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Deal Watch: Merck Looks To Technology Platform Partners For Cytokine Agonist Discovery, Drug Delivery

by Joseph Haas

Plus deals involving Moderna/Metagenomi, Agomab/Origo, Selecta/Ginkgo, Teva/MODAG, Boehringer Ingelheim/Thoeris and X-Chem/ComInnex/Glamorous AI.

Scrip regularly covers business development and deal-making in the biopharmaceutical industry. Deal Watch is supported by deal intelligence from Biomedtracker.

Merck Inks Platform Licensing Agreements With Synthekine, Xeris

Merck & Co., Inc. said on 1 November that it is partnering with *Synthekine Inc.* to leverage the latter firm's proprietary surrogate cytokine agonist platform in the discovery, development and commercialization of novel cytokine therapeutics. Under the agreement, Synthekine will perform initial research efforts, with Merck getting exclusive rights to develop, manufacture and commercialize surrogate cytokine agonists for up to two cytokine targets. The initial target of focus offers therapeutic potential in autoimmune disease, the companies said.

Merck will make an undisclosed upfront payment along with an additional one-time payment if it designates a second target under the tie-up. Synthekine could realize up to $525m in development, regulatory and commercial milestone fees, as well as tiered royalties on net sales, for each target. Merck also will provide research funding to Synthekine to cover collaboration costs.

Xeris Biopharma Holdings, Inc. granted access to its suspension-based formulation technology, XeriJect, to Merck on 25 October for use with undisclosed monoclonal antibodies in the engineering of ultra-high concentration, ready-to-use formulations. Terms of the agreement were not disclosed. Xeris said XeriJect allows for subcutaneous and intramuscular delivery using syringes, single-use auto-injectors, multidose pens and/or infusion pumps.

Moderna Teams On Gene-Editing With Metagenomi

Moderna, Inc. inked a research and development collaboration on 2 November with *Metagenomi* focused on advancing new gene editing systems for *in vivo* human therapeutic applications. The two firms will advance a series of *in vivo* gene editing therapeutics against undisclosed targets.

While no specific financial details were revealed, Metagenomi will get an upfront cash payment and could earn option exercise fees as well as development, regulatory and commercial milestone payments, plus tiered royalties on net sales of any products commercialized by Moderna. Moderna also agreed to make an equity investment in the Emeryville, CA-based firm.

Metagenomi said it will utilize its toolbox of CRISPR-based and other gene-editing systems, in combination with Moderna's mRNA platform and lipid nanoparticle delivery technologies, to deliver next-generation therapies for genetic diseases.

AgomAb Follows Recent Series B Raise With Buyout Of Origo

AgomAb Therapeutics NV will acquire private Spanish biotech *Origo Biopharma S.L.* to strengthen its capabilities in disease-modifying growth factor pathways, the firms announced on 28 October. AgomAb and Origo have entered into a definitive agreement but no financial details have been disclosed. The acquisition follows shortly on the heels of AgomAb's $75m series B financing led by two US venture capital firms in March. (Also see "*AgomAb Therapeutics Identifies Regenerative Pathway Modulators, Attracts Investors*" - Scrip, 10 Mar, 2021.)

The deal will bring together AgomAb's hepatocyte growth factor (HGF)-targeting monoclonal antibody-based pipeline with Origo's organ-restricted small-molecule candidates in a pipeline that will address fibrosis and organ failure across several indications, the companies said.

Origo drugs target the pathway of transforming growth factor beta (TGF-β), a cytokine released by fibroblasts that is activated and up-regulated during fibrotic disease. The company has two TGFβ type I receptor kinase (ALK-5) inhibitors in development. Lead candidate ORG-129 is in a Phase I trial for Crohn's disease while ORG-447 is in investigational new drug (IND)-enabling studies for idiopathic pulmonary fibrosis.

AgomAb said those assets make a fitting addition to the Belgian firm's full MET antagonist AGMB-101, which has completed IND-enabling studies for an undisclosed indication.

Selecta, Ginkgo Seek Transformative Therapies In Orphan Indications

Selecta Biosciences, Inc. and *Ginkgo Bioworks* unveiled a collaboration on 26 October in orphan and rare diseases with a goal of designing novel and improved enzymes with transformative therapeutic potential. Ginkgo can earn upfront research and development fees and milestones,

some of which could be paid out in the form of Selecta common stock, along with clinical and commercial milestone payments of up to $85m in cash and potential sales royalties.

Selecta said it will partner its ImmTOR technology with Ginkgo's high-throughput enzyme discovery, design and screening capabilities to improve the sustained efficacy of novel biologic therapeutics.

Teva Teams Up With MODAG In Neurodegenerative Disease

Teva Pharmaceutical Industries Ltd. and *MODAG GmbH* announced a collaboration on 26 October bringing the Israeli firm exclusive worldwide licensing and development rights to MODAG's lead compound anle138b and a related compound, sery433. Anle138b is a small molecule oral compound that targets pathological alpha-synuclein oligomers and is being evaluated in patients with neurodegenerative diseases for potential disease modification, MODAG said.

