



Press release

**CERENIS Therapeutics acquires LYPRO Biosciences  
expanding its HDL strategy  
into immuno-oncology and chemotherapeutic drug delivery**

- **Combining LYPRO Biosciences' NanoDisk® technology with CERENIS' HDL solution to build the first HDL nanoparticle delivery platform to be initially dedicated to the oncology market**
- **Using its existing technologies with LYPRO's NanoDisk® discoidal HDL, CERENIS is positioned to utilize HDL related particles to selectively target a wide variety of tissues**
- **Phase I study, evaluating the safety of the platform technology in active drug delivery to cancer tissues, to be launched by the end of 2019**
- **New strategic markets and value-creation prospects: Immuno-oncology is one of the most promising cancer treatment technology in a market valued at \$100 billion by 2020**

Toulouse, FRANCE, Lakeland, UNITED STATES, November 8, 2017, 7.30 am cet — **CERENIS Therapeutics (FR0012616852 – CEREN – PEA PME eligible)** an international biopharmaceutical company dedicated to the discovery and development of HDL-based innovative therapies for treating cardiovascular and metabolic diseases, today announces the acquisition of LYPRO Biosciences assets, a portfolio of proprietary drug delivery nanotechnology. The operation positions CERENIS at the forefront of the chemotherapy drug delivery and immuno-oncology space. This represents a significant step towards the Company's strategic objective of developing the next generation of **multiple targeted drug delivery nanotechnologies associated with HDL therapy**.

Financial terms of the LYPRO Biosciences assets acquisition by CERENIS Therapeutics are not disclosed. LYPRO will receive single digit regulatory milestones as well as single digit royalties depending on products sales each year.

**Jean-Louis Dasseux, CEO of CERENIS Therapeutics**, commented: *"We are thrilled to add the LYPRO technology development program and nanotechnology platform to our portfolio of world-class HDL assets. Building on the strong foundation of our lead HDL product, CER-001, this acquisition opens another therapeutic area characterized by a significant unmet medical need, while allowing us to leverage our leading HDL therapy capabilities to drive the development of this potentially revolutionary technology. We look forward to initiating the Phase I trial of NanoDisk® and advancing other HDL-based assets, including CER-209 for NAFLD and NASH, in order to create value for patients, the medical*

community and other key stakeholders of CERENIS Therapeutics. Our enthusiasm about the fully enrolled TANGO trial continues, with results expected at the end of Q1, 2018.”

**Robert O. Ryan, Ph.D., Founder and Board Member of LYPRO**, added: “We are extremely proud of accomplishments achieved by the LYPRO team. The product candidates that LYPRO has developed and associated with CERENIS’ proprietary HDL technology, could have a tremendous impact on the field of oncology, and we believe that CERENIS Therapeutics is the optimal company to lead future advancements of this groundbreaking technology. CERENIS Therapeutics holds the appropriate scientific, manufacturing, patent exclusivity, and clinical expertise to continue development of nanotechnology based delivery systems for therapies from laboratory bench to bedside.”

**Robert O. Ryan** is a renowned expert in lipids, lipoproteins, lipid transport and metabolism. He is Professor and Chair of the Biochemistry and Molecular Biology Departments at the University of Nevada.

**Michelle Stecklein Call, CEO of LYPRO Biosciences**, added: “This agreement marks a transformational step for LYPRO Biosciences’ targeted HDL nanotechnology. CERENIS’ lead, drive and focus on HDL is a major competitive advantage to successfully take forward HDL-based targeted nanodelivery technologies to the market.”

**Combining LYPRO Biosciences’ NanoDisk® technology with CERENIS’ HDL technology to build the first HDL particle delivery platform dedicated to the oncology market, including immuno-oncology and novel chemotherapeutic delivery technologies.**

**CERENIS acquires LYPRO Biosciences assets, including patent rights and in-depth pre-clinical data showing efficacy of lipid structures in encapsulating and delivering active drugs to tissues**

LYPRO Biosciences is a privately-held therapeutic development company with a proprietary drug delivery nanotechnology that can increase the solubility and bioavailability of hydrophobic drugs and other therapeutic compounds as well as facilitates targeting to specific receptors. LYPRO's technology, entitled "NanoDisk®", is based on self-assembling, targetable, nanometer-scale bioparticles, incorporating active drugs into the stable and water-soluble NanoDisk®.

