1st WORLD CONGRESS ON HEALTHY AGEING

19 – 22 March, 2012

www.healthyageingcongress.org

Organised by:

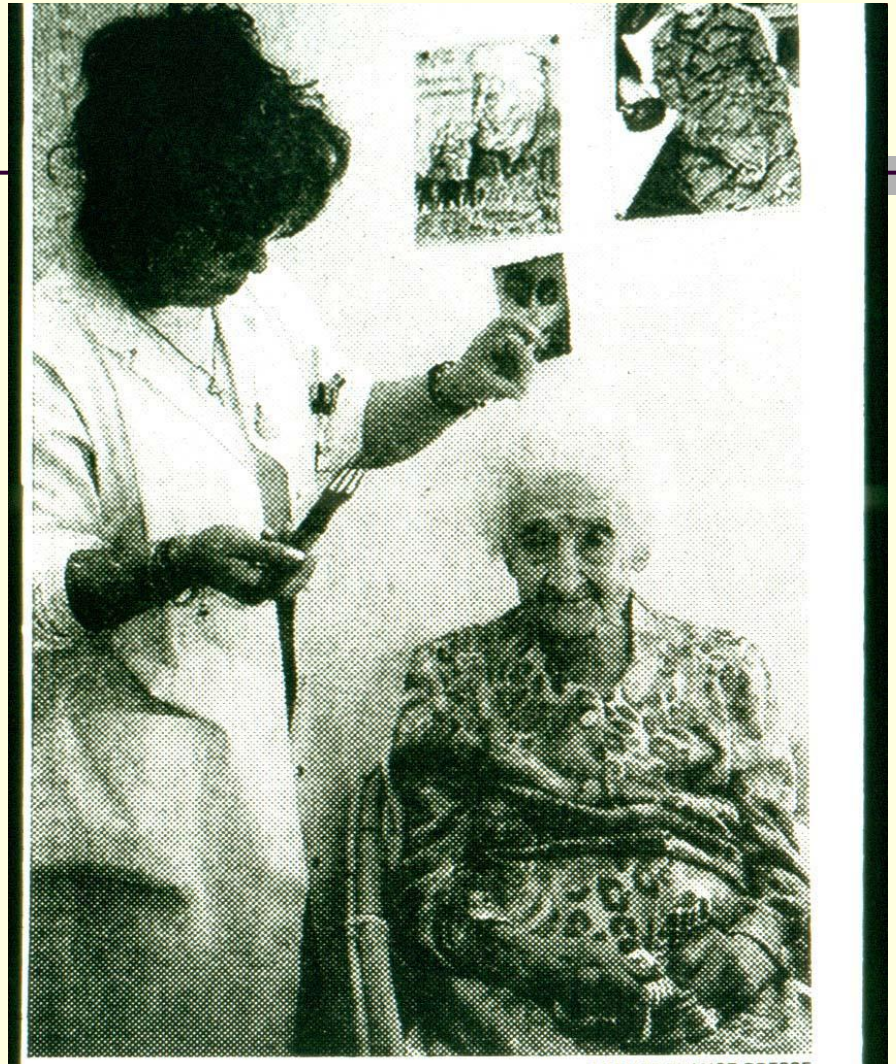
Malaysian Healthy Ageing Society

Co-Sponsored:

World Health Organization

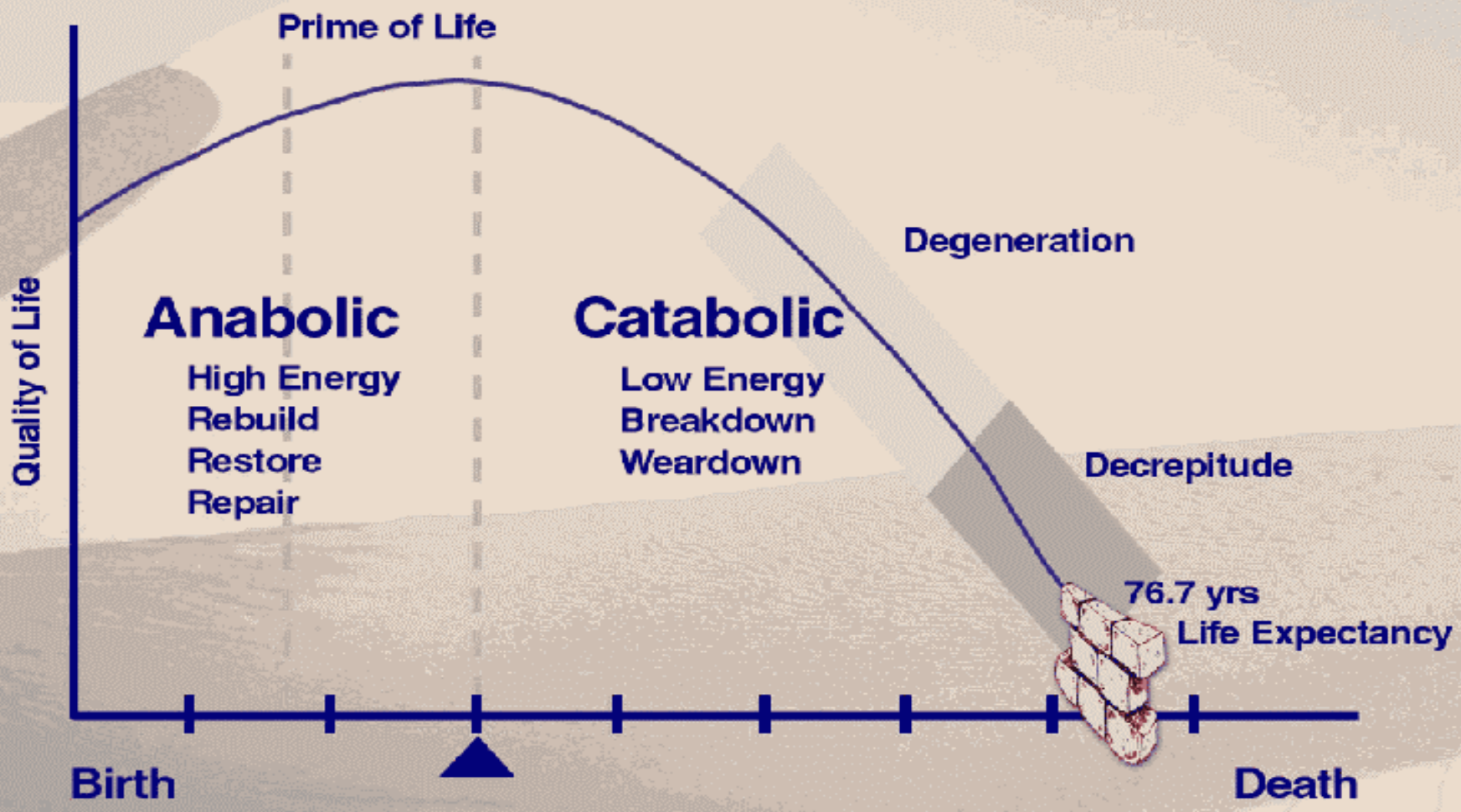
Is there a role for Stem cells in Healthy Ageing

