Reverse of Life, Immortality and Stem Cell

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Abstract: In the universe, all the results come from the reasons, and all the reasons create results. In the timeline of the universe, all the current events (or universe condition) come from the past and become the future. Under a certain determined condition, all the factors exist. As the reason, it creates new condition. The younger condition of a life body changes to old under certain condition. Under other condition, the life body could change to the younger. Normally, the adult animal cells come from the differentiation of stem cell. However, there is another change event of cells called transdifferention. By the transdifferention, mature somatic cells transform into other mature somatic cells or even stem cell, which means the life body changes to older to younger. The adult cells are old cells and stem cells are younger. Everything is possible under a certain condition. The universe, the time, space and matter – all are unlimited and the possibility is unlimited also. The life is an existing of physical and chemical existence. Everything is possible, including the reverse of the life processing.
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As the whole, the universe is unlimited, no origin, no termination. However, each body and each event in the universe has a beginning and a terminating. The life in the earth, no matter as a species or a living body, has a birth and death naturally. Generally, the life in the Earth looks at one direction in the timeline, from younger to older, from birth to death. However, is life line reversible? Can life become younger from older? For this question, our answer is yes.

In the universe, all the results come from the reasons, and all the reasons create results. In the timeline of the universe, all the current events (or universe condition) come from the past and become the future. Under a certain determined condition, all the factors exist. As the reason, it creates new condition. The younger condition of a life body changes to old under certain condition. Under other condition, the life body could change to the younger.

Normally, the adult animal cells come from the differentiation of stem cell. However, there is another change event of cells called transdifferention. By the transdifferention, mature somatic cells transform into other mature somatic cells or even stem cell, which means the life body changes to older to younger. The adult cells are old cells and stem cells are younger. Everything is possible under a certain condition. The universe, the time, space and matter – all are unlimited and the possibility is unlimited also. The life is an existing of physical and chemical existence. Everything is possible, including the reverse of the life processing.

A ship with over-light speed can catch the image of the past events. This happens only because the light goes out but not because there is the real past time. This is just like what we see a movie tape with the reversed direction. The fact is that everything exists already and forever. We see that there are past and future because we are living in our time arrow. This is the absolute time. The key question for us is how to testify that the past still exists and the future has existed already.

In the biology field, the totipotency is the ability that a cell can divide and produce a new organism. This means that a single cell has an integrate genes to differentiate to a whole body (Baud, 2005). Totipotent cells can be any cell in a body (Cantley, 2005). Normally, the differentiation is one direction where an undifferentiated cell (especially stem cell) can differentiate into differentiated cells but differentiated cells cannot reverse to the immatured cells. However, under certain condition, the direction can reverse, especially in plant. A plant cutting or callus can grow to an entire plant and this appears everywhere in the earth. Many plants reproduce for next generation through schedule and it is widely used in the agriculture. In the animal field, this reverse differentiation normally is not exist, and only in case of reverse differentiation happens in the jellyfish Turritopsis nutricula through the transdifferentiation (Ma, et al, 2011).

The zygote is totipotent. A human begins a zygote that a sperm fertilizes an egg and creates the single totipotent cell. In the first hours after

fertilization, this cell divides into identical totipotent cells, which can later develop into any of the three germ layers of a human (endoderm, mesoderm, or ectoderm) and into cells of the cytotrophoblast layer or syncytiotrophoblast layer of the placenta. After reaching the 16-cell stage, the totipotent cells of the morula differentiate into cells. The differentiated cells will become either the blastocyst's inner cell mass or the outer trophoblasts. Approximately 4 days after the fertilization and a few cell divisions, these totipotent cells will be specialized.

Totipotent stem cell can differentiate into all the human body's cells (about 200 types). In most animals, the only true totipotent stem cell is the fertilized egg and its immediate descendants. A totipotent stem cell can potentially generate a complete organism. Differentiation results from differential gene expression.

In order to clone an animal, such as a sheep, udder cells are removed from a ewe and starved for one week to cause G0 arrest. Nuclei from arrested ewe udder cells are fused with enucleated eggs from a ewe, and then stimulated to re-enter the cell cycle. After a few rounds of cell division, the embryo is transplanted into a surrogate sheep mother. The sheep that is born is genetically identical to the ewe from that the nucleus obtains.

