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In Vivo's Deals Of The Year: Cast Your Vote!

by Jo Shorthouse

It is time for *In Vivo's* 15th annual Deals of the Year contest. We've selected 15 nominees across three categories – Top Alliance, Top Financing and Top M&A – and you get to pick the winners.

In Vivo's editors, along with experts from the Informa Pharma Intelligence team, have selected our top five picks for the most significant M&A, alliance and financing deals of 2022. Vote now in the polls below.

Top M&A Deals Of 2022

1. Amgen Snaps Up Horizon

After much speculation, [*Amgen, Inc.*](#) acquired the Dublin-based biotech [*Horizon Therapeutics plc*](#) in a \$27.8bn cash deal. It is thought Amgen was in a three-horse race alongside [*Sanofi*](#) and [*Johnson & Johnson*](#) for the rare disease specialist. The deal value represented a premium of around 48% on the closing price of \$78.76 per share on 29 November 2022, the final value before Horizon unveiled the takeover plans and a near 20% increase on the stock's price on 9 December 2022. For Amgen, the deal should enhance efficiency for the combined group, leading to an estimated annual pre-tax cost reduction of at least \$500m by the end of the third year following completion. The US major said it would capitalize on its legacy in inflammation and nephrology to unlock the growth potential of Horizon's rare disease portfolio, which includes first-in-class drugs Uplizna (inebilizumab) and Tepezza (teprotumumab) for neuromyelitis optica spectrum disorder and thyroid eye disease (TED), respectively. (Also see "[Amgen To Enhance Rare Disease Franchise With \\$27.8bn Horizon Takeover](#)" - Scrip, 12 Dec, 2022.)

2. Pfizer Acquires Biohaven

[*Pfizer Inc.*](#) bought the migraine specialist [*Biohaven Pharmaceutical Holding Company Ltd.*](#) in a transaction valued at \$11.6bn, and in doing so gained the oral migraine drug Nurtec ODT (rimegepant) and a nasal spray, zavegepant, pending at the US Food and Drug Administration, as well as five preclinical calcitonin gene-related peptide (CGRP) inhibitor assets. In 2021, Pfizer had signaled its interest in the migraine space, signing a partnership with Biohaven to commercialize rimegepant and zavegepant outside the US. In that deal, Pfizer invested \$350m to acquire 2.6% of Biohaven's common stock at \$173 per share. With the buyout of Biohaven, Pfizer acquired the outstanding shares it does not already own at a discounted price, \$148.50 per share in cash, which Pfizer said reflects a premium of about 33% over Biohaven's volume weighted average selling price of \$111.70 over the last three months. (Also see "[*Pfizer To Put Big Marketing Muscle Behind Migraine With Biohaven Purchase*](#)" - Scrip, 10 May, 2022.)

3. Pfizer Buys Global Blood Therapeutics

Pfizer continued to spend its from its COVID-19 coffers in 2022 with the acquisition of sickle cell disease specialist [*Global Blood Therapeutics, Inc.*](#) for \$5.4bn, \$68.50 per share. Pfizer said at the time that the acquisition of GBT will expand its heritage in the area of rare hematology, though it marks its first foray into the sickle cell disease (SCD) commercial market. The deal brings Pfizer the marketed drug, Oxbryta (voxelotor), for SCD, as well as two clinical-stage drugs for the painful and debilitating blood disorder. Pfizer said it believes Oxbryta and the two pipeline drugs GBT601 and inclacumab together could generate peak sales of \$3bn. Oxbryta was approved by the US Food and Drug Administration in November 2019 and hailed at the time as the first drug to address the underlying cause of SCD by inhibiting sickle hemoglobin polymerization. Oxbryta has grown substantially in 2022, with the product generating \$126.7m in the first half of the year, 46.3% growth over the first six months of 2021. The FDA expanded the use of Oxbryta to children four years of age and older in December 2021, which has contributed to growth. (Also see "[*Pfizer's Buying Spree Continues With GBT, Gaining A Sickle Cell Disease Franchise*](#)" - Scrip, 8 Aug, 2022.)

4. GSK Picks Up Affinivax

[*GlaxoSmithKline Pharmaceuticals Ltd.*](#) purchased the US vaccine company [*Affinivax, Inc.*](#) for an upfront payment of \$2.1bn and \$1.2bn in potential development milestones, to get its hands on a promising new vaccine technology and a next-generation pneumococcal vaccine candidate. Buying the Cambridge, MA-based vaccines company means GSK could eventually mount a challenge to Pfizer's blockbuster Prevnar franchise using Affinivax's lead candidate AFX3772. Affinivax only reacquired the rights to AFX3772 in February 2022 when Astellas exited a licensing and development deal first struck in 2017, citing a "strategic reprioritization" of its pipeline. GSK, however, has decided to go one stage further than simply licensing this lead candidate, by taking Affinivax's vaccine platform and full pipeline in-house. If AFX3772

eventually reaches the market, it would sit alongside GSK's existing vaccines franchise, which includes the blockbuster shingles vaccine Shingrix, and bolster its position as one of the world's leading vaccine companies. (Also see "[GSK Spies Pfizer Challenge With \\$2.1bn Vaccine Company Acquisition](#)" - Scrip, 31 May, 2022.)