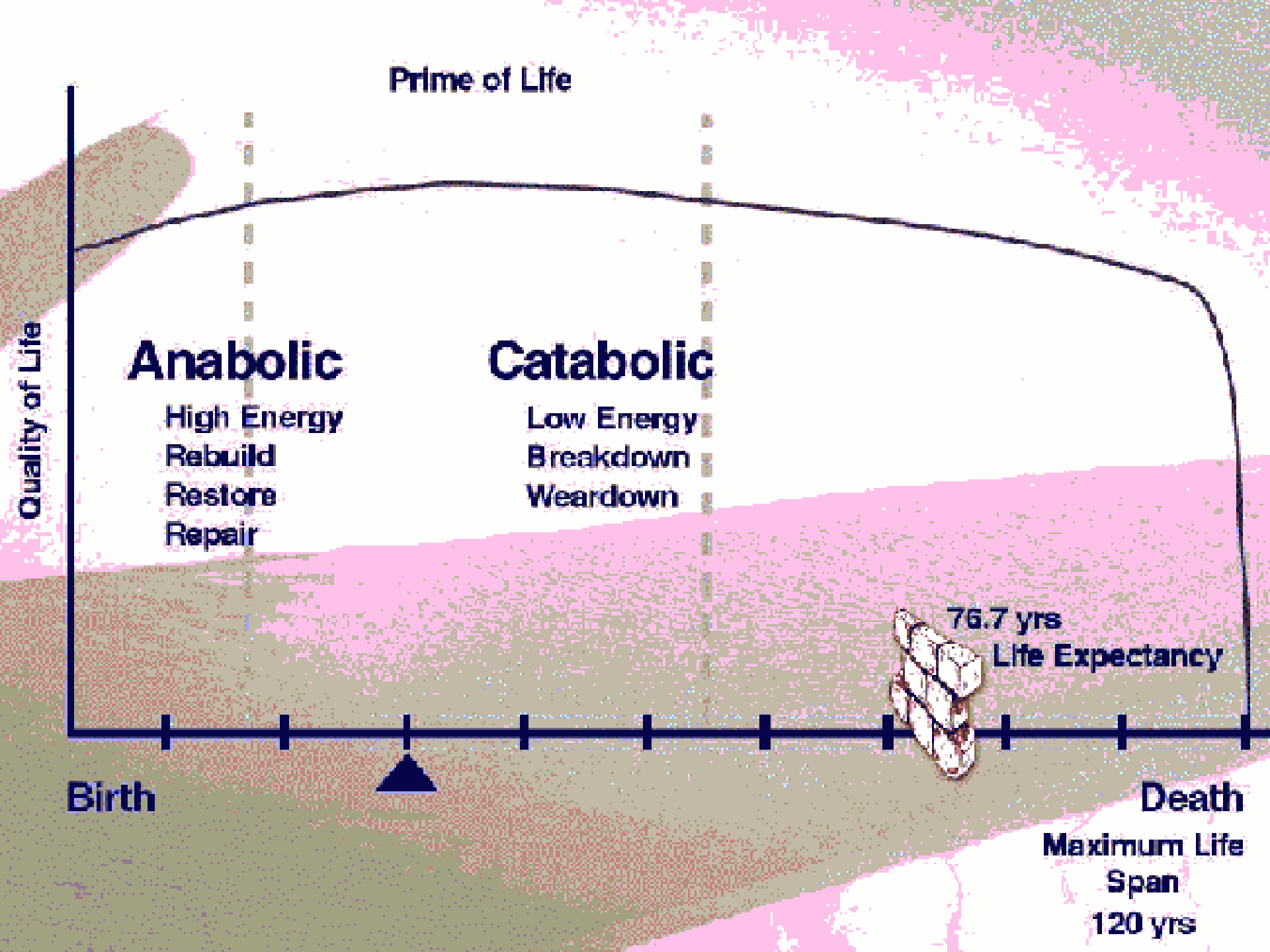
Dr. Rajbans Singh
MBBS, MRCP, Dip. Geriatric Medicine
Consultant Physician & Gerontologist
Healthy Ageing Specialist
Pantai Medical Centre
Beacon International Specialist Centre



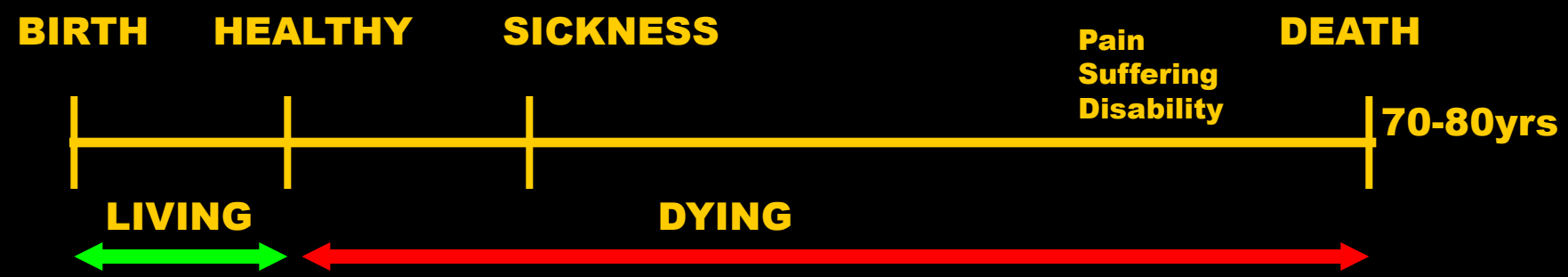
AGENCE FRANCE-PRESSE

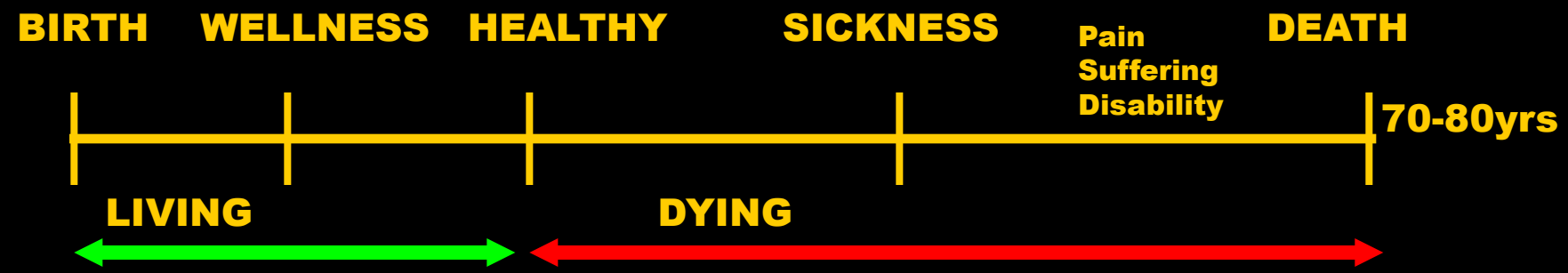
Jeanne Calment gets ready for her 120th birthday, which Guinness says is the current world record.