Cellular determination results from the asymmetric segregation of cellular determinants. However, in most cases, determination is the result of inductive signaling between cells. Asymmetric segregation of cellular determinants is caused from the asymmetric localization of cytoplasmic molecules within the cell before dividing. During cell division, one daughter cell receives more localized molecules and the other daughter cell may receive less of these molecules, which results in two different daughter cells taking on different cell fates based on differences in gene expression. The localized cytoplasmic determinants are often transcription factors or mRNAs encoding by the transcription factors.

The field of stem cell biology has undergone tremendous expansion over the past two decades. Scientific investigation has continued to expand our understanding of these complex cells at a rapidly increasing rate. This understanding has produced a vast array of potential clinical applications (Hemmat, Lieberman et al. 2010).

The direct induction of adventitious buds and somatic embryos from explants is a morphogenetic process that is under the influence of exogenous plant growth regulators and its interactions with endogenous phytohormones (de Almeida, de Almeida et al. 2012).

The ontogeny is also related to de-differentiated mesophyll cells that acquire totipotency and form the majority of embryos (Wang, Nolan et al. 2011).

Somatic cell nuclear transfer (SCNT) is a technically and biologically challenging procedure during which a differentiated committed nucleus undergoes rapid reprogramming into the totipotent state in a few hours (Shufaro and Reubinoff 2011).

Primordial germ cells (PGCs), the precursors of sperm and eggs, are the route to totipotency and require establishment of a unique epigenome in this lineage. The genetic program for PGC specification in the mouse also initiates epigenetic reprogramming that continues when PGCs migrate into the developing gonads. Among these later events is active and genome-wide DNA demethylation, which is linked to extensive chromatin remodeling (Surani and Hajkova 2010).

In many tissues, mammalian aging is associated with a decline in the replicative and functional capacity of somatic stem cells and other self-renewing compartments. Understanding the basis of this decline is a major goal of aging research (Sharpless 2010).

In human cells there are 23 pairs of chromosomes in each normal human cell that carry out our DNA, at the end of each chromosome that is a protective cap known as a telomere that stops working when a cell divides. In the experiment, if an animal lacks a telomerase enzyme that causes telomeres to get shorter and the animal will be age prematurely, as well as suffer from a greater amount of ailments. When it gives the animal injections that reactivated the enzyme, damaged tissues were repaired and signs of aging reversed.

Telomeres play a main role in cell aging by adjusting the cellular response to stress and growth stimulation on the cell division/differentiation and DNA damage. Normally sveral hundred nucleotides of telomere repeats cap each chromosome end to avoid activation of DNA repair pathways. The cell aging is related to the repair of short or uncapped telomeres by telomerase or recombination. Normaly, the aging of the somatic cells and apoptosis cell is related to the short of the telomeres function. The average telomere length is set and maintained in cells of the germline which typically express high levels of telomerase, and the telomere length is shorter in somatic cells then the aging process invlolved. To keep the function of the telomeres could be a way to control the aging.

Example of the totipotent protocols - Proliferation of totipotent hematopoietic stem cells in vitro with

retention of long-term competitive in vivo reconstituting ability (Christopher, 1992**):**

