Reem Al-Ahmad

Doyle/Easterly Award

Ph.D. Candidate, Chemistry

First Year ARCS Scholar

EMORY UNIVERSITY

The First Semisynthesis of (-)-Veragranine A Enables Access to Novel Non-Opioid Analogs for Chronic Pain Treatment

We developed a scalable synthesis of Veragranine A to address its scarcity, leveraging its structural diversity to design novel calcium channel inhibitors. This approach accelerates drug discovery and emphasizes the potential of targeting calcium channels for non-addictive, safer, and more effective treatments.

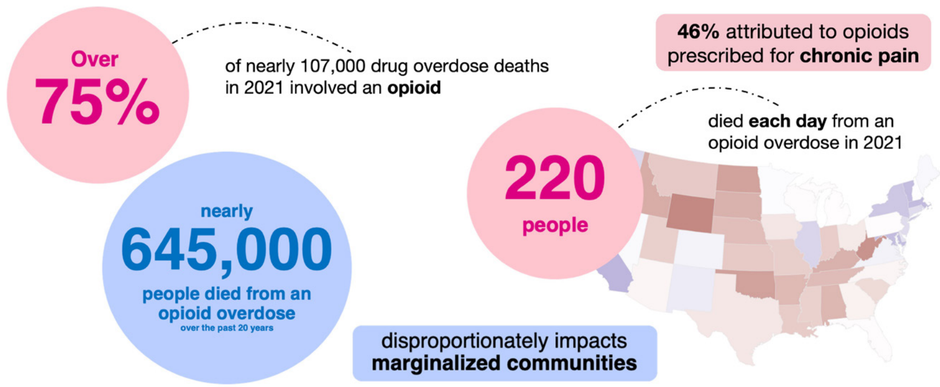
Chronic Pain: A Global Challenge

According to WebMD, at least 100 million Americans and more than 1.5 billion people worldwide suffer from some kind of chronic pain.

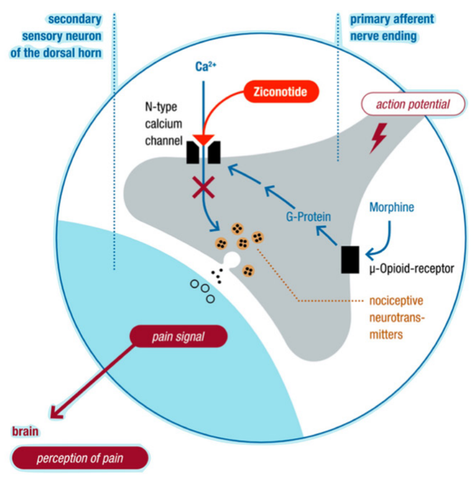
100+ million US chronic pain sufferers

1.5 billion worldwide chronic pain sufferers

The Opioid Crisis



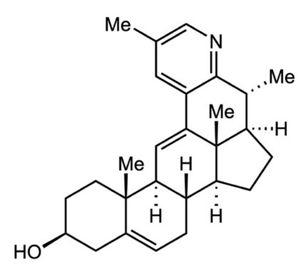
Calcium Channels: Promising Non-Opioid Target



Veragranine A: Calcium Channel Inhibitor

Veratrum Grandiflorum

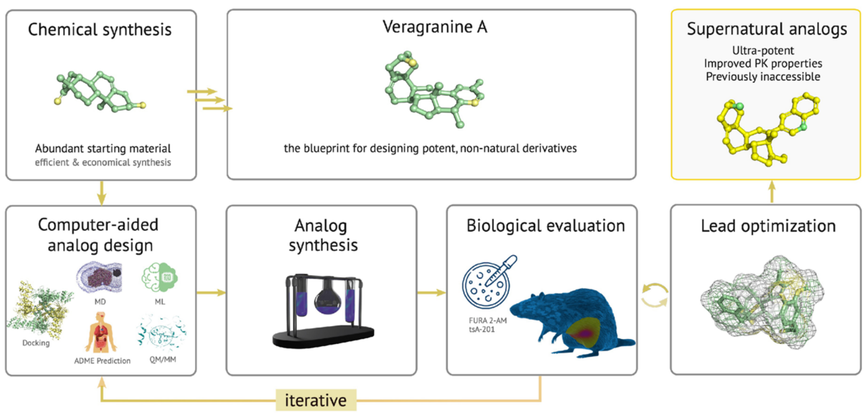
0.00004% isolation yield



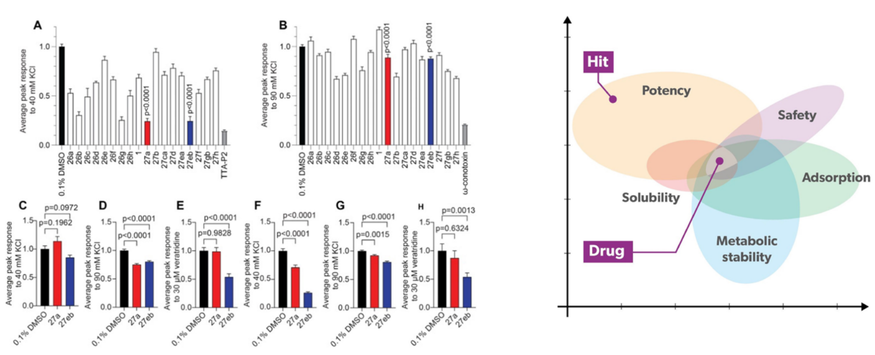
(-)-Veragranine A

- **Severely scarce in nature**
- **No reported synthesis**

Expanding Chemical Landscape of Veragranine A



Results & Future Work



✓ **Aim 1:** Achieve sustainable, short, and efficient synthesis towards Veragranine A & novel analogs

✓ **Aim 2:** Identify lead compound(s) with greater *in vivo* efficacy for further clinical development

Scholar Awards Celebration

November 13, 2024

SCHOLAR AWARDS CELEBRATION ARCS FOUNDATION ATLANTA

Igniting Innovation in Georgia