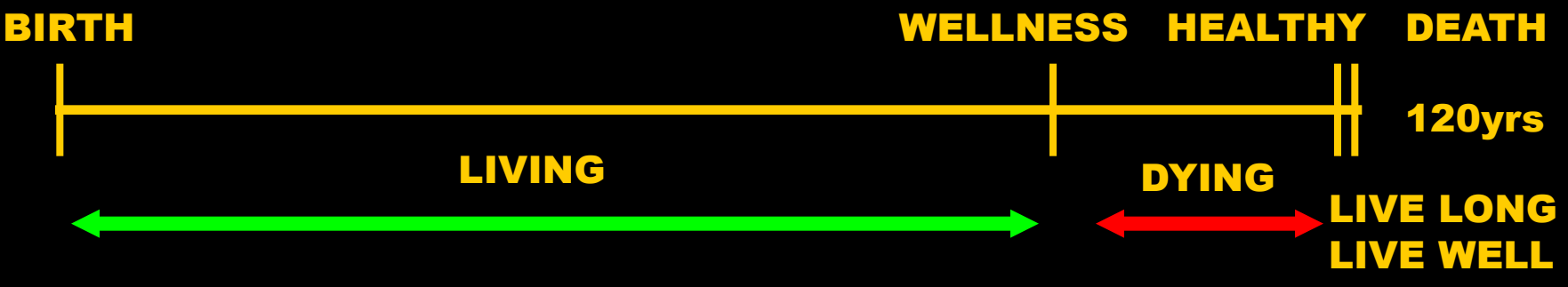

Prime of Life
Degeneration
Quality of Life
Anabolic
High Energy
Rebuild
Restore
Repair
Catabolic
Low Energy
Breakdown
Weardown
Decrepitude
76.7 yrs
Life Expectancy
Birth
Death

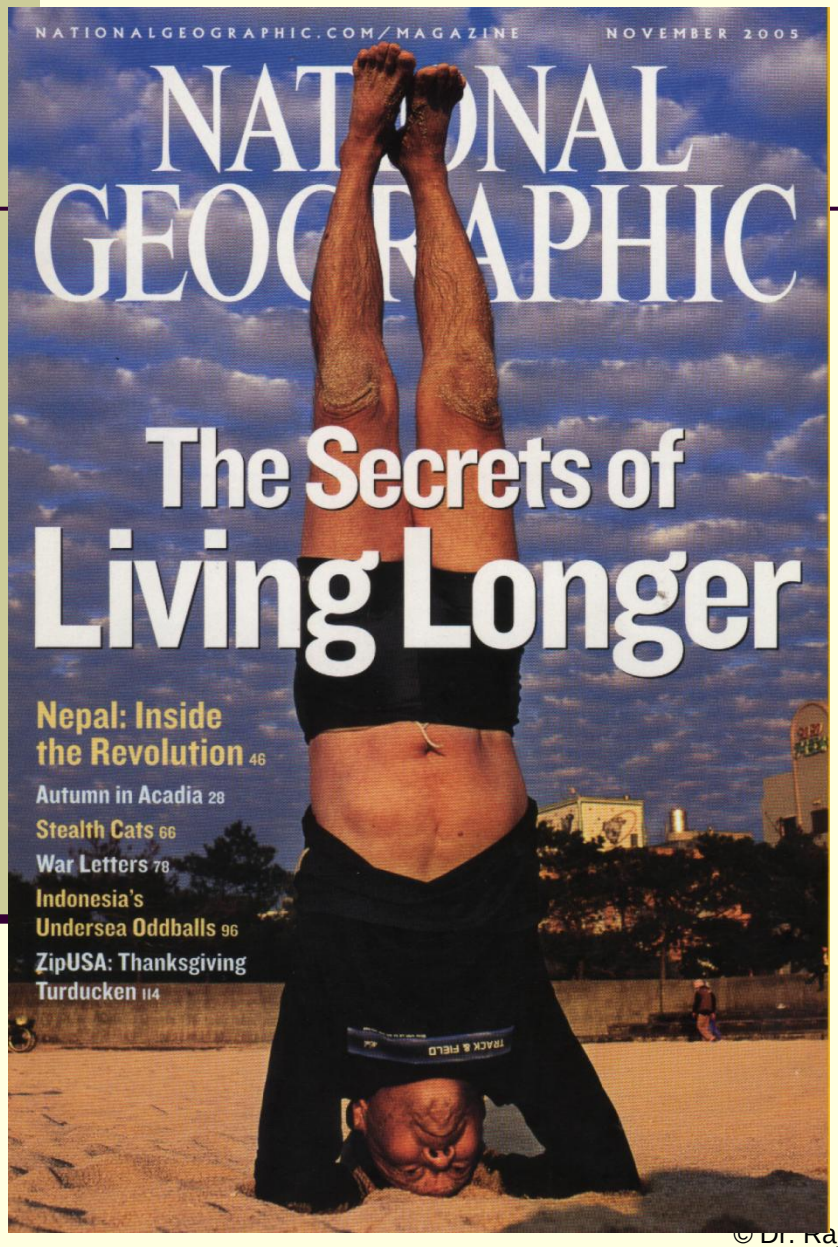

Prime of Life
Quality of Life
Anabolic
High Energy
Rebuild
Restore
Repair
Catabolic
Low Energy
Breakdown
Weardown
76.7 yrs
Life Expectancy
Birth
Death
Maximum Life
Span
120 yrs

