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22nd Century Group and KeyGene Launch Advanced Cannabis Technology Platform for Accelerated Development of New Varieties of Hemp/Cannabis Plants with Commercially Valuable Traits

Breakthrough expected to yield disruptive plant lines and new licensing opportunities with strategic partners

WILLIAMSVILLE, N.Y., Feb. 10, 2021 (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 has developed and launched a new, cutting-edge technology platform that will enable the Company and its strategic partners to quickly identify and incorporate commercially valuable traits of hemp/cannabis plants to create new, stable hemp/cannabis lines. The platform incorporates a suite of proprietary molecular tools and a large library of genomic markers and gene-trait correlations. The platform was developed in collaboration with researchers at [KeyGene](#), a global leader in plant research involving high-value genetic traits and increased crop yields.

"This is a major breakthrough. Quickly and easily identifying the genes responsible for specific traits in a plant is a powerful tool for 22nd Century Group and the hemp/cannabis industry as a whole," said James A. Mish, chief executive officer of 22nd Century Group. "That is why we are even now beginning discussions to license this platform to strategic partners to help them improve their plant breeding techniques and to optimize their hemp/cannabis cultivars. We continue to make great advancements through our partnership with KeyGene, and this newly developed molecular breeding platform has the potential to result in exponential growth for the Company's revenues and create new value opportunities for our stakeholders, including shareholders."

"Using traditional breeding techniques, it typically takes at least eight to ten years to develop new varieties of hemp/cannabis plants that consistently express important traits," said Juan Sanchez Tamburrino, Ph.D., vice president of research and development at 22nd Century Group. "Our new molecular breeding platform can dramatically reduce our development time for new high-value varieties of hemp/cannabis and allows 22nd Century scientists to identify plant lines that carry high levels of major therapeutic cannabinoids, such as cannabidiol (CBD), cannabichromene (CBC), and other minor therapeutic cannabinoids, like cannabidivarin (CBDV) and tetrahydrocannabivarin (THCV)."

Demonstrating how this technology can be used, 22nd Century and KeyGene scientists can now accelerate the selection of specific traits yielding novel cannabinoid profiles. For example, the team was able to select specific markers that predict the gender of hemp/cannabis plants with an astounding 99.6% accuracy.

Using this new breeding technology, 22nd Century has already characterized millions of high-value single nucleotide polymorphisms (SNPs). SNPs are molecular markers or guideposts within a plant's genome that indicate important variations in Deoxyribonucleic acid (DNA) sequences. Targeting these newly identified SNPs, 22nd Century was able to locate and isolate specific sections of genetic code from genome assemblies present in the Company's state-of-the-art hemp/cannabis bioinformatics database. 22nd Century's bioinformatics database continues to grow and already contains hundreds of hemp/cannabis genomes and thousands expression datapoints across a wide array of hemp/cannabis varieties and phenotypes. The ability to identify specific genetic variations allows researchers to isolate high-value traits, like increased CBD or tetrahydrocannabinol (THC) production, and then introduce those traits in new plant lines using modern plant breeding techniques, including trait tracking using molecular marker profiles and the Company's proprietary accelerated breeding pipeline.

Since reporting third quarter earnings, 22nd Century has refocused its hemp/cannabis strategy to target the upstream segments of the cannabinoid value chain, in particular, in the areas of plant biotechnology research,

gene modification and engineering, modern plant breeding and development, and extraction. The Company intends to build upon its core strengths in the plant science and ingredient value chain and is in advanced discussions with operational partners that will enable it to offer comprehensive commercial breeding, cultivation, and extract purification services utilizing its proprietary hemp/cannabis plants in development. The Company will continue to focus on and ensure the accelerated delivery of valuable, commercial plant lines and technology, and related intellectual property for the life science, consumer product, and pharmaceutical markets.

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, 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 might 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 in its subsequently filed Quarterly Report on Form 10-Q. All information provided in this release is as of the date hereof, and the Company assumes no obligation to and does not intend to update these forward-looking statements, except as required by law.

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