

Which embryo is human?

During the developmental processes of vertebrate embryo, common organismic characteristics will appear first. Usually, the spinal column structure is the initial embryo features, which is a universal characteristic of most vertebrate embryos in the beginning, and then the individual features appear. Therefore, it is hard to distinguish the shape of the first four embryos.

The adverse effects of smoke, alcohol, illicit drugs and medications on embryos and fetuses

Pregnant women with alcohol ingesting have more risk of having a child with fetal alcohol syndrome including growth restriction , developmental delay, central nervous system injury and craniofacial anomaly such as flattened nasal bridge , micrognathia and microphthalmia.

Pregnant women with smoking may have increasing risk of abortion, fetal congenital cardiovascular malformation and facial anomalies such as cleft lip, as illustrated in this picture.

Pregnant woman taking illicit drugs may result in fetal congenital anomalies , developmental delay, growth restriction and preterm delivery. In the picture the premature infant was born by a woman using cocaine.

Pregnant women with improper medication may have increasing risk of congenital anomalies and abortion. For example, thalidomide , as an anxiolytic and antiemetic drug , may result in fetal short limbs, so called phocomelia, as illustrated in this picture.

The difference between neonates of humans and red deer

Human's birth giving and body structures are extremely delicate, and more complex than other animals. Human beings have to experience a 10-month pregnancy before giving birth. After 12 to 15 months following birth, human beings are able to walk. Red deers have an 8 to 9-month pregnancy before giving birth, and new-born red deers are immediately able to walk after birth in order to handle their dangerous and ever-changing environment.

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Puberty

Female puberty may occur between 10 to 14 years of age, and male puberty may occur between 12 to 17 years of age. Men and women have remarkably different characteristics and appearances resulting from the effect of sexual hormones. Let's see what kind of changes men and women undergo during this period.

Male physiological development

During puberty, male adolescents' reproductive organs will mature and secondary sexual characteristics will appear, such as increase in body size, wider shoulders, thinner hypodermis, beard and laryngeal prominence ("Adam's apple") growth, etc.

The Secondary Sexual Characteristics

Appearance of armpit hair and pubic hair: Hair under the arms, the pubic hair at the base of the penis, and hair on the face start to appear.

Appearance of Adam's apple and deeper voice: The laryngeal prominence ("Adam's apple") will grow as a result of the male hormone testosterone. The parathyroid bone of neck will protrude, the laryngeal cavern will enlarge, and the male voice will become deeper.

Male bodies are stronger and more muscular than those of female: Male adolescents have taller and stronger bodies, wider shoulders, and thicker waists, stronger muscles and thinner hypodermic fat than female adolescents.

Reproductive Organs Development

During puberty, the male's body begins to produce sperm, which is composed of the secretions of seminal vesicle and prostate gland. When the sperm secretion exceeds the capacity of seminal vesicle, it will be released from the urethra. Sometimes, this may happen while the male is sleeping. This is called a nocturnal emission or a "wet dream". The penis, the male's sexual organ, is comprised of sponge-like vascular tissues that fill with blood to create an erection.

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Puberty Health Care

Reproductive organs should be cleaned and protected from impact. The optimal temperature for scrotum should be maintained at 31 degrees centigrade below body temperature.

Female physiological development

During female puberty, female adolescent reproductive organs will mature and the secondary sexual characteristics will appear, such as breast growth, hypodermic fat increase, menstruation or "period" begins, etc.

The Secondary Sexual Characteristics

Appearance of armpit hair and pubic hair: Young girl in her puberty will gradually grow the pubic hair at her private part, so will the armpit hair under the axilla.

Breast Growth: Breast, as a female breast-feeding organ, is grown stimulated from the great amount of estrogen produced by the ovary. During the breast growth, the breast gland and fat under the nipple and breast areola will enlarge, which produce milk for breast-feeding.

Females have softer, smoother and thinner skin than that of males: Females have smaller skeletons, thinner waists, bigger pelvises, larger hips, thicker hypodermic fat, and smoother, delicate skin.

Reproductive Organs Development

During female puberty, female's labium will enlarge, appear dark colored, and the length and width of vagina will increase. Every month, the ovary will produce eggs. If an egg is fertilized in the fallopian tube by sperm from a man, it will grow inside the uterus and develop into a baby. If the egg does not meet with a sperm, these tissues and cells are not needed by the body. They turn into a blood-like fluid and flow out of the vagina. That is called the menstrual cycle, or "period".

Puberty Health Care

Female labia have a protective function, but it is easy to accumulate secretions. Therefore, it is important to keep them clean. During menstruations, a woman should have a balanced diet and adequate rest, and avoid violent exercise.

Puberty physiological development

During puberty, adolescents can easily become depressed, irritated, and angry, and are curious about “sex”. Their psychological changes are also affected by culture, the media, and social factors.

Interpersonal Relationship

During puberty, adolescents begin to become independent and sociable. Their interpersonal relationships start to expand, and relationships with members of the same generation become important.

Self-identification

In the transition period between childhood and adulthood, adolescents are challenged by facing the future and self uncertainty that make adolescents care about their image in the eyes of others and search for self-identification.

Gender Relationship

During puberty, adolescents are curious about the opposite gender. They are gradually interested in making friends with the opposite gender. The gender relationship of adolescence should follow in proper sequence, make steady progress, and keep the common positive attitude.

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Menopause

Mental and physical changes in both sexes following menopause result in the sex gland function degeneration with age and hormonal secretion reduction.

Female Physiology Change

Hormones are produced by the endocrine gland. When the ovary production degenerates, the female hormone secretion will be affected and decreased. The body will automatically adjust; however, the menopause symptoms will appear if the body cannot adjust automatically.

Female Menopause

When the ovary production function degenerates and the hormone secretion is reduced, female period becomes irregular and finally stops resulting in loss the reproductive ability.

Hormonal Imbalance

Menopause symptoms are a result of hormonal imbalance, which is caused by the female hormone production reduction and the organ degeneration.