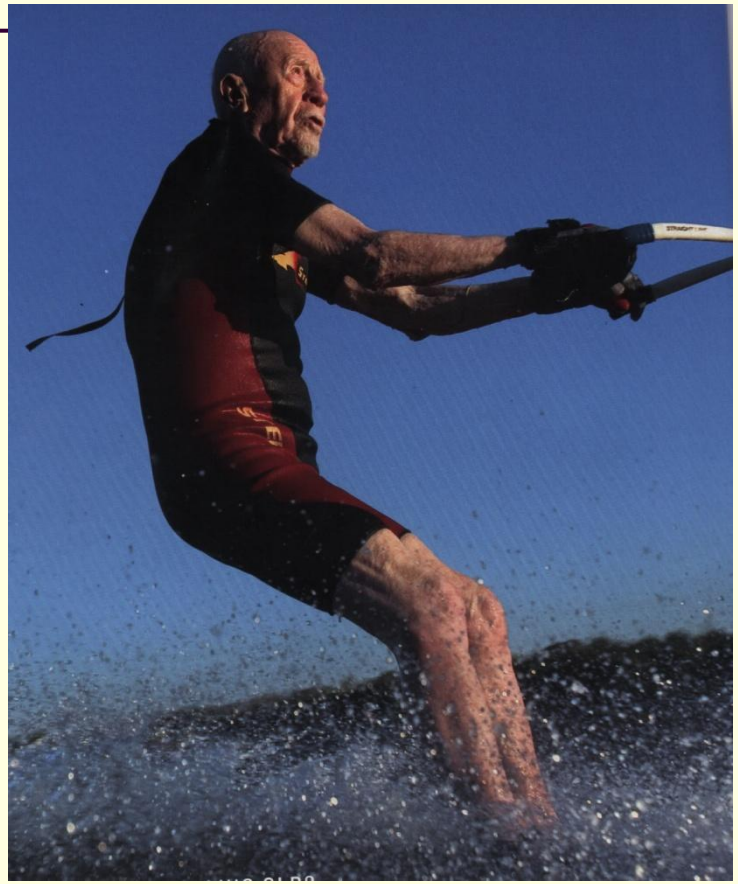
PEOPLE ARE LIVING TOO SHORT AND DYING TOO LONG

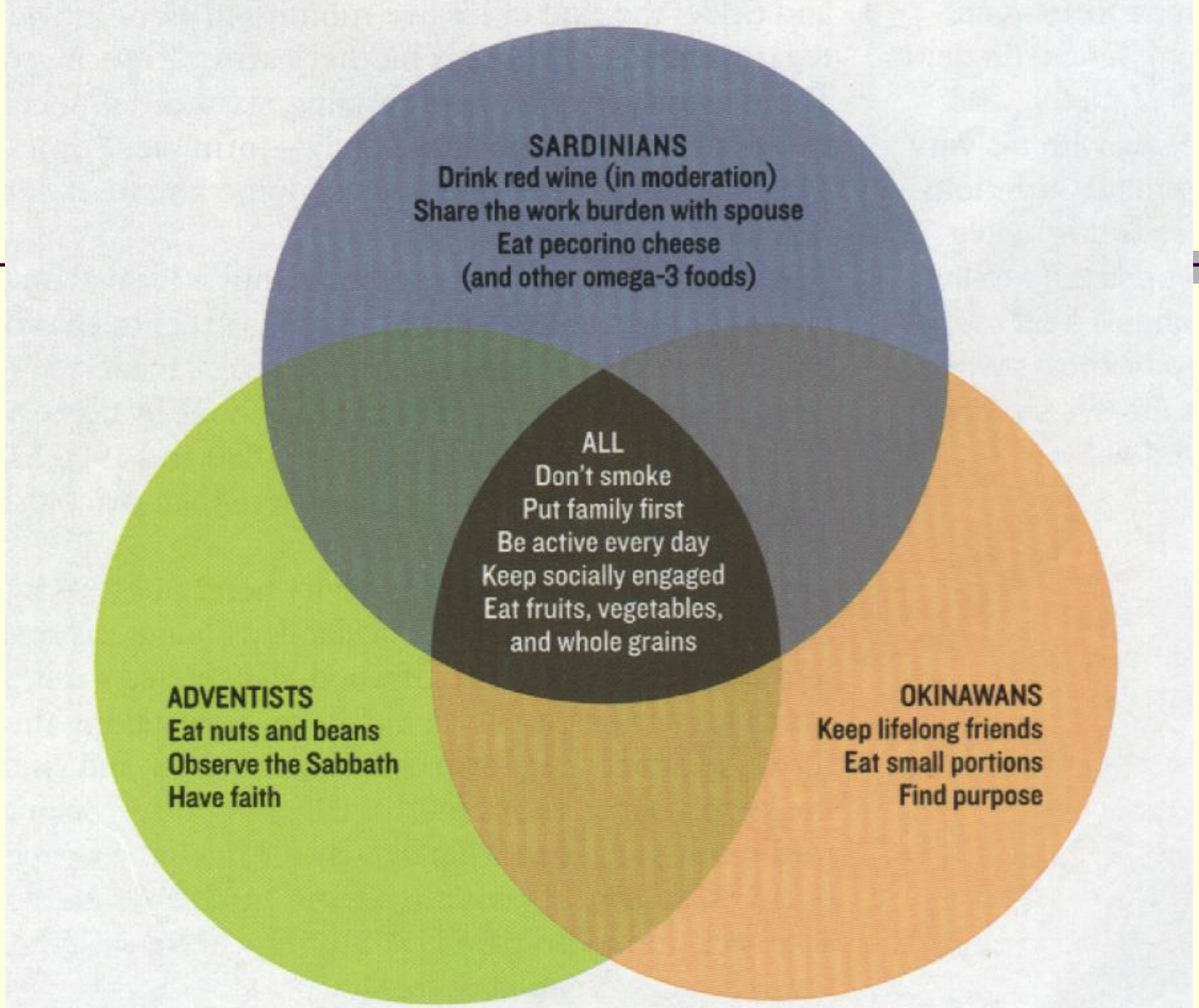







NATIONALGEOGRAPHIC.COM/MAGAZINE
NOVEMBER 2005
NATIONAL GEOGRAPHIC
The Secrets of Living Longer
Nepal: Inside the Revolution 46
Autumn in Acadia 28
Stealth Cats 66
War Letters 78
Indonesia's Undersea Oddballs 96
ZipUSA: Thanksgiving Turducken 114





HOW THEY LIVE LONGER

Super seniors in three widely separated regions share a number of key habits, despite many differences in backgrounds and beliefs.

CNN.com - Inventor preserves self to witness immortality - Feb 15, 2005 - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://edition.cnn.com/2005/HEALTH/diet.fitness/02/15/one.mans.immortality.ap/

Getting Started Latest Headlines

IT Manager's Journal | Why Bluetooth looki... CAST Clearinghouse Fantastic Voyage: Live Long Enough to Liv...

CNN INTERNATIONAL .com

Next time you travel, stay at a CNN Partner Hotel.

SEARCH The Web CNN.com Search Powered by YAHOO! search

Home Page
Asia
Europe
U.S.
World
World Business
Technology
Science & Space
Entertainment
World Sport
Travel
Weather
Special Reports
ON TV
What's on
Business Traveller
Design 360
Global Office
Principal Voices
Spark
Talk Asia
Services
Languages

TrickleUp PROGRAM

HEALTH

Inventor preserves self to witness immortality

Tuesday, February 15, 2005 Posted: 1459 GMT (2259 HKT)

WELLESLEY, Massachusetts (AP) -- Ray Kurzweil doesn't tailgate. A man who plans to live forever doesn't take chances with his health on the highway, or anywhere else.

