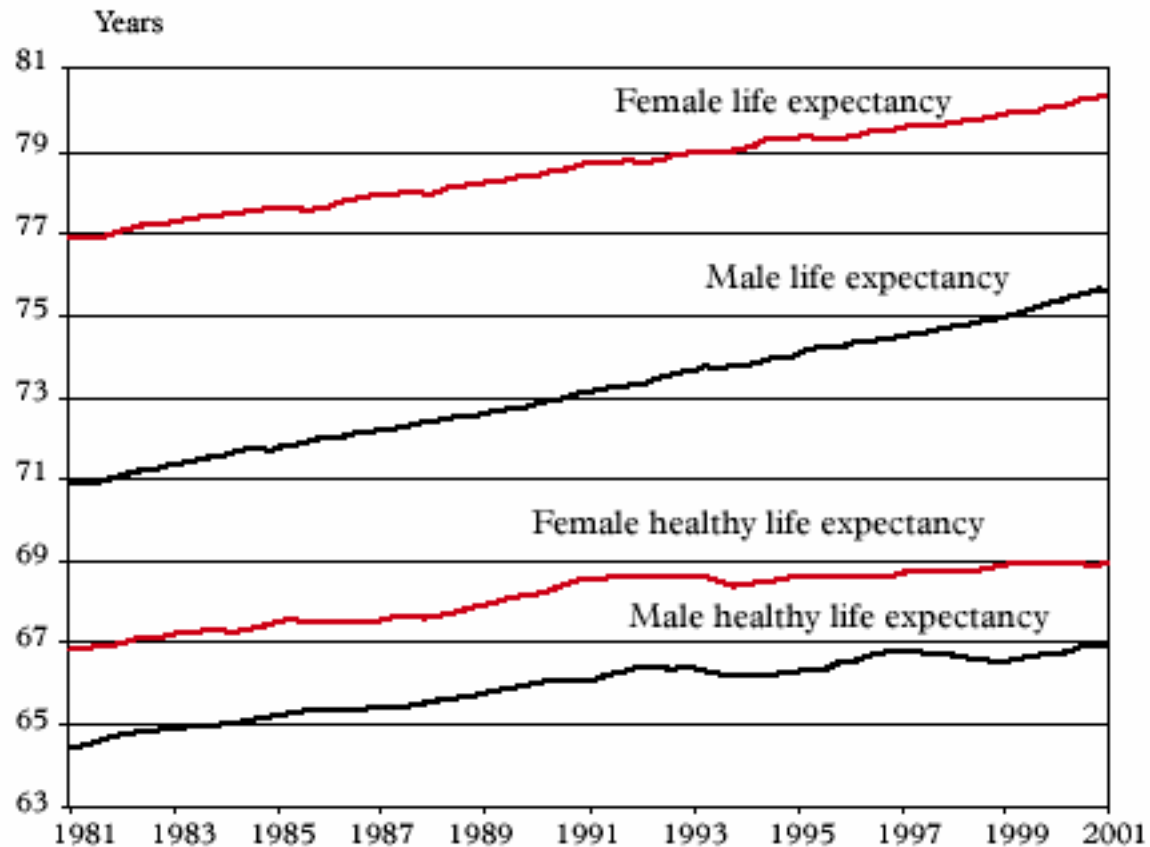
- Rich
- Healthy
- Happy
- Often on TV

Healthspan is the key to
independence

Is healthspan a cause for concern?

FIGURE 2

Life Expectancy and Healthy Life Expectancy



Confounding variables

- Data from the US **does** show a compression of morbidity
- Most survey data monitors self reported health
- **People** compare themselves to their peers
- **People** use different definitions of sickness
- **People** are a **PROBLEM**

Can studying the fundamental biology of ageing help?

- Can it help us understand how ageing happens?
- Can it help us understand what might happen to a population if ageing is slowed?
- Can it offer effective interventions into human ageing?