Reproduction Organ Degeneration

Reproductive organ degeneration may occur after menopause and the following symptoms may appear: the secondary sexual characteristics gradually disappear; sexual functions degenerate; the vaginal secretion reduction may cause genital itch and discomfort during sexual intercourse.

Incontinence

Female hormone reduction in a large numbers will lead to urethra mucous membrane atrophy, urethra resistance decrease, and incontinence.

Bones and Skeleton- Density decrease and Calcium Excretion

The speed at which bones lose calcium will increase due to female hormone production decrease and reduction of calcium absorption by the alimentary canal.



Appearance Aging

Female skin will wrinkle, age spots will appear, and elasticity and gloss will be lost. The hair will turn white and fall out and hypodermic fat will increase.

Sensation System**Vision**

At the age of 40, vision begins to worsen and in such a way to slow response to events on either side of the field of vision.

Hearing

The ear drum will gradually atrophy, and the cell of inner ear is degenerating. At the age of 30, the hearing ability begins to diminish.

Smell, Taste, Touch

The amounts of olfaction cells of the nose decrease and the sense of smell decreases; As for the sense of taste, the number of taste buds gradually decreases causing taste to become bland; As for the sense of touch, it also gradually decreases.

Male Physiological Change

The testicle function is gradually degenerating as a result of the male hormone testosterone reduction. The symptoms of male menopause are slighter than that of female menopause.

Hair Loss Speed Up

When the male hormone testosterone produces abnormal metabolism in some partial tissues that causes follicles to mature early and shorten the growth period, the follicle will gradually become smaller and hair will become thinner until it falls out.

Prostate Gland Hypertrophy

The development and growth of the prostate gland is related to testosterone. During menopause, the hormonal production begins to become imbalanced and causing the prostate gland to proliferate excessively and hypertrophy.

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Decrease of libido

When the testosterone is reduced, the tissues affected by the male hormone will degenerate, such as aging in the testicle cells: Spermatozoa become less active, and sperm production is reduced; The libido, the response to sexual stimulation, sperm ejaculation and orgasm will also decrease.

Menopause Physiological Change**Menopause Depression**

Insufficient hormones will cause emotional instability or stimulate latent mental defects. But not all of the emotional instability that happens at menopause is caused by the insufficient hormones.

Unoccupied Period

Parents at menopause will experience boredom because their children are independent and do not stay with them. Menopause parents will feel insecure as a result of the loss of their parents role.

Late-life Crisis

Because their physiological functions gradually degenerate, and they face the fear of illness and death, people after menopause will easily suffer from insomnia, dysphoria and sadness.

How to get over menopause?**Work and Leisure**

People after menopause period should make efficient use of their leisure time, and do some activities in accordance with their time, energy, experience, interests, etc., or continue working in order to avoid the disconnection with society.

Disease and Sickness Prevention

When a person is close to menopause, he or she should adjust his or her lifestyle, and do exercise in order to postpone the aging process.

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Psychological Adjustment

People after menopause should adjust their lifestyle to match their psychological changes, keep positive life attitudes, expand their interpersonal relationships, and care for their spouse who also experiences menopause, etc.

Growth

0~3 years old : Human's body grows fast and features a big head and short body and limbs.

3 ~ 11 years old : Human's body growth speed starts to slow. The body and four limbs are bigger and stronger.

11~20 Years Old : Human's body starts to grow rapidly again, and the reproductive organs gradually develop and mature. The secondary sexual characteristics are revealed.

20~40 Years Old : The human body's development is complete. The body condition is at its peak.

40~65 Years Old : Human's body starts to age. A healthy life can reduce aging impacts on the body.

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Genes

What are genes?

Genes are the basic unit of inheritance. Living creatures are composed of different cells. Cell nuclei are comprised of chromosomes, which are composed of protein and DNA, and have influence on enzyme production, cell activities and living creature features, etc. A gene is a serial code that determines one characteristic.

Cell→Cell nuclei→chromosomes→DNA→flexible DNA→oligonucleotide(ACGT)→Gene

What is genetic engineering?

Gene engineering is the use of biochemical technologies to obtain a specific DNA fragment from living creatures or cells, and transfer it to other living creatures or cells via artificial modification and recombination to produce the planned characteristics and functions.

Procedure:

1. Obtain the required specific DNA fragment (Target gene); Select the optimal carrier for delivering the gene (Another DNA or virus)
2. Combine the target gene with the carrier, and acquire the recomposed DNA
3. Introduce the recomposed DNA into the bacteria, plant or animal cell.
4. Create necessary conditions to make the target cell synthesize and produce the required outcome in the cell.

Application

- 1. Medical Treatment:** Using gene treatments recover the biological functions by replacing the abnormal genes of living creatures with healthy genes.
- 2. Agricultural Products:** Using gene transplants improve agricultural products' resistance to diseases and increase the crop's production by injecting various genes into different living creatures.

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3.Industrial Application: Using the genetic technologies to produce specific bacteria to replace chemical substances, and allow the partial industrial reaction can be processed at a normal temperature and pressure in order to save energy.

4.Environmental Protection: when the environment is damaged, such as soil contamination by heavy metals, the use genetic technologies can produce the specific plant to absorb the pollutants in order to avoid secondary contamination.

5.Military Technologies: developing genetic weapons, which are hard to prevent and also produce strong weapons for psychological warfare, such as injecting an epidemic virus into snake venom.

Disputes in all respects

Genetic engineering is a brand-new technology and has raised many new questions. There have been so many different controversies. Please select "Agree" or "disagree" options, and let see what other people saying!

Agreement

- 1.Agricultural Development: Genetic engineering can increase agricultural and livestock production, improve breeds and solve food shortage problems.
- 2.Medical Treatment: Doctors should provide patients with the best treatment, and genetic engineering produces many excellent results in medical treatments.
- 3.Environmental Protection: Biotechnological methods can solve the contamination, and avoid the secondary environmental damages.
- 4.International Competition: Bio-technologies are global and economically competitive. All scientists would not want to miss out, and no countries want to fall behind.