As part of his daily routine, Kurzweil ingests 250 supplements, eight to 10 glasses of alkaline water and 10 cups of green tea. He also periodically tracks 40 to 50 fitness indicators, down to his "tactile sensitivity." Adjustments are made as needed.

"I do actually fine-tune my programming," he said.

The inventor and computer scientist is serious about his health because if it fails him he might not live long enough to see

AP PHOTO

Inventor and author Ray Kurzweil predicts human immortality is no more than 20 years away.

HEALTH LIBRARY

In association with MayoClinic.com

• Health Library

advertisement

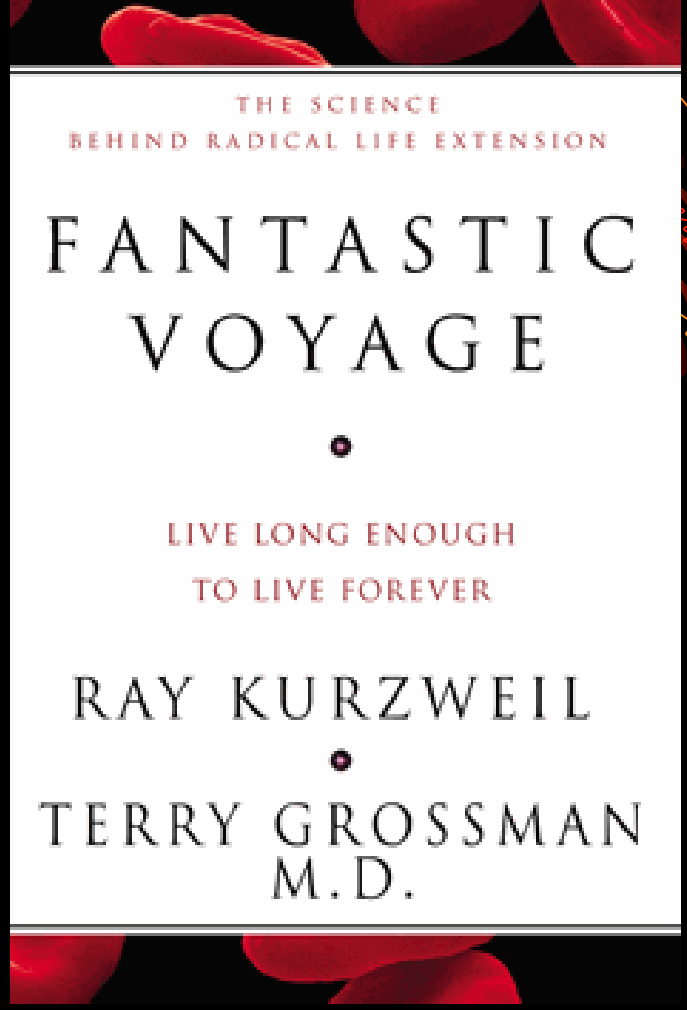
CNN News Ticker
Travel the World
Notes From Singapore
Sports Update

MAKE CNN INTERNATIONAL .com YOUR HOME PAGE.

CLICK HERE!

Done

start Palm Desktop tejinder 3 Firefox the three bridg... Untitled1 - Ope...



- Ray Kurzweil
- Famed Inventor & Computer Scientist
- Top MIT graduate Lemelson-MIT prize
- 1st Reading m/c for the blind
- 11 Doctorate's
- Fantastic Voyage

President Clinton presented Ray Kurzweil with the National Medal of Technology, the nation's highest honor for technological achievement.

“ FIRST BRIDGE ”

- Living a healthy lifestyle to keep people fit enough to cross the second bridge
- Staying focus and discipline on health regimes with key emphasis on **WELLNESS**

- **By keeping your body's internal biochemistry stable and healthy, allowing your body to commit its energy and resources into cell repair and rejuvenation from the inside, you will stay young and healthy.**

" SECOND BRIDGE"

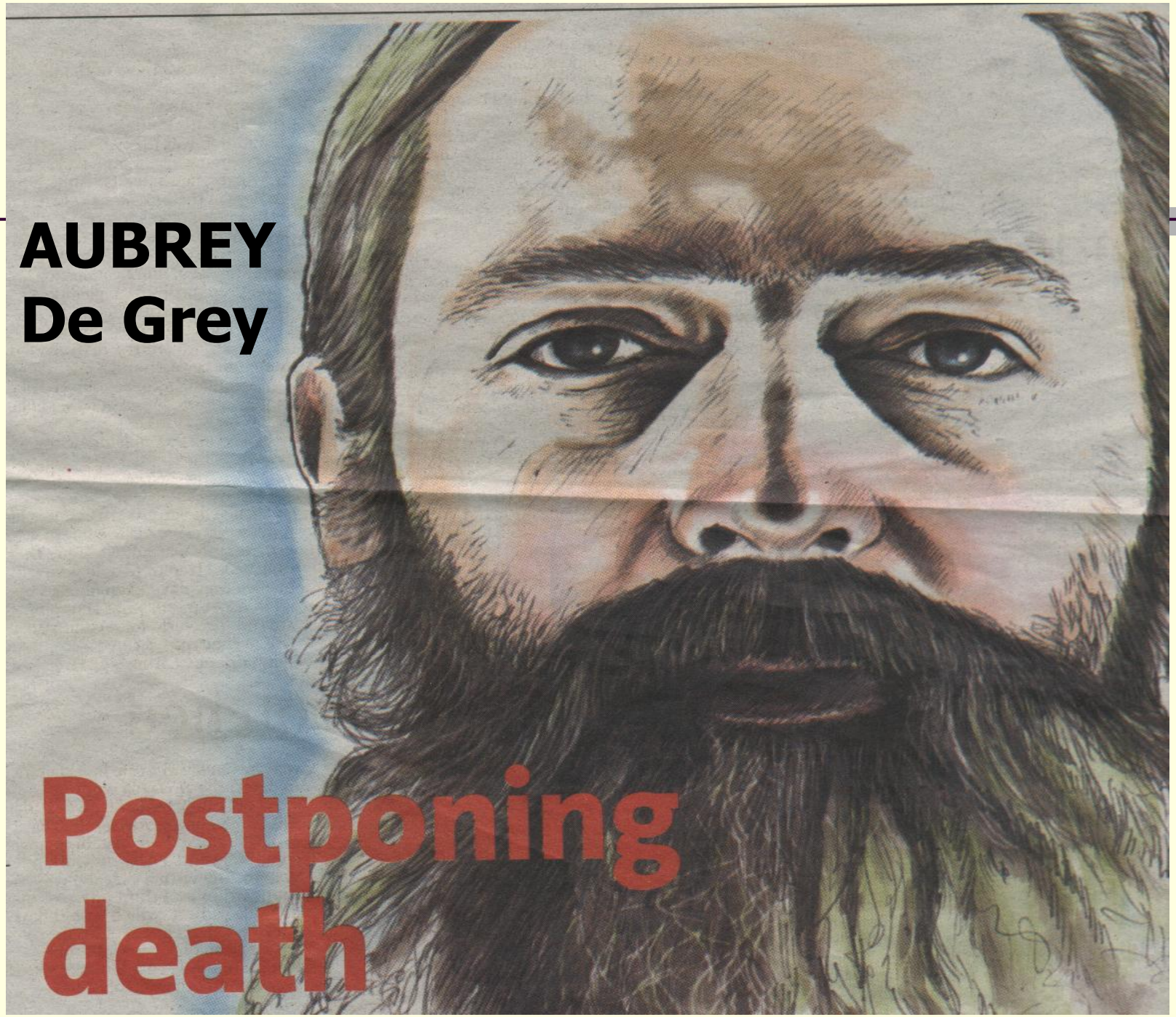
- A Biotechnological revolution
- Humanity is on the verge of controlling how genes express themselves & ultimately changing the genes
- Could block disease causing genes and introduce new ones that would slow or STOP the ageing process