The combination of the NanoDisk® technology with CERENIS’ natural recombinant human apoA-I used in its HDL platform will result in the next generation of drug delivery platforms. This should allow for increased efficacy, while needing lower doses with reduced side effects compared to current drug delivery technology.

Targeting LYPRO NanoDisk® to a specific cell surface receptor allows the delivery of a cell killing agent directly targeted to the diseased cell. Similar approaches are now being used for cancer treatment in the form of antibody-drug conjugates (ADC). However, these agents have a complex chemistry, limited drug to antibody stoichiometry and form an obstacle to drug release. Targeted NanoDisk® may be considered as an ADC parallel technology unencumbered by ADC chemistries and patent estates.

**A disruptive technology with high potential in targeted oncology and immuno-oncology**

LYPRO’s most advanced technology, NanoDisk®, combined with the CERENIS HDL, CER-001, targets a specific human cell HDL receptor, SR-B1. The SR-B1 and other HDL receptors (ABCA1) are scavenger receptors essential to cell homeostasis, proliferation and growth that are up-regulated in cancer cells. Therefore, these receptors serve as a potential gateway for the delivery of therapeutic agents when reconstituted HDL nanoparticles are used to transport agents to cancer cells and tumors.

Research underlying HDL used for delivering drugs to cancer cells and tumors as well as the role of the SR-B1 receptor as a potential gateway for the delivery of therapeutic agents was originally conducted by Professor Daniel Sparks, Ottawa Heart Institute Research Corporation, Ottawa, Canada, and has been published in a number of peer-reviewed publications (e.g. Zheng et al., *Frontiers in Pharmacology* 7:326, September 2016).

The Targeted NanoDisk<sup>®</sup> technology developed by LYPRO Biosciences and allied with the CER-001, an engineered complex of recombinant human apoA-I, the major structural protein of HDL with phospholipids, holds the promise to target and selectively kill malignant cells while sparing healthy ones. A wide variety of drugs can be embedded in nanodisks which will target markers specific to cancer cells and bring these potent drugs to their intended site of action, with lowered systemic toxicity.

**Using its existing technologies with LYPRO's NanoDisk<sup>®</sup> discoidal HDL, CERENIS is positioned to utilize HDL related particles to selectively target a wide variety of tissues. HDL nanoparticles are ideal drug carriers to target cancer cells thanks to their attractive biological features, having important advantages over other delivery systems.**

#### **HDL particles are natural carrier agents and more efficient than existing solutions**

The ability to accommodate highly water insoluble constituents in their core regions enables HDL type nanoparticles to effectively transport hydrophobic drugs subsequent to systemic administration. While the utilization of reconstituted HDL as a carrier can be considered for the treatment of a number of diseases, the initial focus for CERENIS will be on HDL type drug delivery agents for cancer chemotherapy and immuno-oncology.

HDL nanotechnology presents several major advantages over drug delivery agents such as liposomes. First, lipoproteins, including synthetic lipoprotein formulations, tend to be much smaller (6-50 nm diameter) than liposomes. This feature may be a significant advantage as the smaller drug carrying nanoparticles could more effectively enter the tumor environment. Moreover, the HDL biological structure, as a naturally occurring particle, presents a superior safety profile as it is completely biodegradable.

HDL particles are adaptive with the ability to carry different types of molecules allowing for a different location and pace of release. From lipid-poor apoA-I to NanoDisk<sup>®</sup> (discoidal HDL), HDL related particles will be able to target a wide variety of tissues.

#### **A range of CERENIS' drug delivery HDL particles present numerous advantageous characteristics, including:**

- 1) Enhanced safety and efficacy yielding a solid, non-leaking preparation due to a structure stabilized by apolipoproteins, particularly apolipoprotein A-I (apoA-I).
- 2) Biocompatibility and safety of the carrier, shown by several pharmaceutical formulations, made up of essentially the same ingredients as natural HDL
- 3) Strong ability to target cancer cells via the expression of the SR-B1 receptors on the cells' surface.
- 4) The receptor-mediated uptake of the payload, carried in the core of the HDL particle makes this strategy uniquely applicable, especially for cancer chemotherapy and antigen carrying immune-oncologic applications.

5) This wide range of applications is made possible as apoA-I is flexible to adapt from lipid-poor apoA-I, to discoidal particles allowing different types and quantities of drug payloads.