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Disagreement

1. Biological function: The inappropriate handling of external genes could damage the original balance of living creatures resulting in loss of biological functions.
2. Social Resources :spending a large amount of money to waste social resources.
3. Species Ecology: during the species manipulation process, new species may have negative effects on our environment.
4. Morality and Ethic: Embryos duplication involves moral and ethic issues, such as "Do duplicated species have living rights?" However, eugenics and genetic engineering could make a disadvantaged minority become extinct or be neglected.

My Opinion

After reading the introduction to genetic engineering and the different opinions, do you think the genetic engineering should be developed or not?

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Regenerative Medicine

Regeneration is a generally applicable medical science that regenerates the damaged or functional organs and tissues via human self-renewing and external materials assistance. The current medical regeneration science is still in the development phase of external duplication and transplant or biomaterial materials assistance.

Theories Foundation

Utilizing the biological medical science and medical engineering theories to repair damaged organs and tissues.

Involved Field

The main two medical regeneration scientific research scopes are "cell treatment" and "tissue engineering".

Cell Treatment

Utilizing the acquired cells with specific functions and increasing the cell numbers can strengthen organic recovery and regeneration ability and repair damaged tissues and organs via biological technologies. The current major development direction is toward "stem cell treatment".

Stem Cell

Stem cell is the original cell with proliferation and differentiation ability that possesses the self-duplicating and self-renewing ability, and can be differentiated into different cells.

The two major classifications:

1. Embryonic stem cell
2. Adult stem cell

Tissue Engineering

Cooperating with biological medical science, medical engineering, and material science, tissue engineering uses imitational organic structures of tissues and organs to implant the structure or compounded cells that can be applied to the damaged part of organism and recover the damaged tissues.



- 1) Obtain cells from organisms ;
- 2) Externally foster cells to plentiful amounts ;
- 3) Implant the produced cells in the artificial scaffolds
- 4) Add some signal factors to speed up cell's growth and maturity ;
- 5) Transplant the external tissues to patients

International Current Development

The artificial organ biomaterials development from 1950 to 1960 was the beginning of regeneration medicine. In 1970, medicine developed to the cell treatment. In 1977, there was a hot issue about using the cartilage cells to produce human ears and implant them in a mouse. In 2000, regeneration medicine had developed the articular cartilage, cardiomyocyte, neural cell, etc, that could be applied to human beings. Since then, the first human being embryonic stem cell center was founded in UK.

Taiwan Current Development

Artificial skin and related biomaterial research started in 1980. In 1998, the first Taiwan stem cell research center was established. In 2000, biological artificial skin laboratory centers and university research centers were also established, and the related technology standard operating procedures were made. The tissue engineering became the main multidisciplinary research objective. In 2004, the Taiwan's first human embryonic stem cell was produced.

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Phases of Life According to Chinese Medicine

At the age of 7, female physiological functions are complete developed. They lose their milk teeth, and grow permanent teeth and luxuriant hair.

At the age of 14, female have reproductive functions, begin their periods, and can get pregnant.

At the age of 21, female physiological functions are growing at a stable rate. Their wisdom teeth have grown, and all teeth are completely developed.

At the age of 28, female physiological functions are developed to their best conditions. Their whole organs and hair are completely developed, and their health conditions are at their peak.

At the age of 35, female digestive system and appearances start to gradually degenerate, and their hair growth slows.

At the age of 42, female physiological functions are gradually degenerating, their appearance and shape are not plump and smooth-skinned, and their hair begins to turn white.

At the age of 49, female periods and reproductive functions degenerate. Their periods gradually stop, their shapes get old, and they are not able to reproduce anymore.

At the age of 8, male physiological functions are complete developed. They lose their milk teeth, and grow permanent teeth and luxuriant hair.

At the age of 16, male reproductive functions are completely developed. They start to produce and ejaculate sperm. When female eggs meet male sperm, human beings can produce a new life.

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At the age of 24, male physiological functions are growing at a stable rate. Their metabolism system is stronger, and their wisdom teeth have grown in.

At the age of 32, male metabolism is developed to its best stage. Their muscles are strong and healthy, and their bodies are developed to their peak.

At the age of 40, male metabolism begins to degenerate. Their physiological functions become weak, hairs start to fall out, teeth become fragile

At the age of 48, male whole physiological functions degenerate gradually. Appearances and bodies are no longer young and strong, and hair and temples start to turn white.

At the age of 56, male bodies circulation and physical activities are degenerating. The whole physical functions is degenerating, and nutrients are losing, metabolism functions is getting weak, and the appearance of limbs are ageing.

At the age of 64, male hair and teeth fall out faster. The kidney is in charge of secretion and excretion. It also absorbs the body's metabolism and is important in the absorption of nutrients. That's why the organs and excretion are still normal. If your organs age and degenerate, your muscles weaken and your bones become brittle, all physiological functions will also degenerate. Thus, hair become white, movement becomes less agile, walk becomes unstable and one can no longer have children.

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The secrets of aging

Waste Accumulation

There has been extensive research proposed by scientists on the causes of aging. Now we will discuss some of these theories.

Wear and Tear Theory

Most experts think that human cells will be broken down or damaged with time, just like clothes worn with time. When cells are damaged at a speed that human's body cannot compensate for, our body will start to age.

As for the "Waste Material Accumulation Theory", the metabolic processes of a normal cell would generate many biological products including harmful wastes. If the accumulated wastes are not properly processed and removed by the body, the normal cells will be damaged over the long term.

Free Radical Theory

During the metabolic process, human body will produce free radicals. A normal atom requires even electrons to be stable. However, a free radical is active because of the lack of one electron, and it will react with the adjacent nucleic acid, protein, lipid and other biological molecules and seize electrons from them, and that could damage cells. If cells are damaged or die in great quantity, and cannot be repaired, human organ functions will degenerate and begin to age.

Genetic Endowment Theories

The end of the chromosome has a biological clock called telomere, which is used to limit the cell fission times. Without the normal function of telomere, the cells are unable to split normally, which causes irregular cells with twisted size and shape, finally lead to death.