" THIRD BRIDGE"

NANOTECHNOLOGY and ARTIFICIAL INTELLIGENCE REVOLUTION !

- Will deliver the nanobots that work like repaving crews in our blood streams and brains
- These intelligent machines will destroy disease, rebuild organs and wipe out known limits on human intelligence

AUBREY
De Grey



The battle against ageing begins

LIVING LONGER: de Grey believes that once ageing has been reversed in mice, billionaires will come forward, intent on living as long as possible.

THEORIES OF AGEING

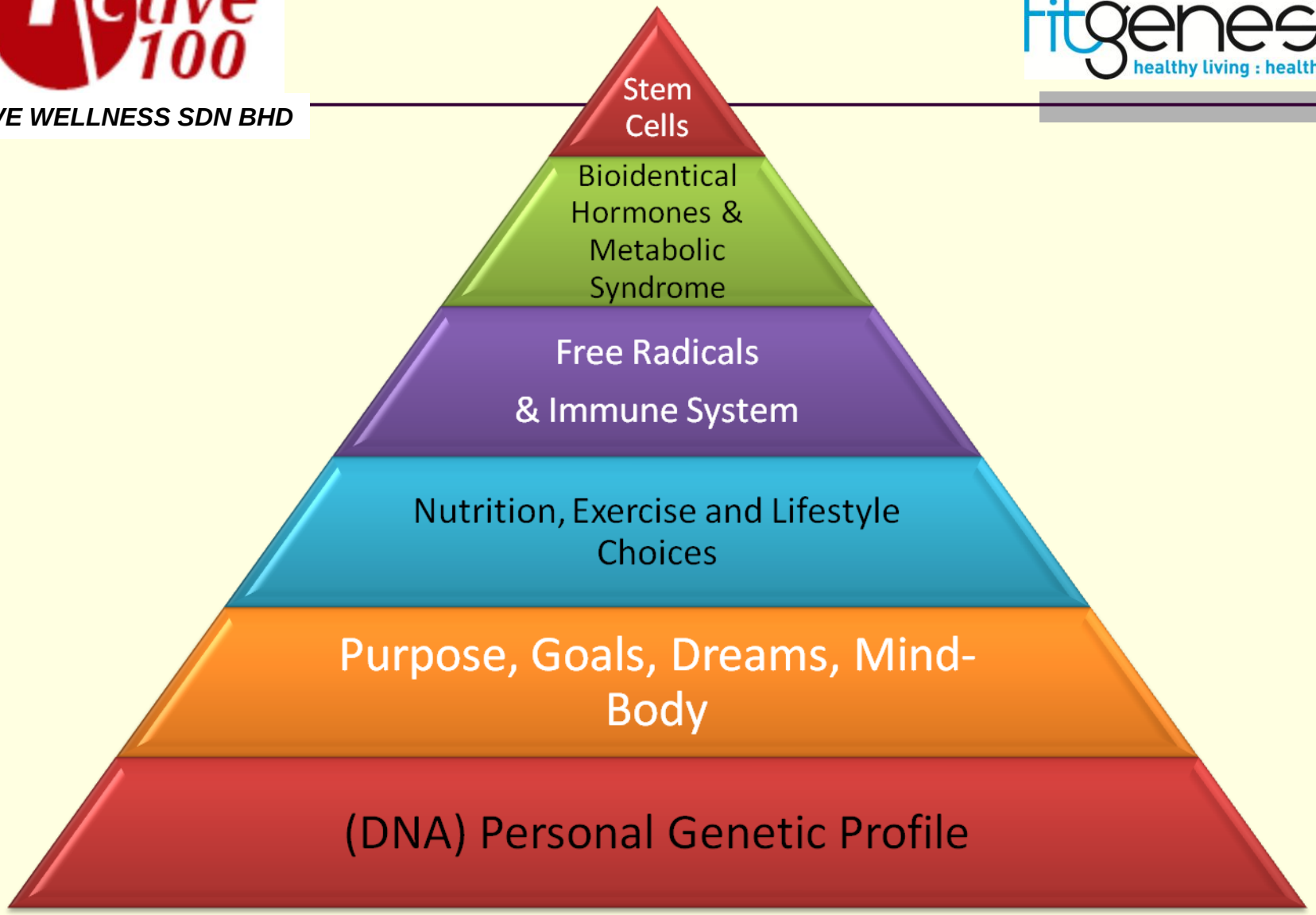
- Social theories
- Biological theories

Biological Theories

1. Programmed aging theory
   (Cellular aging)- aging genes
2. Cross link theory – Rate of DNA repair decreases as the cells age (Telomerase connection)
3. Theories of Random deterioration – Free radical reactions (anti-oxidants)
4. Immunologic theory
5. Stress theory
6. The neuro endocrine theory – hormones
7. Glycosalation theory - Metabolic syndrome.

