LipidSense, Inc.
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LipidSense

Making the invisible, visible

Management Team

Prakrit Jena, PhD.
Co-founder and CEO

Dr. Jena is a research scientist with extensive experience in nanotechnology. Currently a research fellow at MSKCC, he earned his PhD. in Physics from the University of Illinois.

Daniel Heller, PhD.
Co-founder

Dr. Heller is a biomedical engineer who is developing nanomedicines for therapeutics and diagnostics in his research group at MSKCC. He received his PhD. in Chemistry from the University of Illinois.

Scientific Advisory Board

Ming Zheng, PhD.
Dr. Zheng is a research scientist at the National Institute of Standards and Technology and has invented multiple techniques for nanocarbon separation.

Daniel Ory, PhD.
Dr. Ory's research group at Washington University in St. Louis is focused on developing theraputics for lysosomal storage disorders.

Robert Schwartz, MD. PhD.
Dr. Schwartz is an practicing physician-scientist and engineer at Weill Cornell Medicine, focused on developing and building models of human liver disease.

Corporate and IP Representation

WSGR

LipidSense, Inc. is an early-stage biotech developing an optical sensor for monitoring lipid accumulation. Our most developed sensor functions in vivo, and enables longitudinal studies of drug efficacy and toxicity in the same animal, while reducing the cost, time and number of mice used in pre-clinical drug development.

Need for Accelerating Pre-Clinical Drug Discovery

Lysosomal lipid accumulation in liver macrophages is an informative biomarker which is altered in multiple pathologies including NASH, lysosomal storage disorders and drug-induced phospholipidosis. Unfortunately, drug discovery and development is hampered by the inability of current pre-clinical imaging techniques to measure this functional biomarker in live animals.

Lipid Sensor For Non-Invasive Pre-Clinical Imaging

At Memorial Sloan Kettering Cancer Center, we invented a lipid sensor that emits near-infrared light. When intravenously injected into a mouse, the sensor localizes to the lysosomes of liver macrophages with ~ 95% specificity. As the lipid content of the sensor environment changes, the emission wavelength shifts, and can be detected non-invasively through the intact mouse body.

Status of Technology

The sensor technology has been validated in vitro and in vivo, and is ready for scaling up. LipidSense intends to obtain an exclusive license from MSKCC to commercialize this technology (patent pending). A prototype instrument with full functionality has been developed, and will be refined for production.

Commercial Opportunity

Approximately 60 million mice are used in pre-clinical toxicity and efficacy studies, but only 1% of mice undergo pre-clinical imaging. The primary market are the 170 companies developing therapeutics for NASH and lysosomal storage disorders, and programs developing compounds with a high risk of causing liver toxicity. Globally, this represents approximately 3 million mice per year.

Business Model and Financial Projections

LipidSense will sell the sensor ($25/mouse) and the instrument ($50,000) to discovery and pre-clinical stage biotechs. The recurring revenue from the sensor has a high profit margin, and the manufacturing process is intrinsically scalable. We anticipate going to market and turning cash-flow positive by 2020, and project generating $20 million in revenue by the end of 2024.

Funding Requirement and Strategic Partnerships for LipidSense

To develop two portable instruments for demonstrating the technology, and for generating an inventory of the sensor, LipidSense is seeking an investment of $500,000 for operating and startup-costs.

LipidSense is pursuing partnerships with pharma and biotech programs that can integrate our technology into their drug development process. CRO's interested in potentially providing our technology as an exclusive service is also a pathway we are considering.