《生物科学杂志》

Journal of Biological Sciences

ChengZhu Science™

江西省诚筑环保工程有限公司主办

2022 年 11 月刊物/Serial in November, 2022

出版人： 刘焕 香江出版社有限公司

Publisher: Liu Huan, Xiangjiang Publishing Company Ltd.

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Article 8: Gene Therapy and Gene Modification in Nature /基因治疗与自然界基因修改

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DOI:10.58473/JBS0016 Retrieval from official database: www.crossref.org

Latest revised on 08/01/2024.

1.The effects of electromagnetism on cells

1.1. Methods

There are three kinds of cells abstracted from the same tissue of the same genetic strain, which are cultivated in physiological saline in Lab:

Step 1. A stream of cells is cultivated in radiation condition, leading to the gene mutation of DNA molecule (sample 1) which can be detected by FISH technology; another stream of cells is cultivated in moderate electromagnetism condition leading to better immunology (sample 2) without gene mutation in DNA; the last stream of cells (sample 3) is cultivated in 'comfortable' conditions. For the simulation of moderate electromagnetism condition, cells are cultivated in electrophoresis pipe for cell electrophoresis, in which the external electric field is added. Subsequently, the electrophoresis pipe is horizontally placed under external vertical magnetism field imposed by magnetic instrument.

Step 2. The samples of even mixture between sample 1 and sample 2 (50% for each sample) are cultivated together in moderate electromagnetism condition;

Step 3. The samples of even mixture between sample 1 and sample 3 (50% for each sample) are cultivated together in 'comfortable' condition;

Step 4. Finally, the gene mutation rate in DNA molecules of mixed cells are calculated by FISH after step 2 and step 3, respectively.

Please note: it is expected to clearly detect gene mutation after more than ten generations of cell division.

1.2. Objectives:

Step 2 leads to lower gene mutation rate in mixed cells due to the assimilation of cells' 'memory' between different phenotypes discussed in previous articles [2], as compared to step 3. This is the inversion of cancerous gene mutation in DNA molecules, due to the self-repair of genome. The electric potential of different cell

communities are recorded along the electrophoresis pipe in the electrophoresis instrument as discussed in another article [3], and it is expected that the cells of junior stages are more likely to be assimilated, so the advantages of this electromagnetism gradient is to separate the cell communities with different aging stages. **The electromagnetic field of cells varies during their life cycle, which is consequently a kind of time-varying electromagnetism yielding the bio-electromagnetic wave. This bio-electromagnetic wave is the bio-signal for cells to communicate each other (or for vegetation species to communicate each other).**

Please note: this method is less effective on the cancerous cells caused by virus, due to the 'intelligence' of causal factors. The electromagnetism condition is the constant electromagnetism in this article, and the electromagnetic wave is the time-varying electromagnetism.The electromagnetic fields are obviously the constant one in this article rather than time-varying electromagnetic waves. Consequently, the method of this article is similar to the situation of 'taking rest quietly and recovery smoothly by coachers in electromagnetic field after injury,' whereas the method of application of time-varying electromagnetic waves in my another article [4], which aims to defend against invasive pathogens, is similar to the battle music violently, encouraging cells to fight.

1.3. Discussion:
Gene mutation, which occurs during DNA replication process, is triggered by the bio-signal perceived by cell. Once the bio-signal is altered, gene mutation occurs. However, the assimilation of cells results in the inversion of gene mutation during positive biophysical simulation in site due to the self-repair function of cells.

2. Gene Therapy and Gene Modification in Nature:

It is further deduced that natural and mild gene mutation would occur during biophysical training process of blood cells discussed above, which is an indicator of improved environmental adaptiveness like microbes. However, this mild and natural gene mutation is neither like cancerous gene mutation, nor like clone cells which have been artificially inserted or deleted by other DNA sequences. As discussed in previous article, gene mutation leads to faster cell division rate. It is deduced that gene mutation caused by stronger intensity of electromagnetic waves results in faster cell division rate, so the recommended intensity of electromagnetic waves in this article is moderate and increases the blood cell activity once gene mutation is caused by this. Please keep in mind like that: gene mutation is the way for cells evolving into environmental adaptiveness in response to environmental change, and positive gene mutation can be directed in Lab, whereas negative gene mutation is prevented. To date it has been noticed that moderate gene mutation occurs after more than 10 generation cultivation using common environmental microbes in sewage water treatment, which can be detected by the above method.

Actually, this is easy to understand in life: let's compare two different populations: a

population of Chinese who survive in city for several generations without much exposure to sunshine and the other population of Chinese who work as farmers for several generations with much exposure to sunshine. As to compare the skin color of their infants, there must be apparent different between these two populations: city populations tend to be white, and rural populations tend to be brown due to more skin melanin. Obviously, the gene-mutation-induced phenotype at skin cells level is able to pass onto next generations as genetic materials at individual level.

