



Owkin and Institut Carnot CALYM Launch a Collaboration to Advance Lymphoma Research with Artificial Intelligence

September 28, 2020, New York, NY and Pierre-Bénite, France -- Owkin, a startup that deploys AI and Federated Learning technologies to augment medical research and enable scientific discoveries, announces a collaboration with Lymphoma research consortium Institut Carnot CALYM. This engagement was formed to leverage high-quality datasets from LYSARC, member of Institut Carnot CALYM, as well as Owkin's pioneering technologies and research platform, to advance clinical research and drug development for the benefit of patients.

Researchers at Institut Carnot CALYM, led by Dr Bertrand Nadel, General Manager, will team up with Owkin to develop and validate multiple predictive machine learning models based on digitized histology slides from LYSARC clinical trials. This collaboration will focus on diffuse large B-cell lymphoma, the most common type of non-Hodgkin Lymphoma in adults (30-40%). The disease is known to be very heterogeneous with 60% of patients who respond to a treatment regimen known as R-CHOP and 40% of patients that are either refractory from the outset or relapse early. In this context, a better characterization of patients is important to optimize treatment assignment. This collaboration aims at better classifying DLBCLs into different subtypes based on deep learning models trained on digital pathology images.

Built around data coming from clinical trials performed by the LYSA and LYSARC, and Owkin machine learning platform, this project will benefit from the complementarity of expertises of CALYM members in clinical and anatomopathology research and of Owkin in data science.

A second research project will focus on synthetic control arm, and, more precisely on the evaluation of debiased machine learning methods to estimate the average treatment effect.

“For Institut Carnot CALYM, data sharing logic is essential. In this type of consortium, it is necessary to function as an ecosystem and to complement each person's expertise. The issue of lymphoma characterization and treatment requires the analysis of data of multiple origin and nature. These data can be clinical, biological, medical imaging, anatomopathological, genetic data...” says Emmanuel Gomez, Research and Development Director at Institut Carnot CALYM. “The challenge is to decompartmentalize medical, technical and scientific specialties. To do this, we have to think in networks and adopt the logic of data sharing. That is why we, at Institut Carnot CALYM, are excited to start this new collaboration with OWKIN and join our forces to the Owkin Loop.”

The researchers from the 20 organizations constituting the CALYM consortium will have access to Owkin's machine learning platform, Owkin Studio, which was specifically designed for researchers. Institut Carnot CALYM members will benefit from studying the best AI algorithms — developed by Owkin's teams and trained on their own histology data—to collaborate directly with data scientists on the results .

This partnership makes it also possible for the data from Institut Carnot CALYM consortium, both clinical trials and health care data, to join the Owkin Loop, a federated network of US and European academic medical centers. The network collaborates with Owkin to generate new insights from high-quality, curated, research-grade, multimodal patient data captured in clinical trials or research cohorts. These loop-generated insights can then inform pharmaceutical drug development strategy—from biomarker discovery to clinical trial design, and product differentiation— supporting Owkin’s goal of a new movement in medicine which places federated learning at the core of future research.

Federated learning technologies enable researchers in different institutions and different geographies to collaborate and train multicentric AI models on heterogeneous datasets, resulting in better predictive performance and higher generalizability. Data does not move, only the algorithms travel, thus protecting an institution’s data governance and privacy, a critical need for Institut Carnot CALYM. Furthermore, Owkin’s data use is compliant with local ethical body consent processes and data compliance regulations such as HIPAA and GDPR.

“Our collaboration with CALYM is unprecedented, bringing on one side the well renowned medical expertise of the LYSA, the highest data quality standards of the LYSARC trials and the biological expertise of CALYM’s teams and on the other side the machine learning capabilities of Owkin. We are thrilled to kick-off that collaboration with two ambitious projects and are very proud to count CALYM as one of our Loop members.” says Meriem Sefta, Head of Partnership at Owkin.

About Owkin:

Owkin, a French-American startup, which was co-founded in 2016 by Dr. Thomas Clozel (a clinical research doctor and former assistant professor in clinical hematology) and Gilles Wainrib, Ph.D. (a pioneer in the field of artificial intelligence in biology) has raised \$70 million in venture capital.

Owkin connects several of the largest medical research centers and pharmaceutical companies in Europe and the U.S. within a federated research ecosystem. Owkin has developed four key components to build this ecosystem: Owkin Loop (the network), Owkin Connect (the technology infrastructure), Owkin Studio (the AI software tool), and Owkin Lab (the expertise).

Owkin Connect is a privacy-preserving, traceable, secure technology which allows the company to connect with research centers in the Owkin Loop network. Using Owkin Connect’s federated learning approach, the data do not move, only algorithms travel. This enables insights from the data to be collectively shared while guaranteeing privacy for patients and compliance with data ownership.

In October 2019, Owkin published its breakthrough analysis of tumor biology, using an interpretable deep-learning model called MesoNet [in Nature Medicine](#) . In February 2020, [Hepatology](#) published Owkin’s novel deep learning models to predict survival after hepatocellular carcinoma resection from histology slides. Most recently, in May 2020, following a winning entry to the data challenge organized last October by the [Société Française de Radiologie et d’imagerie médicale \(SFR\)](#), Owkin published its methodology to automatically measure muscular area from CT scans to assess sarcopenia in [Diagnostic and Interventional Imaging](#). In August 2020, Owkin published its novel genomic analysis tool (HE2RNA) in [Nature Communications](#).

For more information, please visit www.owkin.com, follow @OWKINscience on Twitter, contact Anna Huyghues-Despointes: anna.hd@owkin.com

About Institut Carnot CALYM:

With about 250 publications ranking A and 100 patents in its portfolio, the Institut Carnot CALYM is the only consortium worldwide in lymphoma to combine fundamental, translational, preclinical and clinical research teams and an operational clinical research organization, in order to accelerate innovation and its transfer in clinics through public/private partnerships, for the benefit of patients.

Lymphoma is currently the 1st blood cancer and 6th global most common cancer worldwide and remains a major public health issue. In front of this situation, the 20 CALYM entities, including the cooperative group, LYSA (Lymphoma Study Association), its clinical research operation structure, LYSARC (Lymphoma Academic Research Organisation) and 18 public research laboratories, offer a unique R&D approach, from basic research to the evolution of standards of care. The consortium proposes to its partners collaborative projects by linking clinical research and clinical development.

CALYM is labelled a “Carnot Institute” since 2011. Created in 2006, the Carnot label is attributed to the public/parapublic research institutes that have committed to promoting innovation with socio-economic actors, mainly companies (from SMEs to large groups). The label is awarded by the Ministry for Higher Education, Research and Innovation, upon proposal by the French National Research Agency.

CALYM is ISO 9001:2015 certified for the management and monitoring of its partnership research activities and for the coordination of the activities related to its CeVi lymphoma viable cell collection. www.calym.org

CALYM is a member of the FINDMED “Health-medicines” Carnot sector.

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