Gene Therapy for Oral Squamous Cell Carcinoma

Japanese scientists have found that adeno-associated virus vectors may be effective in gene therapy of oral squamous cell carcinoma.

Scientists from Nagoya University in Japan have found that recombinant adeno-associated virus (AAV) vectors may be effective in gene therapy of oral squamous cell carcinoma. The team tested the transduction efficiency of a recombinant AAV vector expressing the beta-galactosidase gene (AAVlacZ) in four oral squamous cell carcinoma cell lines. They have found that at a multiplicity of infection (MOI) of 12103, AAVlacZ transduction efficiency was 20 to 50 percent of the oral squamous cell carcinoma cell lines. The researchers have reported in the journal Oral Oncology that increasing the MOI to 12104 improved AAVlacZ transduction efficiency to almost 100 percent of the cells.

The team, led by Professor T. Fukui, also replaced the beta-galactosidase gene with a thymidine kinase gene from herpes simplex virus, creating the vector HSVtk. Upon transduction of HSVtk into oral squamous cell carcinoma cell lines, they found tumor cell sensitivity to gancyclovir (GCV). With an MOI of 12103, 70 to 80 percent of the tumor cells were killed. At an MOI of 12104, almost 100 percent of the cells were killed after GCV treatment. Following these studies Dr. Fukui suggested that AAV-mediated gene transfer of HSVtk and administration of GCV has potential as a new gene therapy for oral squamous cell carcinoma.

Yale Univ. and Beijing Univ. Found Biotech Research Center

The Peking-Yale Joint Center for Plant Molecular Genetics and Agro-biotechnology, jointly set up by Beijing University and Yale University, was opened recently in Beijing University, China.

Professor Richard C. Levin, President of Yale said that the long-term goal of the research center is to support a multidisciplinary research program in plant biology. It is good for independent research groups work within one facility, sharing resources and expertise.

The initial research will focus on the field of basic biology in the model plant system “Arabidopsis” and on the application of this basic research to crop improvement, an area of great interest and importance to China and the US.

The two universities will work together to facilitate direct collaborations between research groups in plant genomics at each university. They are also planning to facilitate student and researcher exchanges between them. The center also plans to sponsor a lecture each year to cover the latest major developments in plant biology.

On the other hand, the China Law Center will be set up soon in Yale with the collaboration of the Law School of Beijing University.

According to Professor Levin, up to date Yale has more than 20 active collaborations with Chinese universities, healthcare organizations and government agencies. The president has recently visited the Gene Engineering Laboratory and the Biology Research Center in Fudan University in Shanghai.

Japan Opens New Genomics Center

Japan’s National Cancer Center has just opened a new genomics center under the government’s five-year Millennium Genome Project. Scientists at the new center will be working on gene expression analysis, genotyping and sequencing. The center has acquired 11 ABI Prism 3700 and Mega BACE 1000 sequencers which will have the capacity to process two megabases of genomic data a day. Using these data, the researchers will focus on the study of single nucleotide polymorphisms (SNPs) and how they influence gene expression and protein functions. The study of the incidence of SNPs in people will also help in the finding of disease susceptibility genes. Apart from sequencing work, the center has also acquired Affymetrix GeneChips for its gene expression analysis work.

Besides SNPs, the center will also focus on the study of stomach cancer which has been the leading cause of cancer deaths in Japan. Other diseases, such as dementia, diabetes and heart disease will be studied in collaboration with local universities and research
Gene Bank for Wild Ramee to be Built in China

Scientists at the Institute of Fiber Crops (IFC) in eastern China’s Jiangxi province are working to build one of the world’s largest gene banks for wild ramee, a type of perennial herbal plant. The fiber of ramee is widely used as a quality raw material for the textile industry.

The project has received a funding of RMB1 million (US$12 million) from the government and is currently going well. Early in the 1950s, a team led by Professor Lai Zhanjun, head of the IFC, conducted the world’s largest investigation of ramee species in the wildness. From the five-year investigation, which covered 14 provinces, scientists have found 222 species of ramee, of which 82 exist only in China.

China currently accounts for 90 percent of total ramee production in the world, with Jiangxi being China’s major ramee production base.

According to Prof. Lai, the gene bank is expected to help China preserve precious ramee species. Currently, Prof. Lai and his team are planning to use genetic methods to develop new hybrid species.

Some Statistics on Major Herbal Markets in the World

According to the US newspaper, Chemical Market, in the year 1999, the market value of dietary supplements in the US amounted to US$13.7 billion. Sales of the herbal supplements reached US$1.9 billion. The annual growth rate of herbal supplements was as high as 20 percent before 1998. Yet, in 2000, sales of botanicals and herbal supplements grew by 9 percent to US$4.3 billion.

In Europe, sales of herbal supplements was US$7.0 billion in 1999. A recent survey shows that herbal supplements are more popular in Europe than in the US. Some 40 percent of Americans take herbs as dietary supplements, while 80 percent of Germans do so.

Because of the cheaper price, the Asian herbal market is no more than US$4.5 billion.

The distribution of sales of herbal supplements of the above three herbal markets is shown in Chart 1.

Chart 1: Sales Distribution of World Major Herbal Markets in 1999 (Total: US$25.4 billion)

Legalizing TCM in Thailand

The Thai Senate has recently passed a supplementary provision to its law governing medical practice in the country. Under the new provision, traditional Chinese medicine (TCM) is legally recognized in Thailand.

Dr. Chen, a high level consultant to the Thai Health Ministry, said that TCM’s presence in Thailand dates back to ancient times. The ancient Thai medicine is mainly originated from TCM. However, due to the predominant legal authority of western medicine, TCM has not been fairly treated in Thailand.

Since Thailand and China established diplomatic relations in 1975, TCM exchanges between the two countries have been increasing rapidly. Yet there is still no legislation in Thailand to support TCM developments. Chinese herbs and patent medicines have been imported without law support.

Aiming to develop TCM in Thailand, the health ministries of Thailand and China have recently signed an agreement to jointly set up TCM evaluation standards in Thailand. The Chinese Ministry has designated the State Drug Administration and Shanghai TCM University to help Thailand in this area. Twelve TCM experts from Beijing, Tianjin, Nanjing and Fujian of China have been assigned to Thailand to undergo a one-year cooperative project, to help Thailand set up TCM evaluation standards, as well as conduct further research with regard to the integration of TCM, Thai medicine and western medicine.

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Alterntive Medicine

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