To find out UK Government spent about
£10 million over six years in two
research programmes*

*for comparison a new medicine costs about £600 million to develop
and the total UK annual budget for all research on everything is about
£700 million

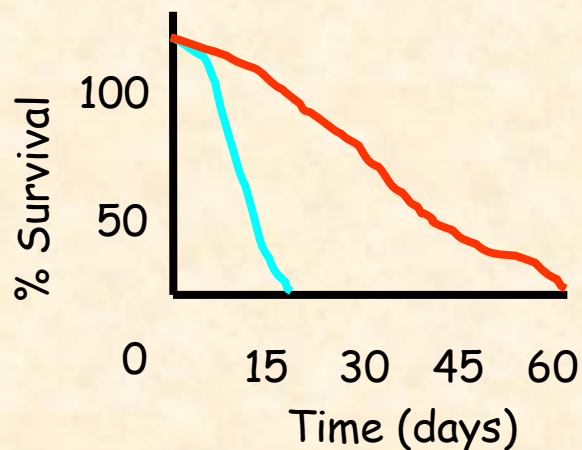
Was it worthwhile?

YES!

The work which follows is funded by the
BBSRC SAGE & ERA Programmes or the
BBSRC-EPSRC SPARC Programme

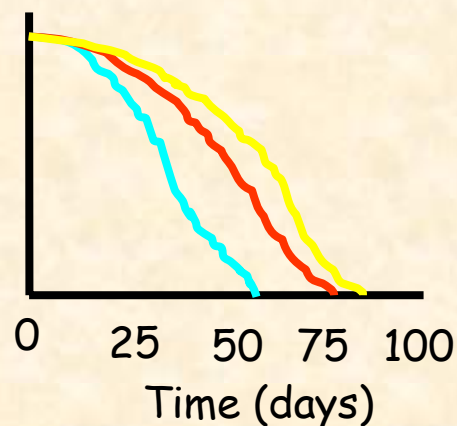


Animals have common ageing mechanisms



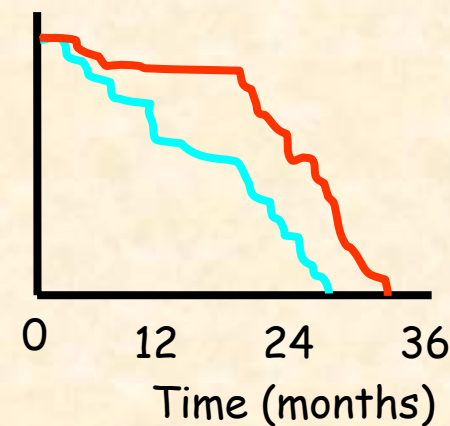
Genotype Median lifespan
 + 16 days
daf-2 35 days

Klass 1983
 Kenyon 1993
 Kimura, Ruvkun 1998



Genotype Median lifespan
 +/+ 44 days
chico/+ 60 days
chico/chico 65 days

Partridge, Gems, Tatar 2001



Genotype Median lifespan
 +/+ 18.7 months
Igf1r^{+/-} 24.9 months

Holzenburger 2003
 Blüher, Kahn 2003
Withers, 2007

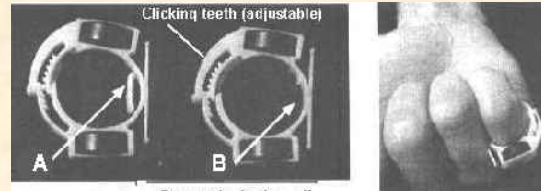
Altering the rate of ageing:

- Decreases the rate at which pathologies appear reduces their severity once they do appear
- Produces increased healthspan
- If this happens in humans we may well spend less money on care, promote independence and get happier older people

Ageing hasn't been 'cured' yet

- One of our jobs today is to put you on your guard against people who say it has...
- Some people say it by accident
- Some people say it out of misplaced enthusiasm
- Some people say it to make money

Some people...



Alex Chui

Inventor of the Immortality Device,
on sale at www.alexchiu.com

"If you are not satisfied with the results brought by the Immortality Devices we can refund your money back within 90 days."

Design: The second string to our bow



- In the stone age I would have been classed as disabled.
- Now (thanks to Spec Savers) I'm not.
- Designers promote independence by designing away disability.

SPARC

- We bring the best designers and the best biologists together
- We have them work on separate problems but in a supportive network
- Links sometimes exist which you could never have imagined

Today

- Better homes for older people
- Better immune systems for old people
- A new shower and a neutrophil don't seem to have much in common
- BUT...

Human ageing as a bio-social whole

- Poor adaptations to your home are a source of immediate and ongoing psychological stress.
- Psychological stress is associated with suppression of the immune system in older people
- Do good interior designers keep you healthy?
- Watch on...