There have been many different theories on the secrets of aging. However, none of them can really explain the cause of aging.



Inside Ageing

With age, skeletons lose their bone substances and bone cells causing osteoporosis, and the skeleton's anti-pressure ability diminishes creating deformation. In the illustration, Thoracic-lumbar spine X ray shows osteoporosis with compression fracture and scoliosis. But this does not happen to young people.

Human bones and skeletons will degenerate with time. In the picture, Ageing right knee joint X ray shows degenerative change with spur formication and joint space narrowing. The abraded cartilage can self-repair and self-proliferate, and then the spur is produced. The brain atrophy is a common phenomenon on old men, like wrinkles, the mark of the years.

In the picture, aging brain CT shows brain atrophy with sulcal widening and ventricular dilatation.

The disadvantages and advantages of aging

Aging will lead to physiological degeneration, but it is also the accumulation of experiences and wisdom. The physiological functions of old people's brain cannot compare to that of young people, however, the accumulated experiences and wisdom of old people allows them to be competitive with young people on the work performance.

AGEING

A diet that can delay the process of aging

Nutrients in specific foods can scavenge free radicals and prevent the peroxidation of lipids, proteins, and deoxyribonucleic acid (DNA) thereby slowing the process of aging. Please select a food and the nutrients of that food that slow the process of aging will be shown.

Garlic : Garlic contains sulfide, which possess anti-oxidative ability.

Buckwheat : Buckwheat contains rutin which reduces the production of free radicals.

Lemon : Lemon contains water-soluble vitamin C, which possess anti-oxidative ability.

Cauliflower : Cauliflower is rich in vitamin C, carotenoids and potassium.

Tomato : Tomato is rich in lycopene, which can clean free radicals.

Asparagus : Asparagus is rich in flavonoids and vitamin A, B and C.

Kiwifruit : 100 g Kiwi can provide enough vitamin C for one day. It also contains soluble fibers (pectin), which is good for skin and to prevent aging.

Grape : Grape skin and seeds are rich in OPC, which can have anti-inflammatory effects and protect cells from oxidative damage.

Tea : The polyphenolic compounds (such as catechins) of tea leaves can clean free radicals and also reduce the levels of plasma cholesterol.

Suggestions for a long healthy life

0~10 years old: 1. Regular living pattern 2. Balanced diets 3. Cut down on sugars 4. Prevent infection

11~20 years old: 1. Regular living pattern 2. Balanced diets 3. Adequate rest 4. Supply calcium Adequate Exercise 5. Avoid smoking, excessive drinking and drug taking

21-30 years old: 1. Regular living pattern 2. Regular exercise 3. Eat three meals at regular times and regular quantities 4. Adequate sleeping 5. Avoid smoking, excessive drinking and drug taking

31-50 years old: 1. Regular living pattern 2. Regular exercise 3. Fixed calories 4. Pressure management 5. Avoid smoking, excessive drinking and drug taking

Over 51 years old: 1. Regular living pattern 2. Regular exercise 3. Cut down on calories intake 4. Keep in a good frame of mind 5. Stay away from alcoholic or drugs.

Pursuit of Immortality

The Effects of Pursuit of Immortality

In the old times, people produced elixirs in their search for immortality. Of course, failure is inevitable. However, during those chemical experimental processes, humans also discovered new substances.

Invention of Gunpowder

Chinese alchemists experimented with the saltpeter, sulfur, and charcoal (carbonaceous) heating the substances in order to transform them into an elixir. But the experiment resulted in an explosion, and they accidentally discovered gunpowder.

Chemistry

The materials used for elixirs were obtained from natural mineral substances and plants, and then transformed through chemical manufacturing processes. During the alchemy process, humans accumulated chemical experiments. They obtained chemical results, instruments, facilities, and measures became the basis of contemporary chemistry.

The absurdity of Immortality

The mineral substances used for producing elixirs were all poisonous heavy metals. If the poisonous substances are absorbed and accumulated in human's bodies that can cause serious damage.

Yong Zheng

Did emperor Yong Zheng die from taking the elixir for a long time?

According to historical records, Yuan Ming Yuan (Old Summer Palace) had imported huge quantities of black lead, which is a common material used for producing elixir and also a heavy metal that can cause death from overdose. After 12 days of importing this black lead, emperor Yong Zheng suddenly died. Some historians believe that emperor Yong Zheng may have died from taking the poisonous elixir.

Tang Taizong

Emperor Tang Taizong took folk prescriptions, and that aggravated his health conditions. By the age of 20, Emperor Tang Taizong suffered from chronic diseases, and he was looking for medicine and immortality. A master from Tian Zhu provided Emperor Tang Taizong with a folk prescription. After taking the prescription, Emperor Tang Taizong's health did not get better but worse, and he finally died in his sleep.

Han Wudi

Emperor Han Wudi was cheated by quacks for immortality. Emperor Han Wudi recruited alchemists from everywhere and spent a lot of effort, time, and money on his search for immortality, but resulted in being cheated by quacks. Until his late years, Emperor Han Wudi laid off all alchemists and ceased the praying ceremonies.

Qin Shihuang

Emperor Qin Shihuang had never given up looking for immortality. When Qin Shihuang became the emperor, he started to send people to look for the elixir of life. He sent 3000 virgin boys and girls to the San Shen Mountain, the legendary island of the immortals to search for herbs of longevity and immortality, and he also ordered Chinese alchemists to produce elixirs. However, some Chinese alchemists died from taking the poisonous elixirs. The emperor Qin Shihuang also died while on a tour to Eastern China, searching for the legendary Islands of the Immortals.

Well-known Chinese Alchemists

Alchemy originated very early in Chinese history. There were a lot of accumulated experiences and documents. Till Taoism emerged, a large number of Taoists were enthusiastic about Chinese alchemy. The following are presentations of some well-known Chinese alchemists.

