

PILL TO PILL COMMUNICATION PROVIDES PRESCRIPTION COMPLIANCE, DRUG DELIVERY, SAFETY AND SAMPLING OF GUT BACTERIA

POP TEST/PALISADES THERAPEUTICS (PT) receives approval for 10th patent on SMART PILL TECHNOLOGY

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Major pharmaceutical companies are acknowledging the need for medication compliance through technology. Pfizer CEO Albert Bourla

explains Pfizer's new tech to Davos crowd: "ingestible pills"- a pill with a tiny chip that send wireless signal to relevant authorities when the pharmaceutical has been digested. "Imagine the compliance," he says.



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With the availability of this tool, new studies may yield both important pathophysiologic information regarding Neurotrauma & Traumatic Brain Injury (TBI), but also lead to novel treatments.”

Dewleen Baker, MD (VA and UCSD)

PT lead scientist Neil Theise, MD states that successful treatment depends on strict adherence to a prescription regimen. However, the question of whether ingestion can be objectively confirmed, in particular when a patient wishes to conceal nonadherence, persists. A [‘Smart Pill’](#) drug delivery system is the solution.

- Smart Pills can provide prescription compliance through wireless communication
- Smart Pills can prevent overdose through pill to pill communication
- Smart Pills can prevent theft, counterfeiting and diversion throughout the supply chain

The Smart Pill works through an embedded microchip in the capsule which can be programmed by the drugmaker so it can only be used by the pharmacist who is then able to program the pill for the individual patient's needs. The pill contains a sensor which detects other smart pills and other compounds already in the patient's system, and thus will release its active ingredient at an

interval or not at all if an overdose or adverse reaction is a possibility. Usage outside this control chain impedes the release of the active ingredient. It also allows law enforcement to immediately trace-back the origin and prescription of any pill. See 2 minute video at www.SmartPillsSaveLives.com

“The FDA expressed strong interest in the Smart Pills [in a pre-IND / pre-IDE meeting] believing it could be the answer to the opioid problem on many levels and with their guidance we believe there is a relatively simple path forward,” stated Neil Theise, MD, PT Lead Scientist. “We are not changing the drugs we are changing the delivery system, thus the time to market is drastically reduced.”

GUT MICROBIOME-BRAIN AXIS

- The gut microbiome is understood to be intimately involved with psychological and neurological states leading to distress, including conditions such as depression, bipolar illness, and post-traumatic stress disorder.
- Responses to traumatic brain injury, susceptibility to infections (including [SARS-CoV-2/COVID-19](#)), recovery from wounds, and development of malignancy all have known associations with microbiome alterations.
- Smart Pills can sample microbiota for analysis of targeted regions of the digestive tract superior to state of the art analysis of microbiome composition
- Changes can be made with targeted drug or pro-biotic delivery for microbiome influenced neurologic and psychological conditions as well as oncology.

In traumatic brain injury and PTSD, microbiome alterations are strongly linked to cognitive, behavioral and physiological findings, but without greater precision, cannot be well understood. In both, settings, data discovered from Smart Pill site-specific microbiota research may then be turned around: the Smart Pill can become a drug or corrective microbiota delivery system rather than a sample collection device. Thus, knowledge gained from Smart Pill sampling will lead to Smart Pill delivery of novel treatments, in these instances to alter sleep deprivation-induced physiologic dysfunctions and to reduce the severity of neuropsychiatric dysfunctions and increased severity of infections in warfare-associated polytrauma including brain injury and PTSD.

According to PT collaborator, Dewleen Baker, MD (VA and UCSD) the Smart Pill technology can allow for programming of the pill in different regions of the bowel to sample bacteria or to deliver pro- or pre-biotics in a site specific fashion. With the availability of this tool, new kinds of studies can be performed that may yield both important pathophysiologic information regarding Neurotrauma & Traumatic Brain Injury (TBI), but also lead to novel treatments.

In addition, this technology has far reaching implications such as farm animals. In cattle and pigs, the gut bacteria can be analyzed and modified to improve digestion and lessen greenhouse gasses. Methane-reducing feed ingredients and emissions-focused breeding programs have the potential to significantly improve production efficiency of livestock.

PT collaborates with the Department of Defense, United State Department of Agriculture, academia and industry through cutting-edge research and [partnerships](#) to advance the scientific understanding of conditions and disorders to study, diagnose and treat.

Palisades Therapeutics invites industry leaders in the field of therapeutics and devices such as Pfizer Inc. (NYSE: PFE); Janssen, a Johnson & Johnson company (JNJ); and AbbVie Inc. (ABBV); to review our technologies and data.

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