



Anti-ageing research

### Methuselah's mixture

#### The Youth Pill: Scientists at the Brink of an Anti-Ageing Revolution.

By David Stipp.

1 **F**OR as long as people have been growing old, they've been wishing they didn't have to. The "Epic of Gilgamesh", one of the most ancient works of literature, chronicles the eponymous hero's quest for eternal life. Most religions offer an attenuated version of 13 in which the soul endures even after the body has died. Medieval alchemists hunted in vain for the rejuvenating Philosopher's Stone; industrial-age quacks got rich off their patent elixirs. Today, cosmetics companies dance around truth-in-advertising laws to imply that their creams and lotions can keep the years at bay.

2 Yet for all the gloomy fascination that surrounds ageing, precious little research has been done into its causes. The question of why we grow old and die still divides evolutionary biologists. Strictly speaking, ageing does not seem to be inevitable. After

all, both cancer cells and some very simple forms of life appear highly resistant to the passage of time. And while we know plenty about the consequences of ageing, we know much less about the exact biological processes involved. The little interest shown was until recently limited to quacks and cranks, leavened with the occasional iconoclastic scientist (such as Peter Medawar, a brilliant British zoologist) with a reputation strong enough to survive developing an interest in a thoroughly disreputable field.

3 In the past couple of decades that has begun to change. Improvements in technology, particularly the ability to sequence DNA quickly, have made the serious study of ageing possible. All this is carefully chronicled in "The Youth Pill" by David Stipp, a former medical writer for the *Wall Street Journal* and an able guide to this young science. His book draws readers down the blind alleys and experimental dead ends that are an inevitable part of 15, as well as explaining the advances that have been made and the hunches that led to them.

4 Plenty of progress has already been made. Genes have been found that boost the lifespans of laboratory animals by 30% or more, and research into the mechanisms of ageing has fingered some tantalising leads. Ageing seems to be associated with a low-level, chronic inflammation of many of the body's tissues, for instance. Insulin, a hormone that regulates the metabolism of glucose, also crops up.

5 Most intriguing of all is something that scientists have known for decades: feeding near-starvation diets to laboratory animals such as mice and fruit flies can extend their lifespans by 40% or more, and improve health along the way. If those results translated directly to humans (and there is some preliminary evidence that fasting may confer benefits in people), then the human lifespan could reach 150 years. Many explanations have been offered and discarded. Production of the harmful chemicals that are a side-effect of respiration, might be reduced, for instance, or there might be a lowering of blood-sugar levels, which seems to have a variety of health benefits.

6 Instead, Mr Stipp propounds a relatively new theory that low-calorie diets activate genes designed to help animals endure hard times, which boost cellular repair mechanisms. There is evidence that almost all animals, including humans, may have a similar suite of genes. Proponents of this theory are searching for drugs, so-called “calorie-restriction mimetics”, that can produce these effects without requiring aspiring centenarians to endure 100 years of non-stop dieting. Several firms have been set up to capitalise on the findings, in the hope of developing and selling pills that grant longer, healthier lives.

7 The book’s tone is refreshing, although its occasional passages of lazy journalese can be jarring. Mr Stipp is clearly enthusiastic about the possibility of life extension, and he mostly manages to avoid the breathless prose that mars so much reporting on the subject. Hype is an occupational hazard of anti-ageing research. There is a great temptation (rising with age) to inflate small advances into the idea that serious life extension, or even immortality, is just around the corner. It isn’t. But the discoveries of anti-ageing researchers suggest that some modest improvement in life expectancy, and a big reduction in the diseases of old age, are indeed pharmaceutically possible. Ageing, reckons Mr Stipp, is on the verge of becoming a respectable sub-discipline of medicine. That would be quite enough to constitute a revolution in its own right.

8 The final part of the book is philosophical, and considers whether extending lifespan is something worth aiming for. Some religious leaders and self-appointed sages have offered a variety of portentous reasons for embracing decrepitude instead of fighting it. Happily, Mr Stipp has little patience for such homilies, and demolishes them convincingly.

*The Economist, 2010*

## Tekst 5 Methuselah's mixture

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- 1p 13 Which of the following fits the gap in paragraph 1?  
A humanity  
B immortality  
C longevity  
D youthfulness
- “a thoroughly disreputable field” (einde alinea 2)
- 1p 14 Waarom noemt de schrijver het betreffende gebied “thoroughly disreputable”?
- 1p 15 Which of the following fits the gap in paragraph 3?  
A creative processes  
B human endeavours  
C scientific research  
D the consequences of ageing
- “for instance” (vóórlaatste zin alinea 4)
- 1p 16 Welk algemeen punt wordt hier geïllustreerd?
- “Many explanations have been offered and discarded.” (vóórlaatste zin alinea 5)
- 1p 17 Voor welk verschijnsel?
- 1p 18 How do the drugs discussed in paragraph 6 work?  
A By aiding people in getting used to low-fat diets.  
B By changing the structure of fat cells in overweight people.  
C By enhancing the impact of genetically modified substances in food.  
D By influencing specific genes that affect cells.
- 1p 19 Which of the following is in accordance with paragraph 7?  
A Mr Stipp is quite clear in his desire to facilitate a healthy old age.  
B Mr Stipp shows that modern medicine has successfully incorporated anti-ageing research.  
C Mr Stipp's optimism makes immortality seem to be attainable.  
D Mr Stipp thinks the developments in anti-ageing research promising.
- 1p 20 Wat is de boodschap in “such homilies” (alinea 8)?

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### Bronvermelding

Een opsomming van de in dit examen gebruikte bronnen, zoals teksten en afbeeldingen, is te vinden in het bij dit examen behorende correctievoorschrift, dat na afloop van het examen wordt gepubliceerd.