ACTIVE WELLNESS SDN BHD

Personal Health Pyramid

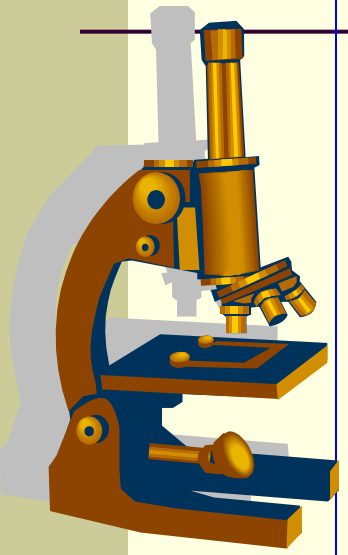


Understanding The Human Body

WELLNESS

SICKNESS

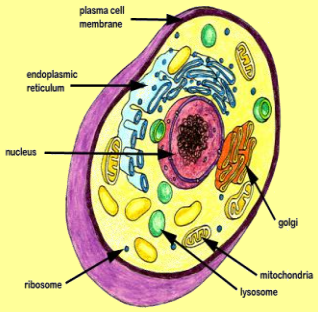
HUMAN BODY



MOLECULE

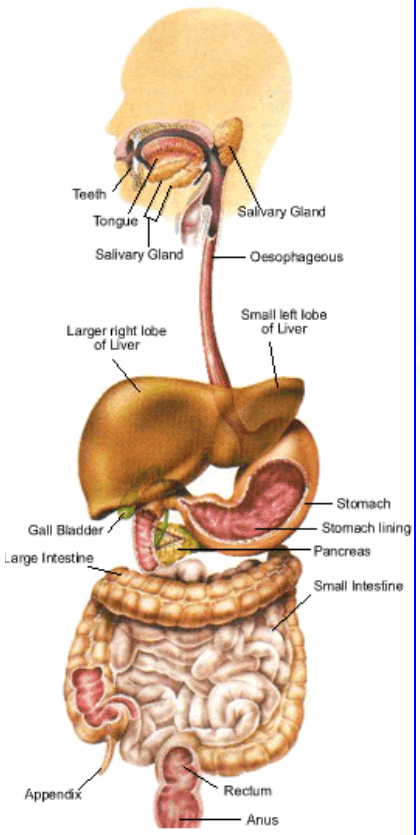
loading...

CELL



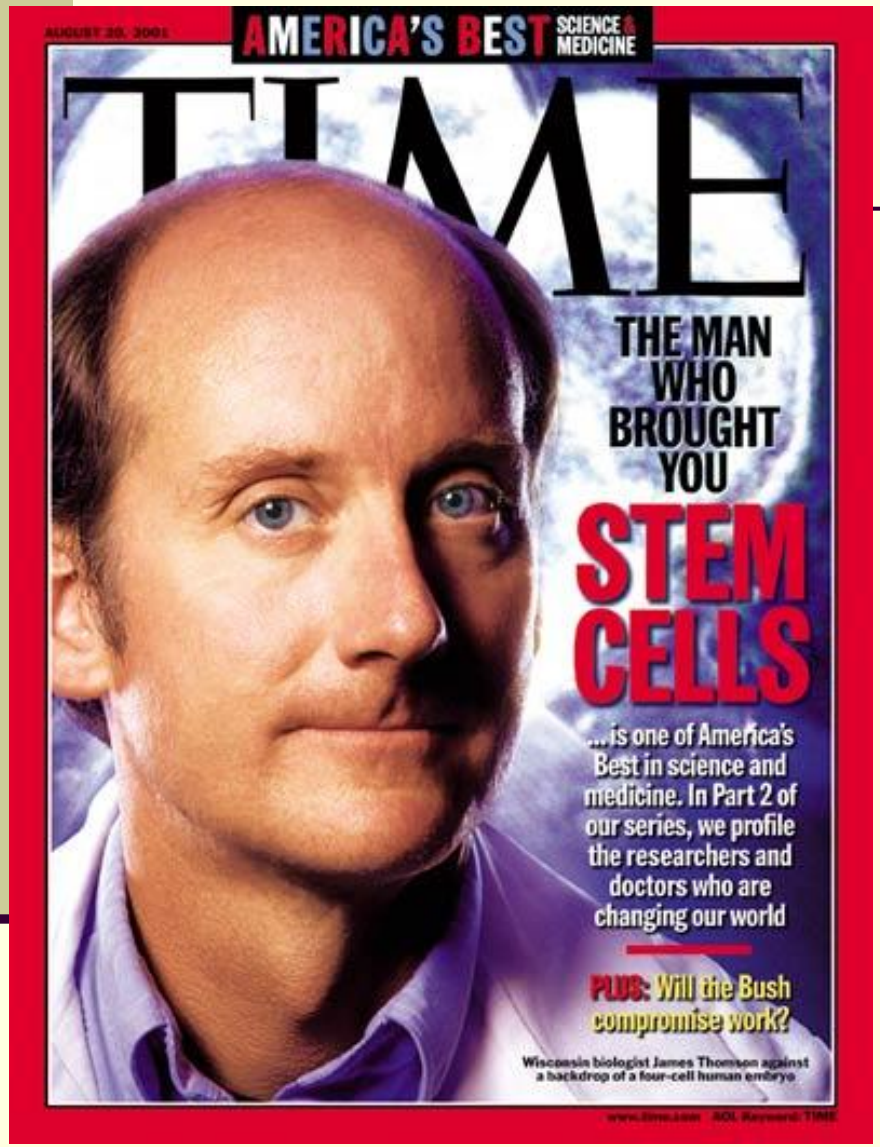
TISSUE

ORGANS



Top Five Biotechnologies

1. Stem Cells
2. Cloning
3. Nanotechnology
4. Artificial organs
5. Nerve impulse continuity (brain/spinal cord)


AUGUST 20, 2001
AMERICA'S BEST SCIENCE & MEDICINE
TIME
THE MAN WHO BROUGHT YOU
STEM CELLS
...is one of America's Best in science and medicine. In Part 2 of our series, we profile the researchers and doctors who are changing our world
PLUS: Will the Bush compromise work?
Wisconsin biologist James Thomson against a backdrop of a four-cell human embryo


FINANCIAL TIMES & SCIENTIFIC AMERICAN
SPECIAL REPORT
The Future of
STEM CELLS
FT
FINANCIAL TIMES
SCIENTIFIC AMERICAN
COPYRIGHT 2005 SCIENTIFIC AMERICAN, INC.

What are Stem Cells ?

- Stem cells are highly plastic, multipotential cells with the capacity to self replicate; that is, they can generate all the cell types composing more specialised stem cells and then ultimately a functional organ or tissue, while maintaining a pool of cells like themselves for the lifetime of the individual.

Stem cells – The Renewal System

A number of recent studies collectively suggest that health is a balance between cellular loss taking place as part of normal process of tissue turnover or ageing and Bone Marrow based tissue regeneration.

Diseases would form out of an imbalance between tissue turnover and tissue repair.

Stem cells – The Renewal System

Two aspects must be considered for health maintenance and disease prevention

1) Enhancing tissue repair/renewal by supporting stem cell function
2) Preventing conditions that might accelerate cellular loss by adopting lifestyle strategies that support health at the cellular level.

What are stem cells useful for

- The Four R's of Stem Cell Therapeutics

1. Replace
2. Repair
3. Regenerate
4. Rejuvenate

These processes recapitulate/mimic natural events of developmental biology

What are stem cells useful for?

- 1. Replace – Many diseases such as Parkinson's Disease and juvenile diabetes result from the death or dysfunction of just one or a few cells. Therefore , stem cells can be used as replacement cells, offer "lifelong treatment".

What are stem cells useful for?

- 2. Repair – Stem cells can be used to repair diseased or damaged organs. By isolating stem cells in a laboratory, scientists could grow new heart cells to repair damage from heart attacks, new liver cells to treat hepatitis and new red blood and stromal cells for cancer patients after ablative radiotherapy.

