CANNABIS SCIENCE: ADVANCING ACADEMIC AND INDUSTRY COLLABORATION

Event Schedule

8:30am	**Welcome**	Dr. Gary Kinsel, Director SIU Cannabis Science Center Dr. Buck Hales, former Director, SIU Cannabis Science Center

8:45am **Mike Petersen** **Transformation and CRISPR Knockout of the CBDAs and other Genes in Type III Cannabis**

The Wiscsonsin Crop Innovation Center has developed a patented process for the routine transformation and editing of cannabis. This process uses a mature embryo explant and spectinomycin selection, is genotype flexible, and has successfully created 100s of engineered and edited events for both internal research and external client projects. We will discuss the transformation methodology and present data on several edited lines that have been created, including a CBDAS knockout, an OAC knockout, and edits targeting powdery mildew resistance. The Center offers a fee based service for researchers to overexpress or knockout genes of interest and receive T1 transformed seed within 12 months.

9:15am **Sandra Leal** **The Effect of Cannabidiol on Motor Behaviors and Serotonin Expression in *Drosophilla***

Drosophila neurotransmitters (NTs) and their receptor targets are evolutionarily conserved across invertebrate and vertebrate species within tissues of the central, peripheral, and neuroendocrine systems. NT receptor-activated cell signaling regulates behaviors important for maintaining physiological homeostasis and the survival of these organisms. A study by The Lancet Neurology reported in 2021 that approximately 3 billion people worldwide suffer from neuropsychiatric and neurological disorders. Recent clinical studies report that cannabidiol (CBD) provides an alternative and effective treatment for mental health patients who are traditionally prescribed Selective Serotonin Reuptake Inhibitors (SSRIs) and antipsychotic drugs. However, the mechanisms of CBD action have yet to be completely resolved. To understand the molecular-genetic mechanisms of CBD action and to aid in the development of improved CBD therapies, we sought to determine whether Drosophila can be utilized as a tractable model system to uncover conserved molecular-genetic mechanisms of CBD action within neuronal tissues.

9:45am **Break/View Posters**

10:15am **Mark Lange** **Expanding the biochemical lexicon of cannabis - lessons from working with type 1 cannabis as a university employee**

Overview of the complicated protocols followed to abide by WSU policies and the adjustments made to these policies. I will describe the scientific outcomes of our first study, which demonstrated that the cannabinoid and terpenoid pathways are co-regulated across cannabis chemotypes. Follow-up work characterized the potential of cannabis for producing terpenoid diversity based on comprehensive metabolite profiling and functional characterization of terpene synthase genes. Dewey Scientific LLC was founded in 2018 but it took until 2020 before type I cannabis plants could be grown. This changed again how we managed activities at the company and WSU. More recently, we have uncovered non-terpenoid volatile chemical diversity in cannabis chemotypes and efforts to modulate aroma through a combination of terpenoid and nonterpenoid volatile profiles will be presented

10:45am **Anna Schwabe, Ph.D.** **Uncomfortably High: THC Inflation on Retail Cannabis Labels**

Validated HPLC testing revealed significant discrepancies between actual THC levels and the percentages reported on retail cannabis flower labels. While the causes of these discrepancies remain speculative, it is crucial to recognize that THC percentage often drives consumer purchasing decisions. Due to price structuring based on THC content, consumers are frequently misled into believing that higher THC percentages equate to superior quality, leading to overpayment for perceived quality. This issue also raises broader concerns about the reliability of cannabis testing, including for contaminants like metals and pesticides. If THC results are inaccurate, it casts doubt on the trustworthiness of other critical safety tests, ultimately undermining consumer trust and industry integrity.

11:15am **Clay W. Moore** **Drug Discovery, Rare Earth Genomics; Ph.D. Student, Texas A&N Agrilife; Founder, Cannabis Hemp Innovation League**

This presentation will provide an overview of the Texas A&M University Industrial Hemp Breeding Program, highlighting various ongoing projects focused on Cannabis sativa L. (Hemp). These projects include the development of inbred lines, polyploidy research, gene editing, germplasm collection in collaboration with USDA-ARS, bast and hurd fiber research, petiole propagation discovery, the creation of organic terpene-based pesticides, trichome microscopy studies, hypocotyl strength analysis, and phytochemical cancer research. The presentation will showcase the diverse applications of hemp and the innovative approaches being taken to advance this field at Texas A&M.

11:45am	**Lunch and Biolaunch Lab Tours**	
1:15pm	**David Lakeman**	**Current and pending Hemp/Cannabis Legislation** The Department of Agriculture is tasked with licensing and regulating adult use cultivation centers, cannabis craft growers, cannabis infusers, cannabis transporters, and Community College Vocational Cannabis Pilot Programs.
2pm	**James Swartz**	**Highlights from the 2024 Annual Report on Cannabis Use in Illinois** This presentation will highlight selected issues from an evaluation of the effects of legalizing adult cannabis use in Illinois. The focus will be on general metrics such as changes in the prevalence of cannabis use, frequent use (20+ days per month), initiation of cannabis use among youth, cannabis-related poisonings, and cannabis use disorder(CUD) since enactment of the Cannabis Regulation and Tax Act (CRTA) in 2020. Also considered will be recently identified public health issues related to cannabis legalization such as cannabis hyperemesis syndrome, traffic fatalities perinatal cannabis use, and the emergence of synthetic cannabis products such as delta-8 THC derived from hemp-based products.
2:30pm	**Break/View Posters**	
3pm	**Jeff Rawson**	**Legalizing Cannabis is Imperative for Public Health** Legalizing Cannabis is Imperative for Public Health. Cannabis remains illegal under federal law, although policies have been liberalized in many states. I will discuss the impacts on public health of the prohibition of cannabis, and outline how the legalization and normalization of cannabis will improve public health in the United States.
3:30pm	**Rebecca Abraham**	**Drug Classification Changes: Why Education is Critical to Healthcare Providers & Nurses** Medical cannabis is a rapidly growing area of health and wellness. There is currently a significant gap between medical patients who would benefit from and are interested in treatment with medical cannabis and providers able to offer appropriate education and guidance. Exacerbating the issue is the fact that for medical cannabis to be most effective and minimize unwanted side effects, it also needs to be individually tailored with precision dosing and product recommendations. This unmet need will only grow after cannabis is rescheduled to a schedule III drug by the DEA later this year - after which hospitals and healthcare systems will be under pressure to begin offering cannabis to hospitalized patients but will lack staff with the training and expertise to recommend products appropriately. Nurses are well-trained and positioned to lead the way and scale to meet the needs of the millions of medical patients who will need help. Nursing guidance involves assessment, goal setting, supportive care, nursing interventions, and therapeutic relationships. Nurses can bring a holistic approach to healthcare, all of which are key to having a successful outcome with botanic medicine. This talk will discuss the endocannabinoid system and why cannabis is effective at treating multiple conditions, as well as the role and advantages of having trained cannabis nurses offer this education and guidance.
4pm	**Poster Awards**	

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