When Pharma Met Medtech: Better and Faster Drug Discovery

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Recent collaborations for the development and commercialization of companion diagnostics have been aimed at generating information from each patient's genome to identify patients who can respond to a certain treatment. Going forward, tools like next generation sequencing (NGS) will allow the identification of patients who are eligible to receive certain types of treatment, based on the results of genetic testing, which enables faster and more personalized treatment options.

Undoubtedly an exciting prospect towards the convergence of advanced therapies, personalized medicine and medical devices, it has recently been exemplified by a partnership concluded on May 30, 2019 between AstraZeneca and BenevolentAI. The partnership combines the latter's expertise in AI and machine learning with AstraZeneca's scientific dataset and research and development (R&D) capabilities in order to focus on therapeutic areas of high unmet medical need in respiratory and cardiovascular conditions. The joining of forces of these areas of expertise has the potential to accelerate dramatically drug development by enabling target identification with more accuracy and higher speed.

Of course such deals are not unknown to the pharmaceutical industry, which has recently seen a high number of similar deals, including: the deal between Boehringer Ingelheim and Bactevo (for the development of small molecule therapies for neurodegenerative disorders), Bristol-Myers Squibb with Sirenas (for the identification of therapies from small molecule metabolites derived from microbiome libraries), Vertex with Genomics plc (for the discovery of new targets based on genetic variation), bluebird bio with Gritstone (for the identification of mutations to target via T-cell receptors), Gilead with Insitro (for the optimisation of in vitro disease models and drug discovery), and Exscientia with Sanofi and GSK (AI-guided small molecule design), to name but a few.

Equally exciting is the news of the "Melloddy" consortium of pharma companies (which stands for Machine Learning Ledger Orchestration for Drug Discovery), which uses a blockchain system allowing pharma companies to share proprietary data with each other (including the results of pre-clinical studies), in order to train their drug discovery algorithms, with the help of machine learning. The system is developed by Owkin and enables searching competitors' data with traceability but without revealing commercial secrets to competitors. This is expected to create novel drug candidates "within 46 days" and has been hailed as a "supercharged AI drug discovery."

The use of technology tools such as AI and NGS bears unprecedented potential for bringing therapies to patients in need, in a wide range of areas including clinical trial design, patient selection and recruitment, drug development, precision medicine and the collection of real world evidence. Industry and regulators alike on both sides of the Atlantic are trying to maximize application of these tools within the Life Sciences sphere.

Being able to fully utilize the potential from the convergence of traditional pharma with new medical technologies requires a solid understanding of the applicable legal and regulatory frameworks and restrictions to both medicinal products and medical/in vitro diagnostic devices in order to derive maximum value and innovation.