What are Stem cell useful for?

- 3. Regenerate – Embryonic or TR stem cells can be used to renew biological functions or damaged organs.
- 4. Rejuvenate – Stem cells can to used to become new, healthy “younger” cells to rejuvenate, restore and repair older cells and ailing hearts, liver, brains and other organs.

Perhaps a 5th "R" ?

- Rebalance the body's biochemical processes definitely, obviating the need for classic, costly, repetitive pill-taking, injections and surgery.

Pilot Study

- Pilot study to determine the efficacy and safety of allogenic mesenchymal stem cells adminstration for healthy ageing.
- 50 million allogenic stem cells given 1st month and repeated after 6 months.
- Or 100 million cells once.
- Intravenous infusion over 30 minutes.

Pilot Study

- Measurements:

1. Quality of life Questionairre
2. Body Composition
3. Full blood profile – including hormones and cancer markers.
4. Heart scan, U/S abdomen, mammogram
5. Bone Density

Pilot Study

- Measurements were before 1st injection and 6 months after last injection.
- 50 patients underwent the therapy.
- Data collected from 27 patients.
- All improved in QOL questionnaire ?placebo
- 25 out of 27 had an increase in IGF1 between 30-40%.
- Almost all had same levels or decrease in cancer markers.

Study Protocol - Title

A Randomised, Double Blind, Multicentric, Placebo Controlled, Phase 11 Study Assessing the Safety and Efficacy of Intravenous Ex-Vivo Cultured Adult Allogeneic Mesenchymal Stem Cells in Improving Aging Parameters in Older Individuals.

Study Protocol

- A total of 72 patients are planned to be randomised at one study centre in Malaysia.
- Clinical trial duration will be for 2 years.
- Primary Objective- To assess the safety and tolerability following a single dose of allogenic mesenchymal stem cells administered by intravenous injection in improving the ageing parameters in older individuals.

Study Protocol

- Secondary Objective – To explore the efficacy of allogenic mesenchymal stem cells in improving the ageing parameters in older individuals and to find the appropriate dose of allogenic mesenchymal stem cells.

Study Protocol

The primary end points are safety and tolerability, assessed by adverse events

The secondary endpoints are:

1. Clinical Evaluation
2. Hormones esp. IGF1
3. Body Composition
4. Bone Density
5. Ferrans and Powers QOL index generic version 111.

THE END OF DYING

By studying the genetics of aging, scientists are traversing the road to immortality

BY WILLIAM LAI

There is no mistaking the onset of aging. Fine wrinkles begin to appear on the face. Hair starts to turn gray. The unaided eye encounters problems focusing on nearby objects and eventually loses the ability to distinguish fine details. Men, especially, find it increasingly difficult to hear higher sound frequencies. The heart grows larger while the maximum breathing capacity of the lungs declines. The bladder progressively holds smaller amounts of liquid. Body fat migrates to hips and thighs in women and to the gut in men. As time passes, chronic illnesses like osteoporosis, arthritis and Alzheimer's disease strike with little warning.

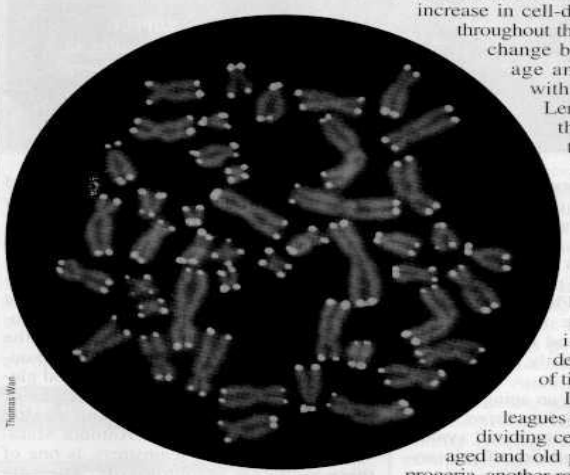
Traditionally, scientists believed that aging was a biological process in which cells simply stopped dividing. Gerontologists, who specialize in aging, now know the explanation is not that simple. One theory links aging to cumulative cell-division errors. Another attributes it to the shrinkage of telomeres, the structures at the tip of chromosomes. A third hypothesis suggests a connection with the build-up of so-called junk DNA, genetic material that does not have any obvious use. Other researchers zero in on environmental factors such as high-calorie diets. A common thread runs through all these studies: the belief that in unlocking the secrets of aging, doctors can devise ways of retarding and even reversing the process.

Genetics. Some light was shed on the mystery in 1996 when Chang-En Yu, Junko Oshima, Ying-Hui Fu and other researchers identified the first human gene that affects aging. The breakthrough came from studies of people with the rare condition known as Werner's Syndrome. As they enter adolescence, sufferers develop wrinkled skin, lose their hair and become susceptible to diseases associated with the elderly such as cataracts, heart disease, diabetes and cancer. The researchers traced the abnormalities to mutations in the WRN gene, which controls the production of an enzyme belonging to a group known to play a crucial role in manipulating genetic material. The hope is that reengineering the defective WRN gene (it has been successfully cloned) could help cure Werner's Syndrome — and perhaps extend natural lifespans.

A California team led by Richard Lerner, president of the Scripps Research Institute, has embarked on another approach. The researchers theorize that the mechanism of human aging and its associated diseases can be traced to a gradual increase in cell-division errors in tissues throughout the body. "This functional change begins slowly in middle age and increases gradually with advancing age," wrote Lerner in a recent issue of the journal *Science*. The theory is that those errors gradually alter the way key genes operate, which in turn causes the loss of tissue functions that result in aging. Imagine your cells as tiny gene factories where quality control of the manufacturing process naturally declines with the passage of time.

Lerner and his colleagues studied genes in actively dividing cells from young, middle-aged and old patients, and those with progeria, another rare genetic disorder characterized by accelerated aging. The researchers found that 61 out of more than 6,000 genes examined showed consistent changes in expression — that is, there were slight differences in their characteristics depending on the age of the donor and whether the patient had progeria. Some of the 61 genes are linked to chronic diseases such as age-related breast cancer and arthritis, and defects in organs like the kidney, heart and ovaries. Lerner cautions that the research is not conclusive. Further studies are needed before the process of aging can be completely understood.

Other researchers focus on telomeres, which are found on the tips of chromosomes *(see picture above)*. Every time a chromosome replicates itself, its telomeres shorten in length. The older an organism is, the shorter are its telomeres. Thomas Wan



Thomas Wan

MEASURE OF LIFE If a way could be found to repair shortened telomeres *(orange structures)*, humans might live longer

A common thread runs through all these studies: the belief that doctors can retard and even reverse the process of aging

ACTIVE 100

- Come along and grow old with me, the best is yet to be.

Robert Frost

THANK YOU