Additionally, the mixed cultivation of blood cells with different genetic strains (of course, blood types must be the same) helps to improve the immunology as a whole community against invasive pathogens as well, which focus on the optimization of gene pool and enhances gene diversity in blood cell community. Please note: unlike cells of other tissues (or organs), blood cells can be the mixed cultivation from different genetic strains for ‘exchange transfusion’ remediation. Consequently, DNA sequencing technology is used to relate the gene variation to the specific immunology against specific pathogens, which provides basis of optimization of gene pool for cell transplantation. Further more, it is deduced that cell transplantation is more effective than the whole tissue or organ transplantation, not just because of less genetic or type matching requirement for cell transplantation, but also because cultivation of 'young' cells after transplantation would lead to less resistance against other organs. Please note: the 'young' cells are the cells with more active cell division rate caused by moderate gene mutation, and the advantages of cell transplantation is particularly important to other tissues or organs rather than just blood cells.

Further more, as discussed in previous article [5], ‘the specific frequency of electromagnetic wave simulates the bio-signal regulating gene expression as a specific isozyme family, and the specific electromagnetic wave intensity corresponds to the bio-signal regulating gene expression as a specific enzyme species within an isozyme family, which can be examined by metabolomics tests.’ Consequently the specific gene locus of moderate gene mutation, expressed as specific gene trait, is caused by this biophysical training as well, which restore the specific congenital defect through gene therapy and cell transplantation. In this case, this moderate gene mutation would be understood and named as the gene variation only, because the gene mutation would be considered as higher variation by alteration of genomes.

Step 1. host cells are cultivated during simulation of electromagnetic wave conditions;

Step 2. Different frequency of electromagnetic wave (or different wavelength) are simulated, and labeled as F1, F2, ..., Fn;

Step 3. Under each simulated frequency of electromagnetic wave, different intensities of electromagnetic wave are simulated, and labeled as I1, I2, ..., and In; Then in total N×N bio-samples of host cells are cultivated under biophysical simulation;

Step 4. After sufficient reproduction process, the gene variation of each bio-samples in host cells is identified by FISH technology, recorded as different new genotypes of host cells;

Step 5. Finally, each new host cells of different genotypes is abstracted for immunology test by invasion-host interaction simulation, and then the potential gene therapy is examined. For other genetic disease, a new method of screening the specific gene sequences expressed as the specific congenital genetic defect is designed in my another article [7] to exactly target the gene sequences for gene therapy purpose through this biophysical training method.

Please note: the detection of gene variation on specific genome locus can be achieved by FISH technology, and the criterion of centromere index or the curve degree of chromosome is used to detect the specific locus of gene mutation, which becomes the unique identifier to distinguish different loci of gene mutation. However, the improved detection methods for gene variation has been designed in another structural biology article [6], and the improved simulation method of time-varying electromagnetic waves has been designed in another biophysics article [4], which can be used to replace the static frequency and intensity specified in step 2 and step 3 above. It is expected that a specific life function is determined by multiple gene sequences concurrently rather than single gene sequence isolated, which means the time-varying electromagnetic wave is more reasonable than the static electromagnetic wave.

Of course, it is further deduced that the specific frequency of electromagnetic wave determines the gene variation in specific gene locus qualitatively (a stream of the same and repetitive DNA or RNA sequences on chromosome), and the specific electromagnetic wave intensity determines the ‘modification’ of amount of these repetitive DNA or RNA sequences quantitatively on this specific gene locus. This science rhythm corresponds to the re-definition of isozyme family: the biochemistry molecules contain the same functional group in the same isozyme family, but the amount of repetitive functional groups varies between different enzyme species’ molecules within an isozyme family. Obviously, specific gene locus (or loci) express as specific isozyme family in this case.

This is the revised materials in book “Proceedings for Degree of Postgraduate Diploma in Environmental Science (3rd Edition).” published in 2016. Revised on 05/01/2021;Thirdly Revised on 29/12/2021; Fourthly Revised on 31/12/2021. This journal article is previously published as: Liu Huan. (2021). Article 12: Gene Therapy and Gene Modification in Nature. Journal of Environment and Health Science (ISSN 2314-1628), 2021(2)., which is converted into Journal of Biological Sciences (ISSN 2958-4035). Both Journals belong to the same publisher, Liu Huan. The previous journal article is closed to the public, but the previous reference is still valid. Latest Revised on 11/04/2023; 30/05/2023; 08/01/2024.

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