

BioSpectrum award winner Biomix uses RNAi for therapeutics

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BioSpectrum Asia Pacific Emerging Company of the Year 2013 award winner Biomix uses RNAi for therapeutics



Biomix Biotechnologies, China, founded in February 2006, is on road to be counted as one of Asia's leading RNA interference (RNAi) therapeutical technology company. The company has a portfolio of more than 40 patents and patent applications to protect its technologies and products.

"There exists a natural drug-making machine, RNAi, in all human cells, which was discovered by 2006 Nobel Prize winners in the US. I wished to turn RNAi mechanism into real therapeutics to cure many incurable diseases," says Dr York Zhu, who founded the company, explaining why he chose to focus on RNAi technology.

Dr York Zhu, who returned home to China from the US, to set up the company, raised initial funding from venture capitalists. The company today has 100 employees and an industrial land of 100 acre at Nantong in Jiangsu province of China where a 10,000 square meter pilot facility has been constructed and is in use since 2007.

Biomix has recognized collaborations as one of the ways of growth, and thus partnered with several companies in Asia Pacific to provide services. It has collaborated with Benitec, a public Australian RNAi therapeutics research company, with focus on developing anti-HBV siRNA therapeutic. The two companies in 2011 announced the success of the first stage of anti-viral program to develop an RNAi-based therapy against Hepatitis B virus (HBV). The companies have proceeded to the next stage, which is designed to develop an RNAi therapeutic to the point of pre-clinical studies in vivo.

Collaboration with Zetiq, an Israeli company, concentrates on development of a novel cervical cancer diagnostic kit, CellDetect. Biomix has exclusive rights to distribute, market and sell the CellDetect cervical cancer diagnosis technology in China. The CellDetect technology can differentiate by color and morphology between normal cells and a wide range of cancer conditions.

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The color discrimination is excellently exemplified in controlled tissue culture experiments showing that while cancer cells are stained red by the CellDetect technology, treatment of the same cells with chemicals known to affect the cancer, phenotype, causes these cells to stain green. In human tissue sections, CellDetect readily differentiates normal cells and tissues from neoplastic cells and tissues by both color and morphology.

According to the agreement, Biomics Biotechnologies will pay ZetiQ Technologies royalties at the rate of 16 percent on direct sales of the product generated by Biomics or 25 percent royalties of the income of Biomics from sales generated by any sub-distributor.

It also has a subsidiary Genecon Biotech. "Biomics' main business is RNAi-based drug development. In order not to distract from the focus of the parental company, we started Genecon to apply RNAi in the cosmetic sector for anti-hyperpigmentation (anti-skin blotch) to show the power of RNAi in application," says Dr York Zhu.

The technology

The company has several products, such as chemical synthesis of RNA, large-scale RNA synthesis of up to 100 gram and RNA modification and labeling. It also specializes in high throughput siRNA target screening (library base), RNA vector construction, dual luciferase reporting system, protein expression and RNAi-related services.

It owns integrated technology platforms, including entire siRNA targets (EsT) library, multiplex siRNA, small ligand RNA (sliRNA) and RNA modification. Together with Genecon Biotech, a subsidiary of the company, it has developed local (transdermal) and systematic delivery systems. Now, the company is focusing on second-generation delivery systems that can enter hypodermis (epidermis) and follicle (local), and targeted delivery.