Virus. Recombinant Tkneol9 virus at a titer of 1 x 10^6 per ml is generated from a T-2 producer line maintained in 10% calf serum/Dulbecco's modified Eagle's medium. Marrow cells from adult male (C57BL/6J x C3H/HeJ) F1 (B6C3F1) mice injected i.v. 4 days earlier with 5-fluorouracil (5-FU, 150 mg/kg of body weight) are infected with Tkneol9 virus using a supernatant infection protocol in which 3-5 x 10^6 marrow cells are cultured for 24 hr in 100-mm Petri dishes in 10 ml of virus supernatant containing Polybrene at 4 jug/ml, 5% pokeweed mitogen-stimulated spleen cell-conditioned medium, and 10%o agar-stimulated human leukocyte-conditioned medium as described. Cells are then recovered by gentle agitation and scraping of dishes with a rubber policeman, essential Eagle medium and resuspended in LTC medium [a medium/10% horse serum/10% fetal calf serum/10^{-6} M sodium hydrocortisone hemisuccinate/10^{-4} M 2-mercaptoethanol]. Aliquots of 3 x 10^6 cells are overlaid on previously established 3-wk-old long-term B6C3F1 female marrow adherent layers that had been irradiated with 15 Gy [250 kilovolt peak (kVp) x-rays] to inactivate persisting hematopoietic cells (Fraser, 1990). LTC are maintained by weekly removal of half of the medium and nonadherent cells and restoration of the volume with fresh LTC medium. To assay cells in LTC for repopulating cells, adherent layers are removed with a rubber policeman, suspended by passage through a 21-gauge needle and then combined with the nonadherent cells. Cells are washed once in 2% fetal calf serum/a-minimal essential medium, and aliquots from individual culture flasks are then injected i.v. into irradiated (8 Gy, 250 kVp x-rays) female recipients. In some cases, 2 x 10^5 female B6C3F1 marrow cells that had been previously subjected to two cycles of transplantation and regeneration are also injected to allow quantitative measurements of CRU in the retrovirally marked test cells to be obtained. For cultures that are used to assess recovery of repopulating cells in the nonadherent fraction over time, all of the medium and nonadherent cells are removed weekly and replaced either with fresh medium alone or with LTC medium containing 25 units per ml of recombinant mouse interleukin-3 (IL-3). The nonadherent cells removed after 3, 5, 6, and 7 weeks of culture are then injected into irradiated recipients. **Hematopoietic Tissue Analysis.** Recipients are sacrificed either 5 wk or between 5 and 7 months after transplantation of cultured cells. DNA is routinely extracted from marrow, spleen, and thymus. In some cases, DNA is also extracted from lymph nodes and from various subpopulations of marrow and spleen. Highly enriched (>90%) mast cell populations are generated by culturing marrow or spleen cells for 3 wk in WEHI-3B-supplemented medium (as a source of IL-3), and highly enriched (>95% Mac-i-positive) macrophage populations are generated by culturing marrow or spleen cells for 48 hr in medium supplemented with 10% WEHI-3B-conditioned medium and then for 7-10 days in medium supplemented with 35% human leukocyte-conditioned medium. Highly enriched (>90% Thy-i-positive) T-cell populations are obtained by elution of nonadherent cells after loading of a half-spleen equivalent onto a 3-ml nylon wool column and incubating it for 1 hr at 37°C. Nylon wool adherent cells are then released by gentle agitation for 2-3 min in phosphate- buffered saline/10 mM EDTA and a highly enriched (>90% B220-positive) population of B lymphocytes subsequently isolated from this fraction by panning for 1 hr at 37°C in dishes precoated with unpurified rabbit anti-mouse immunoglobulin (<10^8 cells per dish) and selective removal of the adherent cells. Southern Blot Analysis. High-molecular-weight DNA is digested with HindIII or EcoRI, which cuts once in the proviral genome and releases a fragment unique to the integration site. Ten micrograms of digested DNA (5 g for male control lanes) is electrophoresed and analyzed by Southern blotting as described with a 32P-labeled probe specific for the neor gene sequence in the provirus from plasmid pMC1. HindIII-digested blots are stripped and reprobed with a Y chromosome-specific fragment from plasmid pY2 (Thomas, 1987).

Discussions

From the epistemology angle, time and space are relative (observed). From the ontology angle, time and space are absolute (existed) and the universe is a timeless world, which means that all the past, the present and the future exist eternally. According to the timeless theory, everything in the universe will never change. Time and motion are nothing more than illusions. In the universe, every moment of every individual's life - birth, death, and anything in between - exists forever. Everyone is eternal. That means each and every one of us is immortal. The universe has neither past nor future. All the things in the past, present, and future exist forever. The concepts of past, present and future are depended on the human brain. The total universal time is constant. It is a matter of experimentally proven fact that this seemingly universal flow of time does not exist. Lapses of time, as they are measured by the recurrence of periodic events, are not impervious to everything but rather depend upon the relative motion of the two systems whose periodicities are being compared and the positions of the systems are in a

gravitational field (Ma, 2003). According to the above theory, the reverse of the like is just a timeline direction question and it exists in the universe forever.

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