Teva will get an exclusive global license to develop, manufacture and commercialize anle138b and sery433. The companies will jointly develop the compounds for the multiple system atrophy (MSA) and Parkinson's disease (PD) indications based on early-stage clinical studies and may also explore additional indications based on clinical outcomes.

BI Takes Up Urea Cycle Disorder R&D With Thoeris

As part of its Research Beyond Borders initiative, *Boehringer Ingelheim GmbH* inked a collaboration and license agreement on 26 October with *Thoeris GmbH* aiming to investigate novel first-in-class therapies for patients with urea cycle disorders (UCDs). No financial terms were revealed.

In UCDs, one of several proteins involved in the degradation of ammonia is missing or defective. Thoeris claims its novel UCD therapy approach could enable disease symptom control by boosting a pathway to detoxify the excess ammonia levels in the body. BI will contribute its expertise in drug discovery and development to advance potential medications into the clinic.

X-Chem Makes Two Acquisitions To Enhance Its Technological Capabilities

X-Chem, Inc. announced a pair of small company acquisitions in late October that it says will increase its drug discovery capabilities. On 25 October, it acquired *ComInnex, Inc.*, a privately held customer-centric chemistry research organization, at undisclosed terms. Founded in 2006 in Hungary, Comlnnex provides synthetic chemistry services and novel chemical technologies to support early-stage drug discovery.

According to X-Chem, ComInnex's platform and toolkit can enable rapid design and validation of novel E3 ligase ligands and linkers for targeted protein degradation to accelerate research projects in this area. The firm also brings technology expertise in flow chemistry,

photochemistry and software development that will expand X-Chem's capabilities supporting the creation and delivery of services for drug developers on a global scale.

X-Chem then announced the acquisition of privately held Glamorous AI on 28 October; no financial terms were announced. Glamorous AI focuses on artificial intelligence solutions for drug discovery.

In Brief:

- UK-based *ValiRx Plc* reported on 2 November that it has agreed to sub-license its cancer compound VAL201 to new company TheoremRx Inc. A subcutaneous peptide therapy, VAL201 is in Phase I/II for prostate cancer and Phase I for breast cancer. A clinical program in endometriosis was suspended. ValiRx noted that it will retain rights to develop the candidate for non-oncology indications. No upfront payment was disclosed but the London-based company said it could realize up to $61m under the deal, including $2.2m in fees and near-term milestones by the end of 2023.

- Privately held *Aceragen, Inc.* said on 1 November that it was acquiring fellow privately held biotech *Arrevus Inc.* , creating a new company focused on rare and orphan diseases. No financial terms were disclosed. Arrevus, which is focused on orphan infectious diseases, brings a bacterial protein synthesis inhibitor (ARV-1801/ACG-721) that is in Phase II for cystic fibrosis along with several preclinical candidates. Aceragen said it plans to launch studies of its own ACG-801, recombinant human acid ceramidase, believing it has a mechanism of action complementary to ARV-1801.

- Australia's *Imugene Limited* and *Eureka Therapeutics, Inc.* unveiled a collaboration on 1 November to evaluate Imugene's CD19 oncolytic virus onCARlytics technology in combination with Eureka's anti-CD19 Artemis T-cell therapy for the treatment of solid tumors. Imugene licensed exclusive global rights to *City of Hope* 's onCARlytics oncolytic virus technology in 2019. (Also see "*Tech Transfer Roundup: Anixa Thinks Cleveland Clinic IP Offers Potential In Triple-Negative Breast Cancer*" - Scrip, 30 Jul, 2019.) The two companies believe that combining the oncolytic virus and the Artemis T-cell therapy can effectively tag solid tumor cells for destruction.

- *Inovio Pharmaceuticals, Inc.* revealed on 29 October that *AstraZeneca PLC* has ended a collaboration for cancer immunotherapy MEDI0457, the last asset standing under the two companies' 2015 partnership to develop therapies for cancers caused by human papillomavirus types 16 and 18. (Also see "*AZ's MedImmune Links With Inovio Cancer Vaccine*" - Scrip, 10 Aug, 2015.) The candidate is in several ongoing Phase II studies, including one for head-and-neck cancer. Inovio got $27.5m up front under the deal unveiled in August 2015; the partnership had been scaled back previous to the latest announcement.

- *MaxCyte, Inc.* signed a strategic platform license on 28 October with cell therapy specialist *Nkarta, Inc.*, conferring non-exclusive clinical and commercial rights to use MaxCyte's Flow Electroporation technology and ExPERT platform. In return, MaxCyte will get platform licensing fees and program-related milestone payments. ExPERT is a next-generation electroporation technology for complex and scalable cell engineering.

