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## **22nd Century Group Achieves Breakthrough Hemp/Cannabis GMO Technology; Granted New Patent for Controlling Genes Responsible for Production of CBD, THC, and Other Valuable Cannabinoids**

### **New intellectual property facilitates the precise control and modulation of cannabinoid production**

WILLIAMSVILLE, N.Y., Dec. 17, 2020 (GLOBE NEWSWIRE) -- 22nd Century Group, Inc. (NYSE American: [XXII](#)), a leading plant-based, biotechnology company focused on tobacco harm reduction, very low nicotine content tobacco, and hemp/cannabis research, announced today that it was granted a new U.S. patent related to the control of cannabinoid and terpene production in plants. This new intellectual property exclusively provides 22nd Century with unique and powerful tools to alter the cannabinoid biosynthesis pathway in hemp/cannabis plants.

"We are delighted to receive this patent, which is the result of work carried out by our own scientists. This important, new technology will allow us to genetically modify hemp/cannabis plants to modulate their cannabinoid and terpene profiles in order to tailor these plants' therapeutic qualities and enhance the consumer's hemp/cannabis experience," said Juan Sanchez Tamburrino, Ph.D., vice president of research & development at 22nd Century Group. "Our patent application describes eight promoters, which are essentially molecular on/off switches, covering all of the major steps in the cannabinoid biosynthesis pathway. Typically, developing hemp/cannabis plants with new cannabinoid or terpene profiles could take 10 to 20 years using traditional breeding methods. Now, with the combined technologies and know-how of 22nd Century and KeyGene, we expect to shorten the development timeline to create new, differentiated, hemp/cannabis plant lines in just 4 to 5 years. Doing so will provide the Company and its potential licensees and customers with significant competitive advantage as hemp/cannabis continues to penetrate the life science, consumer product, and pharmaceutical markets."

"At 22nd Century Group, we take a scientific and solutions-oriented approach to advancing ground-breaking, plant-based technology. We are excited to secure this patent, and we believe that it demonstrates our unique and leading role in plant science innovation within the \$100 billion global hemp/cannabis market," said James A. Mish, chief executive officer of 22nd Century Group.

The new patent, published as U.S. Patent No. 10,787,674 B2 and entitled "Trichome specific promoters for the manipulation of cannabinoids and other compounds in glandular trichomes," enables 22nd Century to develop and deliver new hemp/cannabis plants that are designed to produce cannabinoids more efficiently. The Company can potentially increase the yield of plants, stabilize the level of cannabinoids that are produced, and create custom cannabinoid profiles optimized for specific therapeutic uses. 22nd Century will also be able to potentially modulate the terpene levels within the plant – increasing them to deliver new strains of cannabis for the adult-use/recreational market and reducing them to remove the odor and taste for improved application in foods and beverages.

Cannabinoids, such as CBD, CBC, and CBG, are valuable compounds that hold great promise for the development of new medicines and other therapeutic applications. *Cannabis sativa* is the only plant species that produces significant amounts of these compounds including more than one hundred different cannabinoids in varying quantities. In nature, cannabis plants restrict production of these potentially toxic compounds to the trichomes which are tiny hair-like stems and globes that grow on the surface of the plant. To successfully manipulate cannabinoids, the Company's new technology activates molecular promoters, "on/off switches," *specifically and only* in the plant's trichomes where the majority of cannabinoids are produced. These regulatory sequences dynamically enhance or restrict gene expression levels, controlling the expression of genetic information that leads to the production of cannabinoids.

**About 22nd Century Group, Inc.**

22nd Century Group, Inc. (NYSE American: [XXII](#)) is a leading plant biotechnology company focused on technologies that alter the level of nicotine in tobacco plants and the level of cannabinoids in hemp/cannabis plants through genetic engineering, gene-editing, and modern plant breeding. 22nd Century's primary mission in tobacco is to reduce the harm caused by smoking through the Company's proprietary reduced nicotine content tobacco cigarettes – containing 95% less nicotine than conventional cigarettes. The Company's primary mission in hemp/cannabis is to develop and commercialize proprietary hemp/cannabis plants with valuable cannabinoid profiles and desirable agronomic traits.

Learn more at [xxiicentury.com](http://xxiicentury.com), on Twitter [@\\_xxiicentury](#) and on [LinkedIn](#).

**Cautionary Note Regarding Forward-Looking Statements**

Except for historical information, all of the statements, expectations, and assumptions contained in this press release are forward-looking statements. Forward-looking statements typically contain terms such as “anticipate,” “believe,” “consider,” “continue,” “could,” “estimate,” “expect,” “explore,” “foresee,” “goal,” “guidance,” “intend,” “likely,” “may,” “plan,” “potential,” “predict,” “preliminary,” “probable,” “project,” “promising,” “seek,” “should,” “will,” “would,” and similar expressions. Actual results may differ materially from those explicit or implicit in forward-looking statements. Important factors that could cause actual results to differ materially are set forth in “Risk Factors” in the Company's Annual Report on Form 10-K filed on March 11, 2020 and on Quarterly Reports on Form 10-Q. All information provided in this release is as of the date hereof, and the Company assumes no obligation to publicly update or revise any forward-looking statements as a result of new information, future events, or otherwise, except as required by law.

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