Owkin publishes breakthrough research in Nature Medicine

Novel deep-learning approach for predicting and explaining the key prognostic factors for patients with Mesothelioma

Paris, France and New York, USA, October 7th, 2019 – Owkin, which is developing machine learning technologies to advance medical research, today announces publication of a paper in Nature Medicine that showcases its breakthrough analysis of tumour biology using interpretable deep-learning models. The paper entitled **'Deep learning-based classification of mesothelioma improves prediction of patient outcomes'** describes how Owkin has developed a detailed and accurate prognostic model based on images of lung tissue biopsies to predict disease evolution and to identify associated biological features in mesothelioma. See link to paper: https://www.nature.com/articles/s41591-019-0583-3. DOI: 10.1038/s41591-019-0583-3

Thomas Clozel, Chief Executive Officer, Owkin commented: "Mesothelioma is an aggressive cancer that often attacks the lining of the lungs and is frequently associated with asbestos exposure. Sadly, it proves to be fatal for most patients. Patients with mesothelioma exhibit a very high variability in survival, from a few months to a few years, and this makes it challenging for doctors to plan treatment and to care for these patients. Our research helps to explain the biological causes of this variation and will ultimately lead to the development of more targeted drugs and better management of this terrible disease."

Owkin's deep learning model, called MesoNet, was used to analyse digital Whole Slide Images (WSI) of pleural surgical biopsies from nearly 3000 mesothelioma patients. To train and test MesoNet, Owkin used the extensive dataset from MESOBANK, which sources its data from multiple French institutions. Medical experts in pathology at the renowned French Cancer Institute, Centre Leon Berard (CLB) provided expert validation of the model results, confirming that MesoNet outperformed all existing survival models and demonstrated robustness to heterogeneity when it was successfully validated on differently stained images from The Cancer Genome Atlas (TGCA). Beyond its predictive performance and this novel way to characterize mesothelioma subgroups, the deep learning model developed by Owkin was also able to highlight precise regions of interest in the image that are associated with the prognosis prediction. This key interpretability feature, combined with an original iterative collaboration with expert pathologists using Owkin software platform, has led to the identification of novel biological features that supports a deeper explanation of heterogeneity in this disease.

Françoise Galateau, Professor of Pathology at Centre Leon Berard, commented: "It was a great experience for our lab to work closely with the Owkin scientists to identify new subgroups within our patient population. The collaboration exceeded our expectations. As well as improving our prognostic models, MesoNet was able to identify new biomarkers within the stromal regions of the tumour microenvironment that were predictive of survival. This ability really sets Owkin's AI models apart and has given us new direction in our research into mesothelioma."

Owkin is now working with its partners in the biopharmaceutical industry to use this insight for enriching patient selection in clinical trials and identifying which patients are most at risk and therefore best suited for new druggable approaches in a trial setting. Owkin's innovative model of collaboration between academia and the biopharmaceutical industry is generating new insights from real world evidence captured from patients in trials and clinical practice. It has set up Owkin LOOP, a federated network of US and European academic medical centres, which includes Centre Leon Berard.

Gilles Wainrib, Chief Scientific Officer, Owkin, added: "Owkin's Technology enables our algorithms to learn from the patient data within hospital firewalls, without removing the data from the hospital. This

scalable approach protects patient privacy and assures our hospital partners and their patients that the data is kept safe and secure. This capability, alongside the interpretable approach to AI discussed in this Nature Medicine paper (NMED-L95980B), is fast making Owkin LOOP the leading destination medical researchers and drug development professionals to gain predictive insight and leverage next-generation biomarkers. Ultimately, we hope that it will accelerate development of better therapies for patients with the greatest need."

For further information please contact:

Optimum Strategic Communications
Mary Clark, Supriya Mathur, Hollie Vile
Tel: +44 (0) 203 950 9144
Email: owkin@optimumcomms.com

About Owkin
Owkin is a technology company that is dedicated to improving the lives of patients with cancer and other severe or complex disease. The company brings together federated learning and AI to advance medical research in academia and the biopharma industry, which it hopes will accelerate the development of better drugs for patients with unmet needs. Owkin empowers researchers to turn real-world and clinical trial data into interpretable models that predict patient outcomes and reveal next-generation biomarkers. Owkin Loop is the company's federated network of medical experts and leading academic medical centres - a unique source of insight based on high quality research-grade data. This decentralised approach protects patient privacy by ensuring that their data never leaves the hospital, and it drives a new model of collaboration between researchers. Through close collaboration with its partners, Owkin's library of predictive models are being used to improve the understanding of disease, which can lead to better patient care in hospitals, and enhanced clinical trial design in drug development. For more information, visit www.owkin.com and follow @OWKINscience on Twitter.

About Centre Léon Bérard
The Centre Léon Bérard (CLB) is part of the twenty French Comprehensive Cancer Centres in France, providing a global management of cancer patients on a unique area, from diagnosis to treatment and beyond. The Centre is a regional, national and international recognized reference cancer Centre assigned with three essential missions: Care, Research and Education and is willing to continuously improve the quality and accessibility of care for cancer patients. Approx. 1,700 persons work in care, research, education and supportive care (200 physicians, 500 researchers, 600 caregivers). More than 37,000 patients are received each year, on consultations or exams and 11,000 new cancer cases are diagnosed. The CLB has technical and treatment facilities (operating room, radiation therapy centre, medical imaging departments, pathology and nuclear medicine departments).