The New Science of Ageing

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The New Science of Ageing

Genetics

Medicine

Biology

Psychology

Bioinformation

Economy

Demography

Statistics

Ageing

Engineering

Politics

Mathematics

Computer Science

Sociology

Epidemiology
Record Life-Expectancy

Life-expectancy in years

England
Norway
New Zealand
Iceland
Netherlands
Sweden
Japan

Oeppen & Vaupel. Science 2002; Christensen et al., Lancet 2009
Oldest age in which at least 50% of a birth cohort is still alive

<table>
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<tr>
<th></th>
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</table>

Data are in years. Baseline data were obtained from the Human Mortality Database and refer to the total population of the respective countries.

Christensen, Dobblhammer, Rau, and Vaupel: Lancet 2009
The Fourth Age

Medical treatment of very old people – are we doing good?

Does exceptional longevity lead to exceptional levels of disability?
Independence in the 1905-Cohort

Christensen et al. PNAS, 2008
The Fourth Age

EXTREME AGES

100 year olds are doing as good as 92 year olds
The Fourth Age

50% more made it to 100 years in the 1905-Cohort compared to the 1895-Cohort

Still no increased disability level

Twin Design

- Heritability
  - Lifespan 25%
  - Functioning 50%
  - Alzheimer 70%
  - Parkinson 5%
Molecular pathways that lengthen lifespan in C. elegans and the corresponding components in humans

Christensen, Johnson, and Vaupel: Nat Rev Genet. 2006
Number of Danish centenarians 1970-2008

The graph shows the number of centenarians in Denmark from 1970 to 2008, divided by gender. The count for females increases significantly from 1970 to 2008, while the count for males remains relatively stable.
## Female advantage in life expectancy at birth in 2006/7

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<th>Country</th>
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<td>Japan**</td>
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</table>

* WHO; ** Human Mortality Database
Male Excess Mortality

Behavioral?

Biological?
Are males seeking medical help too late?

- Trivial diseases – big reaction
- Serious diseases – little reaction
Male health

Juel & Christensen 2008
MEN in Europe

Falling behind

- Biological barriers
- Behavioral barriers
- Cultural barriers