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Sun Si Miao

Some Chinese alchemists were also masters of medical skills. Sun Si Miao was one of those. When he was 18, he was determined to be a doctor, and dedicated himself to researching Chinese medicines. He spent a lot of time to look for medicinal herbs and cure people. His most important contribution to Chinese alchemy was the essential divine elixir of supreme oneness ("Taiyi Shenjingdan"), which was produced when he locked himself in e-mei mountain and concentrated on researching the elixir of life.

Ge Hong

The Daoist text Baopuzi "The Master Embracing Simplicity" was written by Ge Hong, the Chinese alchemist of the Eastern Jin dynasty. The book summarized the experiments of Chinese alchemy and the achievements of "immortality" started during the Han dynasty, and collected various Dao immortal methods. The Baopuzi plays an important role in the "Explanation of the Four-hundred-word Book of the Golden Elixir"

Tao Hong Jing

In Southern Dynasties, Tao Hong Jing, a follower of Ge Hong, was another important figure in the history of Taoist alchemy and medicine.

Wei Bo Yang

"Three Ways Unified and Normalized of the Book of Changes" (Chou-I Tsan-Tung-Chi) written by Wei Bo Yang was the earliest theoretical text of the Danding school of Taoism. This book, regarded as "the King of Alchemical Scriptures from Remote Antiquity", summarized the book of changes (YiJing), the school of the Yellow River Chart and of the Luo River writing, and Huang-Lao Tradition, and also explains the theory and method of alchemy.

Cover Story

In the "Biographies of Spirit Immortals" (Shenxian Zhuan), there was a tale of Wei Bo Yang and his three disciples. One day, Wei Bao Yang asked his disciples to try the new elixir of life. Two of three disciples refuse to take the elixir because of lack of confidence. So, Wei Bo Yang took a white dog as a guinea pig, and then he himself and the other disciples also took the elixir. After taking the elixir, they fainted. The other two disciples who refused to take the elixir left the mountain. However, Wei Bo Yang, his disciple and the white dog woke up after a while, and obtained the immortality. The other two disciples who refuse to take the elixir were told by a lumberman about the story and were filled with regrets.

Chinese Medicine's Methods to Delay Ageing

The possibility for women to conceive a child at advanced age depends on congenital physical conditions and good breeding capability. Conceiving a child is not easy for men over 64 and women over 49. However, people who keep in good health can still conceive after their hundredth birthday.

Teens: After the age of 10, people have almost completely developed their internal organs. Teens have excellent good circulation. They are very energetic and active, and walk and stretch a lot.

20's: People in their 20's have invigorated blood circulation. Their muscles grow strong and very fit. They like to walk and stretch.

30's: People in their 30's have completely developed their internal organs. Their muscles are strong and solid. They like to take walks.

40's: People in their 40's have completely developed their five internal organs, six hollow viscera, and twelve veins and muscles. Their muscles begin to loosen, their skins gradually lose their gloss and their hair starts to turn white. They enjoy peaceful "plateau".

50's: Liver and gall secretion functions start to weaken in people over 50, and their eyesight starts to degrade.

60's: In people over 60, vital essence begins to decline and their body circulation is no longer so smooth. They like to lie down.

70's: People in their 70's digestive system begin to degenerate, and their skins are dry and withered.

80's: People in their 80's metabolism begin to degenerate, and their consciousness starts to fade. It makes them can't explain themselves clearly.

90's: People in their 90's have weak kidneys, livers, hearts, spleens, lungs, muscles and veins.

100's: After 100, internal organs are all old and feeble and appearances are dispirited. They have empty bodies and are waiting for death.

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According to Chinese medicine, there are some aging Theories:

Kidney Essence

The kidney essence is the main substance that controls the process of life and determines the life span and the quality of life. When kidney essences begin to degrade, people will age fast, and their life-span will become shorter.

Spleen and Stomach Essence

The spleen and stomach essence supplies all substances that maintain a human body. If the spleen and stomach do not work normally, it causes a reduction in body supplies, the body's growth and daily activities will be affected.

The Whole Essence

As people become older, their organs and bodies begin to decay.

Hormone Disorder

Human Life Essence is based on inherent hormones. Human Life Essence has to complement the changes in natural science in order to operate normally

Affection Essence

Ancient people thought that emotional change is part of human nature, including happiness, anger, sorrow, anxiety, thought, sadness, fear, surprise, etc. Too much or too little is not healthy.

Chinese Medicine's Methods to Delay Ageing

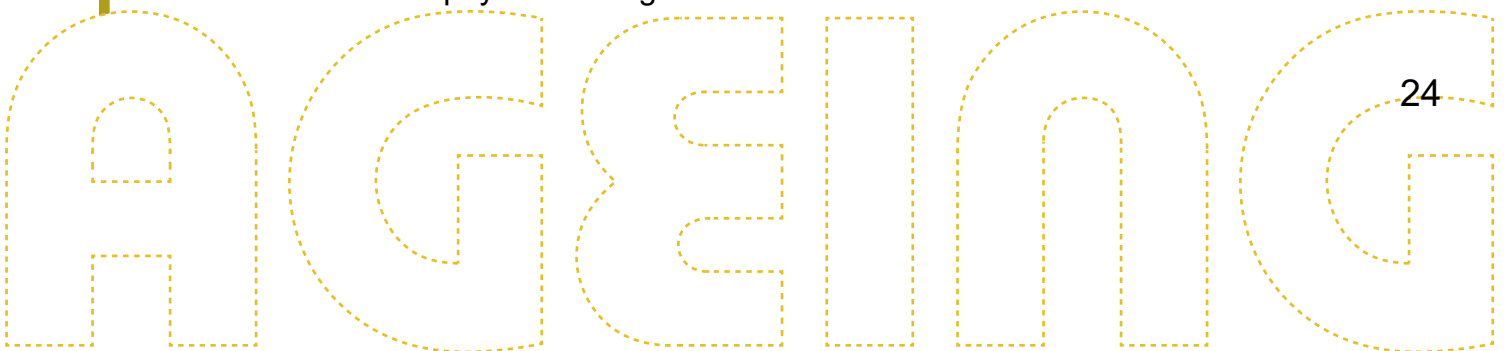
According to the Q&A section of the Inner Book of the Yellow Emperor (Huangdi Neijing), the secrets of longevity are keeping in good health, and curing illness. Keeping in good health involves mental and physical care.