6) Finally, CERENIS owns the right to an exclusive validated manufacturing process to produce apoA-I, apoA-I peptides and HDL on an industrial scale, and the Company benefits from a strong patent barrier to entry, preventing the emergence of similar competitive technologies.

**Phase I study, evaluating the technology's safety in delivering active drugs to cancer tissues, to be launched by the end of 2019.**

Acquiring the LYPRO Biosciences pre-clinical data supporting the proof of concept, CERENIS Therapeutics could launch, by the end of 2019, the first Phase I study to evaluate an HDL particle as a nano transporter of active drug for an oncologic indication. In the short term, CERENIS will set up a clear clinical strategy to select the most appropriate initial indication in oncology in order to demonstrate safety and efficacy of its new product candidate. The company also plans to advance its effort in the use of this technology to encapsulate tumor antigens to induce an immune response, possibly in combination with existing therapy (e.g. a checkpoint inhibitor) in the pursuit of immuno-oncology applications.

**New strategic markets and value-creation prospects: Immuno-oncology is one of the most promising cancer treatment technology in a market valued at \$100 billion by 2020.**

Recognized by experts as one of the most promising fields in cancer treatment, immuno-oncology is an innovative approach to the treatment of cancers by leveraging the body's own immune system.

The immunotherapy global market (antibodies, cancer vaccines, immune checkpoint inhibitors, immunomodulators) is valued at \$100 billion by 2020. The prophylactic cancer vaccine market (exclusive of therapeutic cancer vaccines) is expected to reach \$4 billion in valuation by 2019. Expectations and interest for therapeutic cancer vaccines have increased dramatically as a means to increase immuno-oncology drug response, duration and survival of poorly responding and non-responding cancer patients. There are few accurate estimates for the therapeutic cancer vaccine market as there are, to date, few successes and approvals. CERENIS' new HDL-based targeted nanotherapeutics address a new potential market with a very large upside growth potential in the oncology field. It gives CERENIS a new strategic value for its markets related to its apoA-I/HDL technology and the development of a targeted nanotechnology platform.

**About CERENIS:** [www.cerenis.com](http://www.cerenis.com)

CERENIS Therapeutics is an international biopharmaceutical company dedicated to the discovery and development of innovative lipid metabolism therapies for the treatment of cardiovascular and metabolic diseases. HDL is the primary mediator of the reverse lipid transport, or RLT, the only natural pathway by which excess lipids is removed from arteries and is transported to the liver for elimination from the body.

CERENIS is developing a portfolio of lipid metabolism therapies, including HDL mimetics for patients with genetic HDL deficiency, as well as drugs which increase HDL for patients with a low number of HDL particles to treat atherosclerosis and associated metabolic diseases including Non-Alcoholic Fatty Liver Disease (NAFLD) and Non-Alcoholic Steato-Hepatitis (NASH). CERENIS is well positioned to become one of the leaders in the HDL therapeutic market, with a broad portfolio of programs in development.

### About CER-001

CER-001 is an engineered complex of recombinant human apoA-I, the major structural protein of HDL, and phospholipids. It has been designed to mimic the structure and function of natural, nascent HDL, also known as pre-beta HDL. Its mechanism of action is to increase apoA-I and the number of HDL particles transiently, to stimulate the removal of excess cholesterol and other lipids from tissues including the arterial wall and to transport them to the liver for elimination through a process called Reverse Lipid Transport. SAMBA, the clinical Phase 2 study in patients with hypoalphalipoproteinemia due to genetic defects, has provided important data demonstrating the efficacy of CER-001 in regressing atherosclerosis in several distinct vascular beds, and leading to the TANGO study with results expected at the end of Q1, '18. The totality of the data to date indicates that CER-001 performs all of the functions of natural pre-beta HDL particles and has the potential to be the best-in-class HDL mimetic on the market.



### Contacts:

#### Cerenis

Jean-Louis Dasseux  
CEO  
info@cerenis.com  
+33 (0)5 62 24 09 49

#### NewCap

Investors relations  
Emmanuel Huynh / Louis-Victor Delouvrier  
cerenis@newcap.eu  
+33 (0)1 44 71 98 53

#### NewCap

Media relations  
Nicolas Merigeau  
cerenis@newcap.eu  
+33 (0)1 44 71 94 98