

Actipulse

Category:

Best Startup

Company Name:

Actipulse Neuroscience

Turnover and/or Funding:

Turnover:

\$6M in LTR from an already commercialized device for the treatment of treatment-resistant depression (6 years)

\$1.2M in 2023, and \$2.3M planned for 2024

Funding:

\$1.5M raised from Business angels and VC investors, including Y Combinator, Randi Zuckerberg, and James Park

In total, the company's financial influx includes a combination of \$6M in revenue and \$1.5M in funding, amounting to \$7.5M.

Sub-Category:

Medical Technology / Digital Health

Corporate history (creation, key milestones, main funding,...)Information on Condition / Disease and need for solution / product (prevalence, existing treatments / solutions):

Actipulse Neuroscience was founded in 2017, and focuses on developing non-invasive neuromodulation devices to treat a variety of CNS disorders. Currently, 38 employees work at Actipulse in three different sites: Paris, Mexico City and Boston.

Key milestones:

-One device already on market (for the treatment of treatment-resistant depression), having generated \$6M in LT revenue, and having recently crossed the \$300K/monthly revenue.

- Members of the Paris Brain Institute
- Participated in numerous prestigious accelerators: Y Combinator, Stanford StartX, Creative Destruction Labs, MassChallenge
- We have our own production line certified CGMP and ISO 13485
- Offices in Boston, Paris and Mexico City
- Currently in negotiation with a pharmaceutical company for a research project on BBB permeability for the delivery of their molecules currently in R&D

History of the development of the solution/product (Intellectual Property, preclinical and clinical datas, development collaborations):

In collaboration with the Paris Brain Institute and Grenoble-Alpes University, we have successfully demonstrated in vivo, that our technology can induce BBB permeability and allows extravasation of molecules up to 70kDa into the brain. This was evidenced by the successful crossing of dyes through the BBB post-treatment.

The two studies were performed with C57/BL6 mice and intravenous injection of different dyes.

In the first study, the extravasation of Evans blue was evaluated in two equal groups of mice receiving sham stimulation (control) or magnetic stimulation.

After euthanasia, brains were collected to evaluate the blue coloration, which was already observed with macroscopic examination. Quantification of Evans Blue on fixed brain sections demonstrated a significant increase in mice receiving magnetic stimulation compared to the sham control.

In the second study, we evaluated the BBB permeability with intravital microscopy after Rhodamine B dextran injection. The CX3CR1GFP+ mouse model was used to enable observation of glial activation, the vital mechanism of BBB disruption.

After stimulation (or sham), we performed a craniotomy and imaged mouse brains with a twophoton microscope. Image analysis evidenced lesions in the BBB integrity at several locations upon

magnetic
stimulation.

Additionally, it has also been demonstrated in a third study that our technology has an anti-migration effect on

Glioblastoma cells and will not enhance tumor growth and invasion when used in combination with chemotherapy.

These findings highlight the potential of HF-LIMP not only in treating Glioblastoma and other brain tumors but also

broader CNS applications benefiting from BBB permeability.

Why this drug or device is innovative, the broad implications for future research, and/or how it will improve the human condition:

The purpose of the Blood-Brain-Barrier is to protect the brain from toxins and pathogens in the bloodstream. The caveat, is that only a small fraction of drugs can cross the BBB effectively. It's estimated that less than 2% of small-molecule drugs and almost no large-molecule drugs (like biologics) can penetrate the BBB.

This presents major challenges for pharmaceutical companies in terms of increased R&D complexity, longer development times, higher failure rates, and substantial financial costs.

With a success rate of approximately 6.2% from Phase I to approval for CNS drugs (compared to 13% for non-CNS drugs), the financial risk is substantial.

A solution is needed to deliver drugs into the CNS, safely and not only in a costly hospital setting.

Our technology, utilizing High-frequency low-intensity magnetic pulses (HF-LIMP), is designed to enhance the permeability of BBB non-invasively, facilitating improved delivery of drugs to the brain.

Our approach could potentially allow for safe, daily at-home treatment, and not just in a clinical setting, in order to treat chronic neurological disorders that require daily medicine intake, such as Parkinson's, and hopefully one day, Alzheimer's

Please provide appropriate references (PubMed, Abstract, Website):

Attached

References File Document upload:

[Actipulse_BBB_Data Room_Galien.pdf](#)