Adjust oneself state of mind and life style in accordance with natural order

Adjust energy, mind and spirit through health care

Proper and balanced diet and regular living style

Avoid exhaustion or physical strength overuse





X-Ray radiography

Due to the permeability of X-rays and the different density and thickness of human tissues, different parts of the body have different intensities on X-ray images due to the different absorption level. Therefore, the X-ray image demonstrates black and white contrasts, and different gradation

Bone fracture Prevention

1. Reduce osteoporosis
2. Be aware of environmental safety

Lung Cancer Prevention

1. Quit smoking
2. Reduce environmental pollution
3. Eat more fresh fruits and vegetables
4. Avoid professional injuries
5. Go for regular health checks

Pneumonia Prevention

1. Avoid bacterial or virus infections
2. Increase body resistance to disease

SICKNESS



我們的身體

The Journey of Human Life

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Ultrasound Examine

When ultrasound flows through the substance it can produce a reflected wave. Because the body density of various areas is different, when ultrasound waves pass through different organisms, the reflected wave is different. The ultrasound examinations use image processing technology to convert the ultrasound wave into an image, and display the organ's shape.

Prenatal ultrasound test

With the prenatal ultrasound test, doctors and patients can learn more about the baby.

Major anatomical abnormalities or birth defects can show up on an ultrasound image.

2D Ultrasound Scan can transform the sound wave into a two-dimensional graph with length and width.

3D Ultrasound Scan can transform the sound wave into three-dimensional graph with length, width and depth.

4D Ultrasound Scan can transform the sound wave into multiple three-dimensional graphs, and present images in a form of animation.

Fibroid

Leiomyomas are benign soft-tissue neoplasms that arise from smooth muscle.

Health Care

- 1.Regular living style
- 2.Regular and adequate exercise
- 3.Keep in a happy mood
- 4.Regular health check

Carotid stenosis

Carotid stenosis is a result of the build-up of a plaque inside the carotid artery causing arterial narrowing. It might cause an ischemic stroke.

Health Care

- 1.Regular life habits
- 2.Eat less high fat food
- 3.Regular and adequate exercise
- 4.Quit smoking and less drinking





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Computed Tomography

Introduction

Computed Tomography (CT) uses x-rays to scan human bodies and obtain an image from a computer. The processed reconstructed images can clearly demonstrate the density of bones, skeletons and tissues.

Cardiovascular

The latest medical technology uses multiple CT detectors to diagnose coronary heart arteries. The cardiovascular system is blood circulation that moves blood from the heart and is delivered to the whole body. The coronary artery is the main blood supplier to the heart, and the blocked coronary artery could cause a heart attack. MDCT with 3D reconstruction image of heart shows coronary arteries on the surface of heart.

Prevention

- 1.Regular life pace
- 2.Stable emotions
- 3.Balanced diet
- 4.High blood pressure and diabetes control and treatment
- 5.Avoid being overweight
- 6.Regular exercise

Brain Stroke

Unpredictable brain hemorrhage or blood shortage can destroy the brain, cause poor blood circulation, damage the brain, and make some parts of the body or thinking temporarily or permanently malfunction.

In the picture, Axial section brain CT scan shows intracranial hemorrhage over right basal ganglion.

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Prevention

Avoid high blood pressure, high blood sugar, high blood fat, high uric acid or heart disease

1. Keep in a stable emotion
2. Keep warm when temperature goes down
3. Regular health check, especial for the elder
4. Quit smoking and drinking
5. Regular exercise
6. Balanced diet

Tumor

Abnormal cell pathological changes can make some cells proliferate uncontrollably resulting in tumors, or infect other normal cells via blood and lymph system spreading.

In the picture, On pre and post contrast CT scan imaging of liver, the hepatoma appears as a well enhancement mass on arterial phase and washout phenomenon on portal phase.

Prevention

1. Good life style
2. Balanced diet
3. Good living environment
4. Regular health check
5. Quit smoking, drinking, and betel nut
6. Do not eat excessive fried, salt preserved and smoked or roasted food
7. Avoid contact with carcinogenic substances in the work environment
8. Do radiation preventions

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Magnetic Resonance Imaging

Introduction

Based on the magnetic theory, Magnetic Resonance Imaging can change the hydrogen atom's rotation direction and arrangement inside the body. This way, the atomic nuclei in the body will release energy and send out the magnetic wave signal, and the imaging produced by computer analysis and combination will display the tissues with different density.

Liver Tumor

Abnormal cell pathological changes can make some cells proliferate uncontrollably resulting in tumors. In the picture, MR imaging of liver shows tumor mass on different pulse sequence.

Prevention

- > Do not take non medical prescription
- > No disordered diet
- > Quit smoking and drinking
- > Have a regular bowel habit
- > Balanced diet

Brain Tumor

Abnormal cell pathological changes can make some cells proliferate uncontrollably resulting in tumors. Post contrast enhancement axial section MRI shows meningioma over right parietal region.

Prevention

- > Quit Smoking
- > Regular and adequate exercise and stable emotion
- > Avoid brain damage
- > Balanced diet

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Brain Stroke

Unpredictable brain hemorrhage or blood shortage can destroy the brain, cause poor blood circulation, damage the brain, and make some parts of the body or thinking temporarily or permanently malfunction. In the picture, Axial section FLAIR MR imaging of brain shows infarction lesion over right temporal lobe and basal ganglia.

Prevention

- > Avoid high blood pressure, high blood sugar, high blood fat, high uric acid or heart disease
- > Keep in a stable emotion
- > Keep warm when temperature goes down
- > Regular health check, especial for the elder
- > Quit smoking and drinking
- > Regular exercise
- > Balanced diet

Functional Imaging

Brain functional imaging is the new technology of MRI that can diagnose the different control regions of brain, including the thinking control region and its activity. In the picture, the imaging displays the brain reaction when finger tasking movement of both hands. We can see the both regions of motor control area display actions.

