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22nd Century Group Announces U.S. Patent Issues for MPO Nicotine Biosynthesis Gene

CLARENCE, N.Y.--(BUSINESS WIRE)-- 22nd Century Group, Inc. (OTCBB: [XXII](#)), a company that has developed groundbreaking technology for tobacco harm reduction products, today announced that the United States Patent and Trademark Office (US PTO) has issued Patent No. 8,410,341 for the N-methylputrescine oxidase (MPO) gene technology. MPO is essential for production of nicotine in the tobacco plant. As previously announced, the US PTO issued a Notice of Allowance on December 24, 2012 for this technology; however, yesterday's issuance marks the official grant of the patent.

The allowed claims of Patent No. 8,410,341, entitled, *NUCLEIC ACID ENCODING N-METHYLPUTRESCINE OXIDASE AND USES THEREOF*, cover nucleic acids encoding MPO, methods for producing tobacco plants with either reduced or increased nicotine levels and tobacco plants produced by the foregoing. The US PTO granted Patent No. 8,410,341 on April 2, 2013 to the National Research Council Canada (NRC). 22nd Century is NRC's exclusive worldwide licensee of MPO and other technologies.

Patent No. 8,410,341 is the first MPO gene patent issued anywhere in the world. Including the patent term adjustment, this U.S. patent will expire in December 2027. Patent Application PCT/IB2007/003550 is the related international application to U.S. Patent No. 8,410,341. Additional MPO patent applications are pending in the U.S., Canada and China.

The MPO gene encodes a protein involved in a key step of nicotine biosynthesis. Scientists have attempted to clone the MPO gene for decades. MPO expression can be either down-regulated or up-regulated to produce tobacco plant varieties and tobacco products with a wide range of nicotine levels (from very low to high), or altered ratios of nicotine and other nicotinic alkaloids such as anatabine and normicotine. Dr. Jonathon Page and Enwu Liu of the NRC Plant Biotechnology Institute are the inventors of the MPO technology. 22nd Century funded subject patent and research and development expenses at NRC from 2006 to 2008.

The MPO gene technology is one of several 22nd Century patent families representing the company's second-generation gene technology for modifying the content of nicotine and other nicotinic alkaloids in the tobacco plant. 22nd Century's vice president of research and development, Dr. Michael Moynihan stated, "We are very pleased that the US PTO has granted the MPO patent. Our second-generation technology has significant advantages over our first generation technology."

22nd Century's patent portfolio consists of 15 issued U.S. patents and 9 pending U.S. patent applications. Globally, 22nd Century owns or is the exclusive licensee of 109 issued patents in 78 countries plus an additional 39 pending patent applications – mainly related to all of the key nicotine biosynthesis genes and transcription factors and tobacco harm reduction products produced therefrom.

For additional information, please visit: www.xxiicentury.com

Cautionary Note Regarding Forward-Looking Statements: This press release contains forward-looking information, including all statements that are not statements of historical fact regarding the intent, belief or current expectations of 22nd Century Group, Inc., its directors or its officers with respect to the contents of this press release. The words "may," "would," "will," "expect," "estimate," "anticipate," "believe," "intend" and similar expressions and variations thereof are intended to identify forward-looking statements. We cannot guarantee future results, levels of activity or performance. You should not place undue reliance on these forward-looking statements, which speak only as of the date that they were made. These cautionary statements should be considered with any written or oral forward-looking statements that we may issue in the future. Except as required by applicable law, including the securities laws of the United States, we do not intend to update any of the forward-looking statements to conform these statements to reflect actual results, later events or circumstances or to reflect the occurrence of unanticipated events. You should carefully review and consider the various disclosures

made by us in our annual report on Form 10-K for the fiscal year ended December 31, 2012, filed on March 18, 2013, including the section entitled "Risk Factors," and our other reports filed with the U.S. Securities and Exchange Commission which attempt to advise interested parties of the risks and factors that may affect our business, financial condition, results of operation and cash flows. If one or more of these risks or uncertainties materialize, or if the underlying assumptions prove incorrect, our actual results may vary materially from those expected or projected.

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Source: 22nd Century Group, Inc.