

# Mark J. Rosenfeld, M.S., Ph.D.

Founder & Chief Executive Officer  
ISA Scientific, Inc.

- Consultant, Health Sub-Committee, Energy & Commerce Committee, US House of Representatives
- Advisor, China Health Ministry
- US Member, Joint United Nations Food & Agriculture Organization – International Atomic Energy Agency Committee on Transboundary Diseases
- Faculty, University of Utah School of Medicine
- Visiting Scholar, Peking University

## Testimony – Tuesday, 28 January 2014

- Legislation to Allow for the Physician-Authorized Use of *Cannabis*
- Sanction *Cannabis* for Patients with Intractable, Chronic, Severe & Terminal Medical Conditions

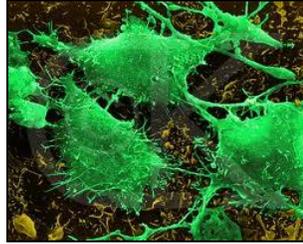
# Phytocannabinoids



Trichomes, minute stalked structures on leaves & flowers, where phytocannabinoids are made

- **More than 3,000 Published Medical & Scientific Works That Indicate Profound Therapeutic Potential**
  - For treating pain, sugar metabolism, heart health, immune system function, cancer control, epilepsy & more
- **Major Phytocannabinoids**
  - Cannabidiol, Tetrahydrocannabinol (THC), Cannabigerol, Cannabichromene, Tetrahydrocannabivarin, Cannabinol
- **Resemble Endocannabinoids Made in the Human Body**
  - Interact with receptors in the brain, organs and immune cells, and thus moderate a variety of physiological processes

# Use As a Human Therapy



Cancer Cells. These die when exposed to cannabidiol, a non-psychoactive phytoannabinoid

- **Smoking Currently the Chief Delivery Method**

- Unsafe, same toxins as in tobacco
- Imprecise & unreliable dosing
- Most people, especially those with respiratory disorders, cannot, should not & will not smoke

- **Nearly All Existing Cannabinoid Products Psychoactive**

- Enjoyable to some, problematic to many
- Abuse liability, especially youth
- Limited therapeutic utility
  - Detracts from work, driving, school, sports

# *Cannabis* Medicine Must Be Evidence Based



Hadassah Hospital  
Ein Karem Campus  
Hebrew University  
Jerusalem, Israel



Rambam Hospital  
Haifa, Israel

- **Existing Information Largely Anecdotal**
  - Unacceptable to the medical & regulatory community
  - Precludes *Cannabis* use by many medical professionals
- **Laboratory & Clinical Research into the Efficacy and Safety of Therapeutic, Rehabilitative and Preventive *Cannabis* Regimens**
  - **Not possible in the United States without *Cannabis* medicine legalization – State by State and/or Federal**

# Where Medical *Cannabis* Is Trending



Capsules with Cannabidiol  
Readied for Human Clinical  
Trials in Israel

- **Non-Smoked, Efficient Oral Phytocannabinoid Therapies Devoid of Psychoactive Effects**
- **Particular Interest in a Certain Phytocannabinoid, Cannabidiol**
  - **Incredible Medicinal Potential**
  - **Safe to Administer**