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Positron Emission Tomography

Basic Theory

Positron Emission Tomography Scan (PET) is a nucleon medical inspection technology. By venous injecting of radioactive substances into the body (e.g. glucose) and by capturing and reconstructing the images of chemical activities and metabolism of the tissues in the body via computer calculation, the abnormal glucose metabolism can be detected. Positron Emission Tomography Scan can be classified into two types : the whole body PET check and partial PET check. Most inspection instruments are applied with PET-CT that provides data of cell metabolism and tissues profile.

The whole body PET check : vicious tumors (Cancers)

The glucose metabolism speed of general cancer cells is higher than that of normal cells; therefore, the imaging displays an abnormal high radioactivity and actively pathological changes that can be used to determine the level of vicious cancers.

Partial PET Check : cranial nerve disease

PET imaging demonstrates the brain glucose metabolism rate based on the color difference, and we can find that patients with brain neural disease have a lower glucose metabolism rate in the brain than a normal person

Nasopharyngeal Cancer

Nasopharyngeal Cancer is refers to the cancer cell developed in the back of nose or above the swallows, and it's most common cancer in the otolaryngology. The symptom includes the abnormal snuffle, the abnormal nosebleed, the cranial nerve paralysis, and so on.

Prevention

- >Regular life habits
- >A balanced diet and nutrition and sufficient fresh fruits and vegetables intake
- >No smoking and betel nut and less drinking
- >Cut down eating preserved, smoked or overdue food

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**Intestine cancers**

Most large intestine cancers develop from polypus pathological changes. Some abnormal polypus would can proliferate uncontrollably and develop into cancers. The common symptoms are having blood in the stools, abdomen angina, feeling weak and tired, etc.

Prevention

- >Regular life habits
- >Regular and adequate exercise
- >Eat more fruits, vegetables and food with high cellulose
- >No smoking and less drinking

Alzheimer's Disease

Alzheimer's is a brain disease resulting from the abnormal transmission substances between brain neural cells, and cause the mental retardation that affects our daily life activities.

Prevention

- >Regular life habits
- >Use brain more to stimulate the neural cells
- >Regular and adequate exercise
- >Regular interpersonal relationships

Epilepsy Disease

When the brain releases abnormal electricity, our body will have unpredictably abnormal behavior. The worse case scenario is our body could become stiff, suddenly collapse, twitch and threw up, or foam at the mouth.

Prevention

- >Regular life habits
- >A balanced diet
- >Protect head from injuries and infection
- >Prevent stroke

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Life Theater

Life living Chou, Ta-kuan

After six attempts at artificial insemination, Chou, Ta-kuan was born in 1987. His happy childhood was beginning. He was diagnosed with malignant muscle cancer when he was 8. His right leg was compelled to amputate when he was 9. He didn't submit to the cancer, and wrote the touching poems with childish sincerity. He visited this world for total of 21 days, 6 months and 9 years. He lived the most impressive life with his poems.

Life Care Li, Shang-Hsuan

The son of Li's, Shang-Hsuan, was born in 1988. He was diagnosed with congenital hyperactive autism when he was 3 years old. The symptoms include attention deficiency, language obstacles, unstable emotions, etc. His parents endeavored to accompany him and didn't care about others' prejudice. Music opened a window for his learning life. He went out from the close life with his parents' efforts. He got the dependency in parents' shoulders. With parents' care, his life was glorious.

Life continuance Wu Yi Zhang

Wu Yi Zhang was born in 1957. He was into the naval academy when he was 18. From love into wedding, he was in the prime of life. Unexpectedly, he fell from the roof. After a 36-hour rescue attempt, he passed away. His family dried their tears sorrowfully. His family accomplished his last wish to be an organ donor. Let his organ to continue more and more life.

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Top 10 Causes of death in Taiwan

Main cause of the death in the last 10 years

Vicious Tumor

Introduction:

Abnormal cell pathological changes can make some cells proliferate uncontrollably resulting in tumors, or infect other normal cells via blood and lymph system spreading.

Prevention:

- > Good living style
- > Balanced diet
- > Good living environment
- > Regular health check
- > Quit smoking, drinking, and betel nut
- > Do not eat excessive fried, salt preserved and smoked or roasted food
- > Avoid contact with carcinogenic substances in the work environment
- > Do radiation preventions

Brain Stroke

Introduction:

Unpredictable brain hemorrhage or blood shortage can destroy the brain, cause poor blood circulation, damage the brain, and make some parts of the body or thinking temporarily or permanently malfunction.

Prevention

- > Avoid high blood pressure, high blood sugar, high blood fat, high uric acid or heart disease
- > Keep in a stable emotion
- > Keep warm when temperature goes down
- > Regular health check, especial for the elder
- > Quit smoking and drinking
- > Regular exercise
- > Balanced diet

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Heart disease

Introduction:

Heart disease can be classified into 4 types: congenital heart disease, rheumatic heart disease, ischemic heart disease, and others. Among those four types, the ischemic heart disease (e.g. Myocardial Infarction (MI) and Coronary heart disease) is one of the top 10 causes of death.

Prevention :

- > Self-check your cholesterol index level
- > Maintain a normal weight
- > Keep yourself warm when temperature drops
- > Quit smoking, drinking and coffee
- > Regular and adequate exercise
- > Relax and avoid overwork
- > Improve diet habit

Diabetes

Introduction:

In a normal condition, human's body can turn starch into glucose. However, patients with diabetes have high blood sugar concentrations due to insufficient insulin, which helps glucose enter cells.

Prevention:

- > Quit drinking and betel nut
- > People who have a family history of diabetes should self monitor their blood sugar level and change their lifestyle.
- > Balanced diet and more fiber intake
- > Keep emotionally stable
- > Regular health checks
- > Regular exercise

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Prevention:

- > Do not take any non medical prescriptions
- > Avoid excessive eating and drinking
- > Quit smoking and drinking
- > Have regular bowel movements
- > Balanced diet

Pneumonia

Introduction:

Common pneumonia is caused by bacterial and viral infections. Various antibiotics can be used to treat pneumonia based on the bacteria types, and drug resistance.

