

to-BBB

to-BBB is a Dutch biotechnology company in the field of enhanced drug delivery across the blood-brain barrier.

Vision

The treatment of currently unserved brain diseases will be best achieved by safely enhancing the blood-to-brain delivery of drugs.

Mission

The company is developing novel treatments for devastating brain disorders by combining existing drugs with its proprietary brain drug delivery platform.

“No other technology is able to enhance the brain delivery of drugs with the favorable pharmacokinetic and safety profile of the G-Technology®”

Contact

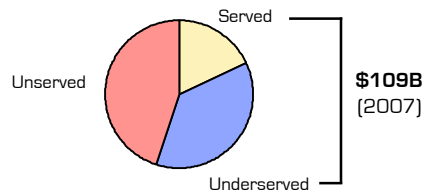
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The global CNS market

The human brain is the single most common origin of illness with 2 billion people worldwide suffering from brain-related disease causing an economic burden of \$2 trillion a year. For the majority of patients no treatment exists. Responding to this unmet medical need and scenting the vast revenue potential, the CNS disorders market became one of the largest and fastest growing markets in the pharmaceutical industry. In 2007, neuropharmaceutical companies alone generated \$109 billion in revenues, looking forward to 8% annual growth.



Source: Neuroinsights' Neurotechnology Industry 2008 Report

Opportunities in CNS drug development

In attempts to cure brain diseases many promising active compounds have shown potential therapeutic effect, however over 95% never reach the brain in therapeutically relevant concentrations. Pharmaceutical compounds are denied access to the brain by the neuroprotective blood-brain barrier (BBB). This sophisticated physiological system regulates the selective uptake of essential nutrients and metabolites and keeps out foreign and potentially harmful substances. While this is life-supporting protection for the brain, it caused resignation in past drug development, as many promising therapeutic compounds were doomed to failure due to dose-limiting toxicity. The future of getting drugs into the brain is to hijack the uptake-machinery of the blood-brain barrier by associating the drug with compounds that are naturally transported into the brain.

to-BBB platform technologies

to-BBB developed state-of-the-art proprietary technologies that create safe drug delivery opportunities to the brain. to-BBB's platform technologies utilize an endogenous receptor-targeted mechanism in combination with nanosized drug-loaded liposomes. This approach is unique in that it does not require drug modification and at the same time gives rise to metabolic protection during transport and increased bioavailability at the target site.

G-Technology®

The G-Technology is the company's core platform and enables superior transport of drugs across the blood-brain barrier and a better safety- and pharmacokinetic profile compared to competing technologies. The technology is based on the proprietary use of glutathione as a targeting moiety and its matching receptor on the blood-brain barrier.

A second patented platform technology of to-BBB is the HB-EGF Technology™ which has unique potential in site-specific drug targeting, bio-imaging, and as a non-toxic adjuvant.

Academic partners

VIB, KU Leuven, Belgium; NKI, the Netherlands; TNO/US Army, the Netherlands; Industrial Technology Research Institute (ITRI), Taiwan; Rega Institute, KU Leuven, Belgium; Leiden University, the Netherlands

Corporate partners

MedImmune (AstraZeneca); Shire; Genzyme; Lundbeck; two undisclosed Top 10 pharma companies; GSK R&D China

Investors

Aescap Venture
Antea Participaties
BioPartner Start-up Ventures
Libertatis Ergo Holding
VenGen Participaties

Board of Directors

Patrick Krol (Chairman)

Entrepreneur & Partner at Aescap Venture

Mats Pettersson

Senior Pharma & Biotech Executive

Jaap Blaak

Serial entrepreneur active in life-sciences

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2B3-101: to-BBB's lead compound

Based on previous validation results obtained with the G-Technology platform, to-BBB is developing several internal products. Currently, to-BBB's lead compound involves doxorubicin glutathione-PEG liposomes.

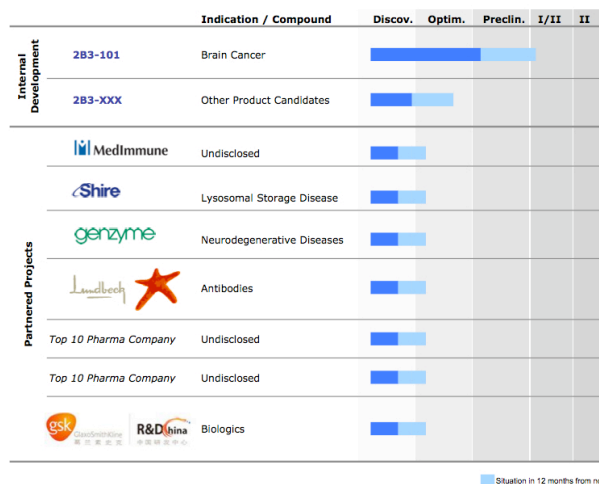
Doxorubicin is a conventional anthracycline that, either as free drug or encapsulated in (PEGylated) liposomes, is widely used as anticancer treatment. However, these doxorubicin formulations do not effectively cross the blood-brain barrier to exert an effect in the brain.

Initial proof-of-concept studies have shown a reduced brain tumor growth and a prolonged survival by doxorubicin glutathione-PEG liposomes. These data have led to the decision to start manufacturing of (pre-)clinical material with manufacturing partner TTY Biopharm and to move into formal preclinical development. to-BBB expects to initiate a phase I/II clinical trial in the second half of 2010.

- ✓ The blood-brain barrier blocks most modern medicines
- ✓ to-BBB provides the safest proprietary brain delivery platform
- ✓ to-BBB aims to become the leading brain drug delivery company by enabling successful development of novel treatments for patients with devastating brain diseases

Pipeline

Based on the available proof-of-concept animal data using the G-Technology with anti-cancer drugs and analgesic peptides, to-BBB is considering the development of other product candidates in the disease areas of Alzheimer's Disease, Multiple Sclerosis, Lysosomal Storage Diseases, Parkinson's Disease and ALS.



Partnering Opportunities

Since its inception to-BBB has closed partnering and evaluation agreements with several top tier biotech and small focused biotech companies. In these partnerships to-BBB offers access to its proprietary platform technologies to jointly determine pre-clinical proof-of-concept with the CNS drug and animal model of interest of (future) partners. In addition to current ongoing collaborations, to-BBB wants to enable multiple value adding industry partnerships for specific product-indication combinations using its unique brain drug delivery capabilities.

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