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Deerfield And Illumina Join Forces To Fund New Discoveries, New Companies

Start-Ups, Additional Collaborations Could Emerge

by Mandy Jackson

Investor Deerfield Management and genomic sequencing giant Illumina entered into a five-year partnership to identify novel targets and drug candidates that may be spun out into new companies.

Health care investment firm Deerfield Management and DNA sequencing pioneer [Illumina, Inc.](#) revealed a five-year partnership on 5 May focused on the identification of new drug targets and discovery of novel therapeutics. Drug candidates that make biological and financial sense may be spun out into start-ups backed by Deerfield and potentially other investors, which may include Illumina.

The partnership will combine Illumina's genomic sequencing and data mining capabilities with Deerfield's expertise in translational science, drug discovery and development, new company formation and finance, and business development. For Deerfield, the collaboration could uncover new targets and identify drug candidates for its portfolio with more certainty about the potential for serving unmet needs, while Illumina sees the arrangement as an opportunity to showcase its capabilities for other potential biopharma partners.

Cameron Wheeler, a partner on Deerfield's therapeutics team, told *Scrip* that the investment firm had been looking for a partner like Illumina for a while, with the San Diego-based sequencing giant at the top of its list, but the opportunity became even more compelling after Illumina completed its \$8bn acquisition of cancer-detecting blood test maker Grail last year. (Also see "[Illumina Will Pay \\$8Bn To Buy Back Cancer Screening Start-Up Grail](#)" - Medtech Insight, 21 Sep, 2020.)

"Some of these new tools that I would say Illumina is a market leader in can elucidate novel

targets, and novel applications and understandings of biology, that are impactful for patients and disease,” Wheeler said. “We entered this collaboration so that Illumina, using its tools, and also we, Deerfield, using our tools of understanding investments, understanding markets, understanding unmet need, and also understanding early drug discovery and development, we could marry those two unique skillsets and develop novel therapeutics for patients in that space of unmet need.”

Current target and drug discovery tools have not been able to match large data sets with unmet needs with the speed and accuracy that novel technologies from companies like Illumina now can, he said.

Applying New Tools To Large Data Sets

Illumina chief technology officer and head of research and product development Alex Aravanis noted that the company has been working with biopharma partners for a while, providing data that underly drug development programs and companion diagnostics, but expanding into drug discovery is new for Illumina. He said its genomics data sets as well as new artificial intelligence algorithms can help it answer useful questions about the data.

“You can generate a lot of biological data and then the question also becomes, which of this data is really telling us about a target that is good to develop a drug around and would likely succeed in a clinical trial?” Aravanis noted.

Building on the momentum of precision medicines based on genomic discoveries, he said, “we want to catalyze that more now and get to the point where it’s the kind of genomics-first approach to drug development where you start with rich genomic data to pick your targets, you use sophisticated algorithms based on machine learning to decide which of those targets are most likely going to have a big effect or likely succeed in a clinical trial, and then also use genomics in clinical trials and ultimately on-market products to find patients the right therapies. And so with Deerfield, we saw an opportunity to accelerate and catalyze what’s going on in drug discovery.”

Wheeler noted that the collaboration’s efforts could yield drug targets and therapeutic candidates across disease areas, given the broad focus on unmet medical needs, but initially the partners’ efforts will focus on central nervous system, metabolic and musculoskeletal disorders.

From Target To Drug: The Best Path Forward

Once Illumina identifies the drug targets, Deerfield will determine the best way path forward – a small molecule, protein, nucleic acid-based therapeutic or some other modality – and whether to start a new company or seek a partner to advance the program further. However, there are a lot of different variables to assess to determine which targets and drug candidates are great opportunities for further drug development partnerships or start-ups.

“First and foremost, we have to believe the biology and the science behind the target,” Wheeler said. “And then there are aspects of technical feasibility or technical risk, there are aspects of clinical risk and clinical unmet need. And then the last point is kind of the commercial value of these opportunities. And so, if you assume that a program has – or even a cluster of programs, a group of programs – has that profile, those are things that we get super excited about, and we would want to invest in, in a new company structure.”

Deerfield’s health care investing history began in public equities, but the firm has become a major player in biopharma venture capital investing, including at the company creation level. It announced a new \$840m venture capital fund in 2020. (Also see "[Finance Watch: Biopharma Fundraising Impact Expected, But Not Apparent Yet](#)" - Scrip, 17 Apr, 2020.) And the firm established a new incubator in New York in 2019. (Also see "[Finance Watch: Deerfield Invests \\$635m In New York Start-Ups, Pledges \\$2bn Globally By 2030](#)" - Scrip, 27 Sep, 2019.) Deerfield has invested in translational research as well, such as its agreement with the [Broad Institute](#). (Also see "[Tech Transfer Roundup: Deerfield, Broad Institute Alliance Selects Two Cancer Programs](#)" - Scrip, 9 Feb, 2018.)

Partnerships or new company creation around a target or drug candidate will be one measure of the Deerfield-Illumina collaboration’s success. For Illumina, another will be its ability to partner with additional companies for drug discovery collaborations.

“Even more important to us though is demonstrating what’s possible and a model that can be adopted more broadly by drug development industry where they’re using our technology and these types of approaches to develop their drugs,” Aravanis said.

The company’s current biopharma partners include [Janssen Pharmaceutical Cos.](#) for cancer drug clinical trial and companion diagnostic services, [Boehringer Ingelheim GmbH](#) for companion diagnostics to support the company’s oncology drug development programs, and with Nashville Bioscience. The latter is a spin-out from [Vanderbilt University](#) that Illumina is working with to develop a diverse patient database that could be mined by biopharma companies for genomic data that could assist drug development programs.