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22nd Century Announces Important New Achievements with KeyGene

Delivers Complete High-Quality Hemp/Cannabis Genome Sequence; Establishes New Proprietary Hemp/Cannabis Bioinformatics Platform

WILLIAMSVILLE, N.Y. , March 11, 2020 (GLOBE NEWSWIRE) -- [22nd Century Group, Inc.](#) (NYSE American: XXII), a leading plant biotechnology company in reduced nicotine tobacco and hemp/cannabis plant genetics research, announced today that lead scientists from 22nd Century Group and KeyGene have assembled a high quality genome sequence of two hemp/cannabis lines and established a new, proprietary hemp/cannabis bioinformatics platform. Both are believed to be among the highest quality, hemp/cannabis reference genomes in the world.

“These exciting, new developments are already enabling the rapid breeding of new and proprietary hemp/cannabis plant lines with truly remarkable and potentially novel medicinal cannabinoid profiles,” said Michael Zercher, President & Chief Operating Officer of 22nd Century Group. “Our research partnership with KeyGene will bolster our existing, proprietary hemp/cannabis plant lines and accelerate our molecular breeding work focused on the creation of valuable, new hemp/cannabis plant varieties and related intellectual property. We congratulate 22nd Century’s science team as well as our partners at KeyGene on these very exciting achievements, and we look forward to even more exciting and valuable results in our hemp/cannabis plant genetics research,” Zercher concluded.

Assembly of the robust genome sequence was first completed with a previously uncharacterized cannabis plant line, “Blue Dream,” popular and well known for its medicinal and therapeutic properties. The proprietary, high quality genome developed by 22nd Century and KeyGene is currently being supplemented and enhanced by the assembly of a second complete, high quality genome of a previously uncharacterized hemp plant line known as “Cherry,” known for having some of the highest CBD concentration among hemp plant varieties. The two high quality genomes have been combined with genomes in the public domain to perform pan genomic analysis and integrated into a comprehensive bioinformatics platform developed by KeyGene for visualization and analytics of all available genomic, transcriptomic and metabolic datasets. This will provide 22nd Century and KeyGene’s researchers access to unique and differentiating tools that enable the rapid breeding of novel hemp/cannabis plant varieties.

These achievements are an example of some of the valuable and innovative, early results delivered by the exclusive, worldwide strategic research and development collaboration between 22nd Century and KeyGene focused on developing hemp/cannabis plants with exceptional cannabinoid profiles for medical and therapeutic use. The assembly of high-quality genomes usually takes years to perform however, through the partnership between 22nd Century and KeyGene, sequencing was completed in record time of under three months using proprietary ultra-high molecular weight genomic DNA isolation and the PromethION platform from Oxford Nanopore Technologies.

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. The Company’s primary mission in tobacco is to reduce the harm caused by smoking by bringing its proprietary reduced nicotine content cigarettes with 95% less nicotine than conventional cigarettes to adult smokers in the U.S. and international markets. The Company’s primary mission in hemp/cannabis is to develop proprietary hemp/cannabis plants with unique cannabinoid profiles and desirable agronomic traits and to commercialize those plants through a synergistic portfolio of strategic partnerships in the hemp/cannabis industry.

Learn more at xxiicentury.com, on Twitter [@_xxiicentury](https://twitter.com/xxiicentury) and on [LinkedIn](https://www.linkedin.com/company/xxiicentury).

About KeyGene

KeyGene is the go-to agriculture biotechnology company for higher crop yield and quality that revolutionized plant breeding using proprietary DNA fingerprinting technologies. Through the use of cutting-edge breeding technologies, bioinformatics and data science expertise, KeyGene provides organizations with solutions to R&D challenges as well as plant-based trait platforms to deliver novel crop solutions. KeyGene was founded in 1989 and has locations in the Netherlands, United States and India.

Learn more at keygene.com, on Twitter [@KeyGeneInfo](https://twitter.com/KeyGeneInfo) and on [LinkedIn](#).

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