Thomas Clozel – Co-Founder and CEO, OWKIN

The big question in AI is how to get data and who the data belongs to

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Thomas Clozel, co-founder and CEO of OWKIN, elaborates on how AI can be applied to the pharmaceutical industry to revolutionize today's drug discovery and development process. He also comments on the challenges facing the sector and how OWKIN is well positioned to overcome questions such as data privacy.

For many executives in the pharma industry, Artificial Intelligence (AI) is a buzzword and they struggle to understand the technology behind it and how much use it can have for their industry. Could you introduce AI and its role in healthcare?

Artificial intelligence is a growing field although today it is hard to say exactly where this technology will impact the pharma industry the most. There is a debate on whether AI will have the most application in drug discovery or development and OWKIN has decided to invest in the development use of this technology.

AI can be split into two functions, the acceleration of processes like drug discovery and the augmentation of human skills, such as improving clinical trial procedures. There is strong precedence already in drug discovery but the best way for AI to be used in development is growing and better relating to the use of real-world data. Augmentation is trying to better understand the diseases and predict which variations will be resistant to new therapies or how new treatments may react with the patient. Outcome research such as response to targeted therapies are difficult

to measure without this tool.

The third consideration of AI is where the data is sourced from. Any algorithm in AI needs to be trained on data and the challenge is that the first companies in the discovery side are built on public data. Therefore, drug discovery has not been fundamentally changed by AI as of today because the models were built on data which was imperfect, among other reasons. This is, however, changing with amazing new companies creating their own datasets. On the other hand, patient data for development is better fitted to AI as it enriches clinical trials and brings new knowledge to better design drug development. Furthermore, it is possible to create partnerships with hospitals and clinics to have more access to their real-world data.

What are the challenges being faced by healthcare AI today?

The big question in AI is how to get data and who the data belongs to. In France, there are many initiatives to encourage data sharing, but it is hard to determine who should hold the rights to the data. Especially when it comes to public health institutions, does this information belong to the patients, the hospitals, or the government? There is still a need for a more clearly defined legal framework in this context.

Another key problem in health data is anonymity. Benchmarks of anonymization are not perfectly set up, and we are in a genomic era where it is possible to cross-reference data with public genetic public databases like e making is possible to find specific patients or family members.

How do you plan to concretely ensure the transparency of OWKIN’s operations and that patient privacy rights are respected?

OWKIN has developed a technology platform called federated learning. This overcomes the data sharing problem, building collective intelligence from distributed data at scale while preserving data privacy and security. We build the algorithms for our program within the firewalls of hospitals, ensuring that the data never leaves the hospital. Once the algorithm is trained, we are able to extract the program and apply it to other uses. This unique approach has helped us to build trust with many hospitals in both the US and France, leading to the creation of many fruitful partnerships.

On the other hand, federated learning can also be applied to building relationships with the pharma industry. There is a data sharing project in Europe called the Innovative Medicines Initiative (IMI) which will utilize collaborative intelligence through federated learning in the molecular libraries of several big pharma players. This shows an immense trust from the industry in the safety and security of the technology.

OWKIN has already succeeded in forging partnerships with innovative pharma players and healthcare institutions. What is the scope of these collaborations?

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On the pharmaceutical side, OWKIN builds many pre-trained models for outcome research, prediction, prognosis, survival, and new treatment response. We try to extract biomarkers and knowledge from these processes and apply them to professional research and drug development for the industry. This helps to understand the differences in patient reactions and how one drug may be more effective than another. The information can also be applied to designing better clinical trials by predicting patient response, and improve statistical plans as well as analysis of the trials, reducing size or variance.

Through our collaborations with hospitals, OWKIN is able to bring models trained on real-world, self-curated datasets from key opinion leaders to the pharmaceutical industry on a multiscale level. Knowledge continues to be a problem in the industry, and no one fully understands how immunotherapy really works yet. By using AI, we can discover new biomarkers, helping us to better understand the science behind the field even better. OWKIN is horizontal, working on any type of data which makes us a very flexible partner in AI.

How do you assess France’s positioning as a potential European and global pioneer of AI and health digitalization?

I feel like there are many great initiatives being undertaken in France such as the Health Data Hub, which is putting AI in a priority position, showing the administration’s willingness to embrace the digitalization wave. Furthermore, we have an amazing pool of data scientists and mathematicians.

This creates a strong collaborative environment, even among startups, which is key in taking on the vast project that AI is. The BPI investment bank in France also helps to promote research and innovation in this area by offering support and funding to digital startups.

OWKIN has a presence in New York City, London, and Paris – an interesting choice considering many start-ups in the AI and life sciences fields tend to establish themselves in hubs like the Silicon Valley or Boston. What was the rationale behind your choice of locations for launching OWKIN?

New York City is growing rapidly in AI and there are many centres of excellence in the field. Additionally, the hospital infrastructure is very condensed, and it is possible to find several health centres within a small radius. There are many centres of excellence in New York, especially in oncology, making the clinical environment in the city very rich.

OWKIN started in oncology and then diversified into other therapeutic areas. Therefore, having a presence in Paris was a strategic decision to be close to the specialized hospitals such Institut Curie, but also amazing engineering schools that help in recruiting the best talents.

As an AI company in healthcare, London is a special place to be because we are always between the biotech and standard tech funds. For example, OWKIN just received an investment from F-Prime, a biotech fund, which is uncommon in the AI space. We are also being back by GV (formerly Google Ventures).

What strategic objectives are you aiming to achieve for OWKIN within the upcoming five years?

Our focus is now on scanning the industry for partners and building the biggest network of hospitals around the world. We want to have high-quality access to the best KOLs, research, and data sets that there are. OWKIN is prioritizing the biggest questions we want to solve such as finding new biomarkers and go further into the biological validation of this technology. We aim to have a long-term impact on the transitional research and drug development of pharma by bringing new knowledge and process models. AI will shuffle how we treat diseases, think about patients, and design clinical studies completely.

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