Prevention:

- > Reduce the opportunity of bacterial infection
- > Sufficient sleeping
- > Add the clothes at the appropriate times
- > Balanced diet
- > Adequate exercise

Nephrosis

Introduction:

The kidney can filter and reject waste materials, balance the blood electrolyte concentration and maintain constant body fluids, and is related to red blood cell production, vitamin D transformation, and blood pressure adjustment. Therefore, kidney pathological changes can affect the whole body.

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Prevention:

- > When the throat and the tonsils are infected by the streptococcus and inflamed, they should be treated immediately.
- > Do not take any non medical prescriptions
- > Balanced diet
- > Drink enough water and do not suppress to urination
- > Regular kidney health check
- > Diabetes and high blood pressure prevention

Suicide

Introduction:

The cause of suicide is related to physiological, psycho-social, and various other factors. Most suicide victims suffered from mental illness.

Prevention:

- > Pressure release
- > Ask for others assistance
- > Seek professional assistance.

High Blood Pressure

Introduction:

A high blood pressure means that the artery blood pressure keep rising, and gradually cause blood vessel pathological changes, and that can damage the organs, such as cerebrovascular disease, heart disease, and kidney disease.

Prevention:

- > Reduce the intake of sodium and fat
- > Balanced diet
- > Reduce drinking tea and coffee, and quit smoking and drinking
- > Adequate sleep and rest
- > Avoid huge temperature differences
- > Maintain the ideal weight
- > Adequate exercise
- > Regular health checks

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Accident

Introduction:

the accident injuries refer to death caused by unpredictable accidents ; Most deaths from injuries occur following the traffic accidents, and the following causes of accidental injuries are toxication, accidental falls, fire accident, drowning, etc.

Prevention:

People should pay attention to traffic safety, public safety and professional work safety, and establish disaster prevention measures.

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The Visible Human

The Visible Human Project® is an outgrowth of the NLM's 1986 Long-Range Plan. It is the creation of complete, anatomically detailed, three-dimensional representations of the normal male and female human bodies. Acquisition of transverse CT, MR and cryosection images of representative male and female cadavers has been completed. The male was sectioned at one millimeter intervals, the female at one-third of a millimeter intervals.

The long-term goal of the Visible Human Project® is to produce a system of knowledge structures that will transparently link visual knowledge forms to symbolic knowledge formats.

DEATH

Reveal the secret under the linen clothes – Description of Mummy Animation

Display the mummy's appearance using Computerized Tomography (CT) to scan successive sections of mummy, and then using computer 3D image reconstruction technologies. Through CT scan and 3D image reconstruction, we can analyze and research the mummy's body without removing its linen clothes. After comparing the imitative image to the real mummy's body, their similarities become apparent.

In this video, we use image process technology to make the skin translucent. This way, we can see the facial skin and the internal structure of the skull. Through special medical imaging technologies we separate the different layers of tissues that make gradual image from outer appearance to internal skull.

"Cyber Laparoscope" is an advanced technology that has been widely used in recent years. It uses 3D image reconstruction technology to imitate the laparoscope's image through different angle changes. "Cyber Laparoscope" reconstructs three thousands year-old surgery methods which use equipment to enter the left nostril and reach the brain to collect brain tissues.

By using breast CT scan and computer image reconstruction, we can see a hole on the left underbelly which was used to remove the mummy's the internal organs. Also, we can see a clear image of the upper body, and tell from the cross-section that internal organs were emptied. By breast CT scan and computer reconstruction, we can observe that the internal organs were emptied and wrapped in linen cloths from the front and back coronary section of computer animation. By breast CT scan and computer reconstruction, we can observe that the internal organs were emptied and wrapped in linen cloths from the left to right side of sagittal section of computer animation.

By abdomen CT scan and computer 3D reconstruction, we can observe the male reproductive organ and a hole on the left underbelly which was used to remove the internal organs.

Smoked Cadaver

Papua New Guinea, the second largest island in the world, is covered by mostly mountains and tropical rain forests, and still has many aboriginal tribes.

The population of Papua New Guinea is very complex, comprising 76 ethnic groups and more than 1000 dialects. The Kukukuku tribe is located in the Molopo province, and has high a population density in the western highlands of Bulolo. Most buried caves of smoked mummies were found in the steep cliffs at an altitude of 2000m.

The "smoked cadaver", the highest honorable funeral ceremony, is the oldest traditional funeral and burial custom of the Papua New Guinea Kukukuku tribe, and only applied to the warriors and people who have contributed to society. For common people, their corpse will be put on the ventilated rack and left to decay, and then the corpse will be buried after one or two years. The ancestors worship is one of the most complicated beliefs in human society. In the early stages, people ate people. But we expressed our immortal emotion to our close familiar members who passed away.

The smoked cadaver custom is not in fashion anymore in Papua New Guinea. The smoked mummies we found today were made 80 years ago. The process of making a smoked cadaver can be explained as follows: at first clean the corps and cover a layer of red mud, then change to a waist ban made by orchid fiber and wrap the corpse with a straw mat, and place the wrapped corps on the ventilated rack, called "Death Chair", finally, dig a 10 cm deep trench to prevent the corpse fluids from flowing. During the smoked cadaver production process, people are not allowed to talk loud for fear of scaring the ghost away. The tribe people believe that they can hear the dead at night. Smoked cadaver production may take about half a year to one year. Once the smoked cadaver completed, the family of the dead will hold a funeral ceremony, and bury the smoked cadaver in the family burial cave. The burial cave we visited today had three generations buried in it. Because of religious beliefs, humans created the "smoked cadaver" to bury the dead. The spirit after death is one of the religious models. The taboo created from religion is used for tribes to maintain their society's law and order.

DEATH