Pete **Apicella**

Plant Biologist

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Highly published scientist with expertise in plant and fungal biology and over four years experience in research. At the startup, Mydecine Innovations Group Inc., led the implementation of the synthetic biology vision through my conception and design of intellectual property.

Education

University of Connecticut
Storrs, Connecticut

MSc Plant Sciences — *2020*

- Thesis - Studies of the Cannabinoid Biosynthetic Pathway in Developing Cannabis sativa Flowers and Elucidation of Genetic and Physiological Mechanisms Regulating Cannabinoid Production

University of Connecticut
Storrs, Connecticut

BSc Horticulture — *2018*

- Honors Thesis - Combinations of Allelopathic Crop Extracts Reduce Digitaria spp. and Setaria faberi Seed Germination

Technical Skills

Dry Lab	Wet Lab
Snapgene Viewer, BLAST, Ensembl, Microsoft Office, R (ggplot2, agricolae, RMarkdown, corrplot, tidyverse, and other packages)	HPLC, Tissue Culture, Protoplasting, Nucleic acid isolation, Gel electrophoresis, PCR, quantitative PCR, RT-PCR, Experimental design

Experience

Research Associate
Denver, Colorado

Mydecine Innovations Group Inc. — *October 2020 - April 2022*

- Conceived the design of intellectual property related to increasing the rate biosynthesis of secondary metabolites in a filamentous fungus to be used as a heterologous host.
- Designed and implemented experiments related to nucleic acid isolation, molecular identification of species, gene expression analysis, stimulation of defense compound biosynthesis, cloning of metabolite biosynthesis cassettes, protoplasting, and CRISPR-Cas9 genome editing.
- Created mutants of a filamentous fungus to serve as platforms for ectopic metabolite production.
- Facilitated the acquisition of scientific equipment and overall operationality of a 7500 square foot laboratory.
- Trained colleagues and one intern in fungal tissue culture, molecular biology techniques, and basic use of R for data visualization and statistical analysis.
- Created R Markdown guides on how to implement data visualization and analysis in R.

Graduate Research Assistant
Storrs, Connecticut

University of Connecticut — *August 2018 - August 2020*

- Successfully defended thesis on genetic regulation of cannabinoid biosynthesis in Cannabis sativa.
- Discovered and published that applications of a plant hormone, known as methyl jasmonate, to Cannnabis plants causes a substantial increase in their cannabinoid levels.
- Designed and executed experiments in university greenhouses and commercial controlled environment facilities.
- Performed extractions on plant tissue samples to generate preparations for analysis on High-performance liquid chromatography (HPLC) equipment.
- Quantified cannabinoid concentrations from plant tissue samples using HPLC equipment.
- Implemented quantitative PCR to measure gene expression levels of genes in the cannabinoid biosynthesis pathway.
- Analyzed and visualized data in R to facilitate comprehension in invited talks and manuscripts.
- Obtained controlled substances research licenses for laboratory and authored standard operating procedures for the sampling, transport, and secure storage of controlled substances.

Graduate Mentor
Storrs, Connecticut

University of Connecticut
August 2018 - August 2020

- Trained undergraduate and graduate students in molecular biology techniques.
- Mentored one student to win a grant, design and execute an experiment, and present findings at a university research forum.

Teaching Assistant
Storrs, Connecticut

University of Connecticut
August 2018 - August 2020

- Lectured one laboratory section of woody plant identification. Led 15 students through university campus to teach students characteristics of plants. Graded assignments and recorded grades.

Undergraduate Researcher
Storrs, Connecticut

University of Connecticut
August 2016 - May 2018

- Awarded $8000 in grant funding to phenotypically survey North America's largest Aronia germplasm collection.
- Evaluated sugar and acidity content of fruit juice from 120 Aronia genotypes, commonly referred to as chokeberry.
- Identified specific genotypes with desirable sugar:titratable acidity ratios to be used as parentage for breeding varieties with improved fruit palatability.
- Presented findings in posters at national and international conferences.
- Co-authored a plant tissue culture publication on novel shoot organogenesis for species in the Aronia genus.

Publications

Apicella, P., Ma, G., Ma, Y., & Berkowitz, G. A. The Cannabis Jasmonate-Independent Homeodomain Zipper Family IV Gene HDG5 Functions in Trichome Morphogenesis and Involves in Immune response in transgenic Nicotiana tabacum L. *manuscript in preparation*

Apicella, P., Ma, G., Ma, Y., & Berkowitz, G. A. (2022). Delineating genetic regulation of cannabinoid biosynthesis during female flower development in Cannabis sativa . *Plant Direct*, *6*(6). https://doi.org/10.1002/pld3.412

Haiden, S. R., **Apicella, P.**, Ma, Y., & Berkowitz, G. A. (2022). Overexpression of CsMIXTA, a Transcription Factor from Cannabis sativa, Increases Glandular Trichome Density in Tobacco Leaves. *Plants*, *11*(11), 1519. https://doi.org/10.3390/plants11111519

Ma, G., Zelman, A. K., **Apicella, P.**, & Berkowitz, G. (2022). Genome-Wide Identification and Expression Analysis of Homeodomain Leucine Zipper Subfamily IV (HD-ZIP IV) Gene Family in Cannabis sativa L. *Plants*, *11*(10), 1307. https://doi.org/10.3390/plants11101307

McGehee, C. S., **Apicella, P.**, Raudales, R., Berkowitz, G., Ma, Y., Durocher, S., & Lubell, J. (2019). First Report of Root Rot and Wilt Caused by Pythium myriotylum on Hemp (Cannabis sativa) in the United States. *Plant Disease*, *103*(12), 3288–3288. https://doi.org/10.1094/PDIS-11-18-2028-PDN

Mahoney, J. D., **Apicella, P.**, & Brand, M. H. (2018). Adventitious shoot regeneration from in vitro leaves of Aronia mitschurinii and cotyledons of closely related Pyrinae taxa. *Scientia Horticulturae*, *237*, 135–141. https://doi.org/10.1016/j.scienta.2018.03.062

Invited Talks

Apicella P. 'The Plant Science of *Cannabis sativa*', Tower Hill Botanical Garden, Virtal oral presentation. March 2022.

Apicella P. 'The Plant Science of *Cannabis sativa*', Groton Garden Club, Virtal oral presentation. May 2021.

Apicella P. 'The Plant Science of *Cannabis sativa*', Tower Hill Botanical Garden, Oral presentation. March 2020.

Apicella P., Ma Y., Schultz T., Ferrarese R., Picard R., Barolli S., and Berkowitz G. 'Looking Under The Hood Of The Cannabis Plant: A Molecular Evaluation Of Cannabinoid Production', Emerald Conference, Oral presentation. February 2020.

Apicella P. and Berkowitz G. 'The Plant Science of *Cannabis sativa*', Middlesex Community College, Oral presentation. Middlesex, Connecticut. October 2019.

Apicella P. and Berkowitz G. 'The Plant Science of *Cannabis sativa*', Metropolitan Horticultural Society, Oral presentation. New York, New York. September 2019.

Apicella P. and Berkowitz G. 'Association of a prenyltransferase (GOT) with THCA production in medical marijuana', American Society of Plant Biology, Brief oral presentation. San Jose, California. August 2019.