- In tandem with *Amgen, Inc.*'s recently closed acquisition of *Teneobio, Inc.*, the latter firm said on 27 October that three spinouts not included in the buyout – *TeneoTwo, Inc.*, *TeneoFour, Inc.* and *TeneoTen, Inc.* – will continue on as part of the newly formed Ancora Biotech. The new company's pipeline will include an anti-CD39/CD3 candidate TNB-486 in Phase I for B-cell malignancies, an anti-CD38 enzyme inhibitor TNB-738 that is slated to enter the clinic in early 2022, and a preclinical, CD3-targeted hepatitis B candidate. Amgen agreed to pay $2.5bn to acquire Teneobio on 27 July. (Also see "*Amgen Builds Out Antibody Interests With $2.5bn Teneobio Buy*" - Scrip, 27 Jul, 2021.)

- *Genentech, Inc.* exercised an option on 26 October under a 2020 alliance with *Bicycle Therapeutics, plc* to develop novel immuno-oncology therapies against targets selected by the *Roche Holding AG* subsidiary. (Also see "*Deal Watch: Genentech Sees Bicycle As Route To Novel Targeted Cancer Immunotherapies*" - Scrip, 25 Feb, 2020.) UK-based Bicycle said the option triggered a $10m milestone payment.

- *Viome Life Sciences, Inc.* revealed on 20 October that it expanded a November 2019 partnership with *GlaxoSmithKline plc* focused on improving the understanding of chronic diseases and the potential use of vaccines in those indications. (Also see "*Deal Watch: Molecular Templates Aligns With Vertex On Optimizing Stem Cell Candidates*" - Scrip, 22 Nov, 2019.) The two-year partnership now will include clinical research activities and potential development of new therapeutic interventions within the fields of chronic diseases including autoimmune diseases and cancers. The partners will investigate health interventions using targets based on Viome's mRNA technology and state-of-the-art artificial intelligence platform to analyze the interaction of host and microbe at the onset and progression of diseases.

Stay tuned for the next edition of Deal Watch. You can read more about other deals that have been covered in depth by Scrip and Generics Bulletin in recent days below:

(Also see "*A Win-Win As Novartis Sells Roche Stake*" - Scrip, 4 Nov, 2021.)	Over two decades since it first invested in its rival from across Basel, Novartis is selling back more than 50 million shares to Roche and banking billions of dollars that will likely be used for bolt-on acquisitions.

(Also see "*Value Of BioPharma M&A Leaps in Q3*" - Scrip, 3 Nov, 2021.)	Merck & Co.'s proposed acquisition of Acceleron and a couple of big purchases from Sanofi drove up the value of the sector's M&A activities, according to the latest report from *Biomedtracker*.
(Also see "*Dunad Bags Big Pharma Partner In Protein Degradation Deal With Novartis*" - Scrip, 2 Nov, 2021.)	Dunad is out-licensing its targeted protein degradation and covalent drug platform to Novartis in a deal that could be worth up to $1.3bn.
(Also see "*Merck Extends Timeline On Acceleron Deal, Still Expects Q4 Close*" - Scrip, 1 Nov, 2021.)	Merck said it is giving the FTC more time to review the acquisition, but the shift also gives the company leeway to convince any reluctant Acceleron shareholders to trade their shares for cash.
(Also see "*AstraZeneca Rejigs Respiratory Franchise With Fresh Covis Deal*" - Scrip, 1 Nov, 2021.)	Having got hold of two COPD drugs from Spain's Almirall in 2014, AstraZeneca has passed Eklira and Duaklir onto old partner Covis Pharma as it focuses on more targeted respiratory therapies.
(Also see "*The MPP And Merck Partner For Molnupiravir In Lower-Income Countries*" - Generics Bulletin, 28 Oct, 2021.)	The Medicines Patent Pool has signed its first agreement to provide access for a COVID-19 medical technology with Merck & Co., to increase access to generic molnupiravir in 150 lower income countries.
(Also see "*Takeda Buys Out Partner GammaDelta In Cell Therapy Push*" - Scrip, 27 Oct, 2021.)	Japanese major buys out existing cancer cell therapy research partner, exercising an exclusive option dating back to a 2017 collaboration and expanding its immuno-oncology ambitions and pipeline.
(Also see "*$10bn Sandoz Business May Be Sold Or Spun As Novartis Weighs Options*" - Generics Bulletin, 26 Oct, 2021.)	Novartis finally has confirmed plans to begin a strategic review for its Sandoz generics and biosimilars business, following years of conjecture and suggestions from the market. However, the originator stressed that it will take its time with a decision, while underlining that keeping Sandoz is among its choices.
(Also see "*Aspen Offloads Six In South Africa With Debt Still A Priority*" - Generics Bulletin, 26 Oct, 2021.)	South Africa's Aspen Pharmacare is continuing along the path of offloading assets that no longer fit into its strategy, using the

	proceeds to pay off its substantial debt pile and reinvest in areas of greater strategic focus. Half-a-dozen products currently offered in its local market are now on their way to Switzerland's Acino.
(Also see "*Vertex Gains In Vivo CRISPR Foothold With Mammoth Pact*" - Scrip, 26 Oct, 2021.)	The nearly $700m deal gives Vertex, already with a major foothold in CRISPR, access to Mammoth's ultra-compact gene-editing technology in two diseases.