# Therapeutic Potential of Cannabidiol

- **Chronic Pain**

- Reduce opioid use – 32,000 US deaths per year

- **Diabetes**

- Prevent, stabilize and even reverse diabetes

- **Heart Attacks**

- Avoid or limit heart damage

- **Atherosclerosis**

- **Inflammatory Bowel Disease**

- **Cancer**

- Inhibit or kill cancer cells

- **Epilepsy**

- **Mental Disorders**

- PTSD, anxiety, depression, schizophrenia

## Current Work by ISA Scientific Centered About Chronic Pain & Diabetes

- Current therapies deficient
- Huge unmet need for medicinal alternatives

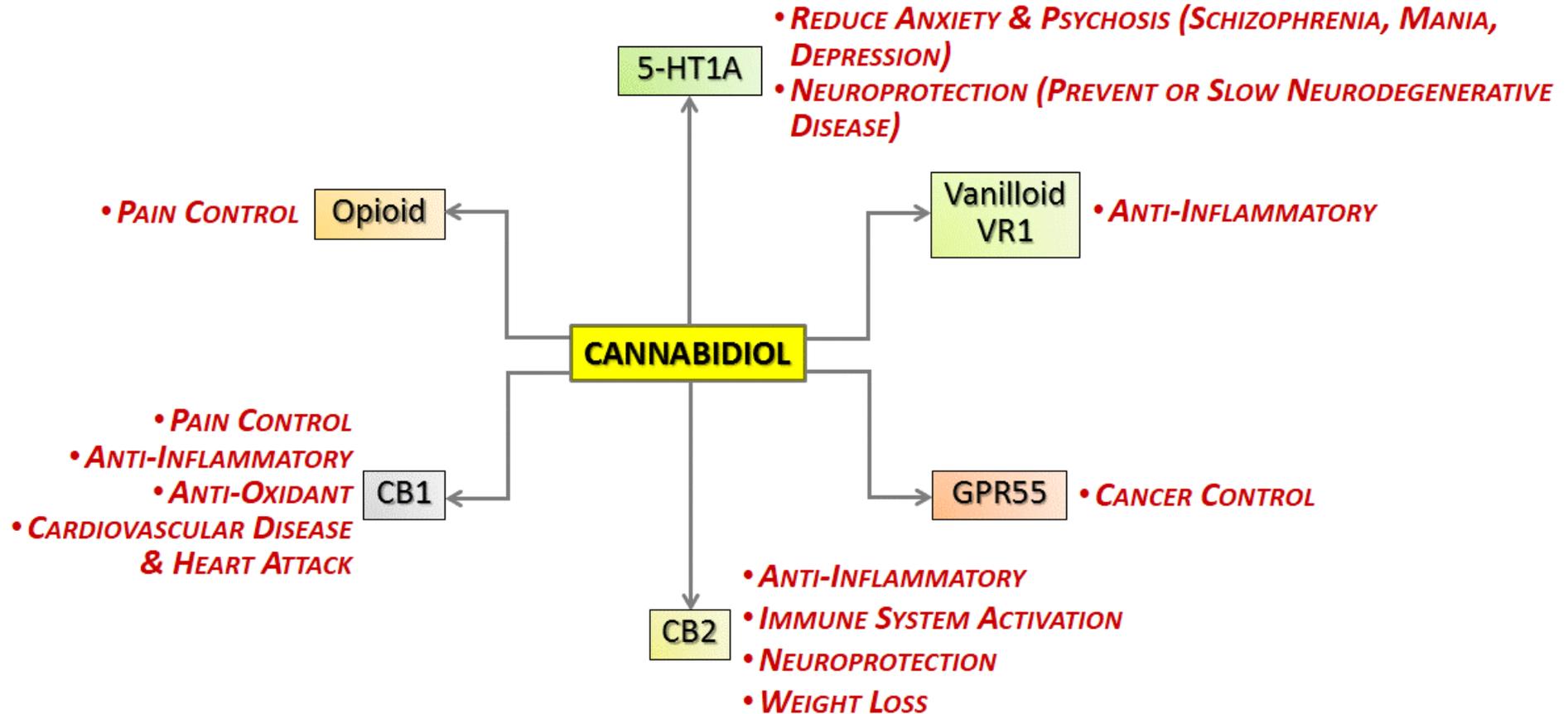
# Cannabidiol Is Very Safe



Sourasky Medical Center  
Tel Aviv, Israel

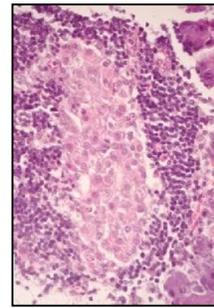
- **Institutional Review Board Approved Work**
  - Certified compliance with the highest ethical & academic “human research” standards
- **Non-Toxic to Normal Cells & Tissues**
- **Not Psychoactive**
  - No discernable effects on psychomotor or psychological functions
- **Chronic Use and High Doses (up to 1,500 mg/day) Well Tolerated**
  - 60 times greater than anticipated daily therapeutic doses still safe
- **No Effect on Appetite**
  - Gastrointestinal transit (time for food to pass through the body) also not changed
- **No Impact on Basic Physiological Parameters**
  - Heart rate, blood pressure and body temperature

# How Cannabidiol Works



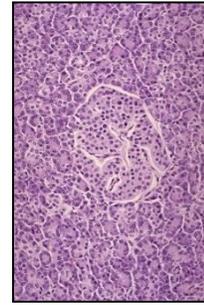
- **Interacts with Structures in Living Cells Called Receptors**
- **Turning a Particular Receptor On or Off Yields Specific Effects**
  - Activates or de-activates biological processes

# Diabetes, a Worldwide Public Health Nightmare



Diabetic

Cannabidiol



Healthy

Stimulate or Repair  
Insulin-Producing  
Cells of the Pancreas

## Stabilize or Reverse Type 1 (Juvenile) & Type 2 (Lifestyle) Disease – *For the First Time* – with Cannabidiol

- Type 1 therapeutic potential confirmed in humans
  - Results published in a critiqued scientific journal
- Type 2 laboratory experiments in process at Hebrew University



Kaplan Medical Center  
Rehovot, Israel

### • Type 2 Human Trials Underway in 2014

- Institutional Review Board approval to proceed

# China Very Interested in Cannabidiol Medicine

Mark J. Rosenfeld, MS, PhD  
CEO, ISA Scientific, Inc.



Zhang You Hui, MD  
Director, China Cancer Policy

Wang Longde, MD, MPH  
China Vice Minister of Health

- **For Resolving Its “Diabetes” Nightmare**
- **Most Diabetics Anywhere, 114 Million People**

# ISA Scientific Mission Statement



*Cannabis* Plants

Improve health and the quality of life with non-smoked, non-psychoactive and evidence-based therapies based on *Cannabis* plant chemistry



# ISA Scientific, Inc.™

1075 Skyler Drive, Draper, Utah 84020 United States of America



## Thank You

United States – Israel – China – Canada