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China and Australia grant patent to NBB nicotine biosynthesis gene

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Singapore: 22nd Century Group, a company that has developed pioneering technology for tobacco harm reduction and smoking cessation products, has been issued a Notice of Allowance by the State Intellectual Property Office of China and a patent from IP Australia for its NBB gene, which is responsible for nicotine production in the tobacco plant.

International Patent Application PCT/IB2006/001741, from which the Chinese and Australian national-phase patents were derived, covers methods for producing tobacco plants with reduced nicotine levels and tobacco products produced there from. Besides nicotine, NBB is also responsible for the production of other nicotinic alkaloids, such as anatabine and anabasine.

The NBB gene encodes a protein involved in the final step of nicotine biosynthesis, nicotine synthase, which has eluded scientists for decades. This protein can either be down-regulated or up-regulated to produce tobacco varieties with a wide range of nicotine levels.

Dr Takashi Hashimoto of the Nara Institute of Science and Technology (NAIST), who is a world-renowned plant molecular biologist, is the inventor of the NBB technology. 22nd Century funded R&D at NAIST from 2005-09 and NAIST assigned various related patent families to 22nd Century in 2010, including the NBB technology.

Dr Michael Moynihan, VP, R&D, 22nd Century Group, said that, "The NBB gene technology is one of the keystones of 22nd Century's intellectual property and represents our second-generation gene technology that has significant advantages over

our earlier technology."

22nd Century owns or is the exclusive licensee of 102 issued patents in 78 countries plus an additional 37 pending patent applications, which are mainly related to all of the key nicotine biosynthesis genes and the potential modified risk tobacco products produced there from. 22nd Century owns or is the exclusive licensee of six patents in China, and two pending patent applications and five patents in Australia. Additional patent applications will be filed by the company in both countries.