5. Bristol Myers Squibb Buys Turning Point Therapeutics

In June 2022, [Bristol Myers Squibb Company](#) purchased the San Diego biotech [Turning Point Therapeutics Inc.](#) for \$76 a share, equating to approximately a 122% premium over its end-of-day share price (\$34.16). The \$4.1bn acquisition adds another precision medicine to Bristol's oncology portfolio. In top-line data from the TRIDENT-1 study, Turning Point's repotrectinib yielded promising overall response and durable response rates in patients with ROS1-positive non-small cell lung cancer. With ROS1 mutations thought to account for between 1%-2% of NSCLC cases, BMS is entering a competition that generates \$500m-\$600m in annual revenue, with peak sales of \$250m-\$300m modelled for repotrectinib. Pfizer's Xalkori (crizotinib) holds the dominant market position in that treatment setting, bringing in \$493m in 2021 sales, while Roche's Rozlytrek (entrectinib) in its second full year on the market, totaled \$49m. (Also see "[BMS Hopes Turning Point Buyout Will Fare Better Than Roche's Ignyta Acquisition](#)" - Scrip, 3 Jun, 2022.)

[Top M&A Deals Of 2022](#)

Top Alliances Of 2022

1. Sanofi And IGM Biosciences

Sanofi laid its chips on the table for a promising new platform to develop 'super antibodies' which could bring new possibilities in oncology, immunology and inflammation, via a partnership with [IGM Biosciences, Inc.](#) potentially worth more than \$6bn in milestones. The partnership kicks off with a \$150m upfront payment, with the French pharma company also expressing an interest in buying up to \$100m of IGM Biosciences's non-voting common stock in a public financing, which the biotech issued following the deal announcement. The IGM collaboration will focus on the creation and development, manufacture, and commercialization of IgM antibody agonists against three oncology targets and three auto-immunity inflammation targets, which will be created in addition to the biotech's existing pipeline. The Mountain View, CA-based biotech is a leader in developing IgM antibodies, which have the potential to outperform the IgG antibodies, the classic Y-shaped antibody which is the basis of nearly all the antibody therapies currently on the market. The deal is split between oncology and auto-

immunity inflammation, with the terms differing slightly between them, with IGM receiving a bigger pay out for success in the latter category. (Also see "[Sanofi Bets Big On IgM 'Super Antibodies' In Potential \\$6bn Cancer and Immunology Deal](#)" - Scrip, 29 Mar, 2022.)

2. LegoChem Biosciences And Amgen

In late December 2022, South Korean firm [LegoChem Biosciences, Inc.](#) licensed out its antibody drug conjugate (ADC) platform technology to Amgen, Inc. in a \$1.25bn deal, marking its fourth platform technology deal to date. Under the agreement, Amgen will have the global development and commercialization rights for multitarget ADCs using LegoChem's ADC platform technology, ConjuALL. In return, the Korean biotech will receive \$1.25bn including technology use fees as well as milestones for clinical development, approval and commercialization, plus separate royalties on sales, said LegoChem, which focuses on on the research and development of ADCs, antibiotics, anti-fibrotic and anticancer therapeutics. The Daejeon-based company said its clinical-stage platform technologies overcome the existing limitations of ADCs by imparting a trinity of improved properties, such as site-specific stable bioconjugation, cancer selective linker activation and cancer selective activation of potent payload, all of which in a significantly broader therapeutic window. It is also said to have differentiated strengths such as higher efficacy and lower adverse reactions as well as superior stability in the blood. As a result, this enables development of ADCs with therapeutic index and manufacturing yield. (Also see "[LegoChem's \\$1.2bn ADC Platform Deal With Amgen Signals Continued Big Pharma Interest](#)" - Scrip, 23 Dec, 2022.)

3. Merck And Orna Therapeutics

Cambridge, MA-based start-up [Orna Therapeutics, Inc.](#) clinched its first big pharma partner for its novel circular RNA (oRNA) technology platform in a deal with [Merck & Co., Inc.](#) in August 2022, while retaining its lead programs, in situ chimeric antigen receptor (CAR) therapies (isCARs). Merck agreed to pay Orna \$150m up front and invest an additional \$100m of equity in a Series B financing round announced the same day. The collaboration spans multiple programs, including vaccines and therapeutics, in the areas of infectious disease and oncology, with an emphasis on vaccines. All the programs are in preclinical development or even exploratory stages. Orna is developing oRNA therapeutics that it believes have substantial advantages over traditional linear RNA approaches, including mRNA. The technology originated out of the Massachusetts Institute of Technology (MIT). Orna could be eligible to receive \$3.5bn in development, regulatory and sales milestones associated with the progress of the multiple vaccine and therapeutic programs, as well as royalties on sales of any products that reach the market. (Also see "[Merck Buys Into Orna's Circular RNA Platform With Emphasis On Vaccines](#)" - Scrip, 16 Aug, 2022.)

4. Merck and Kelun's Cancer Collaborations

With three agreements in seven months, Merck & Co., Inc. and Chinese firm [*Sichuan Kelun Pharmaceutical Co Ltd.*](#) got to know each other well last year, with the largest of those deals coming in December 2022. Kelun granted Merck exclusive rights to develop, manufacture and sell seven preclinical antibody-drug conjugates (ADC) for cancer, with Kelun retaining its rights to certain candidates for mainland China, Hong Kong and Macau. Kelun received \$175m up front and, if all seven candidates hit the market, could realize up to \$9.3bn in development, regulatory and sales milestone fees. Merck agreed to make an undisclosed equity investment in Kelun and will pay tiered royalties on net sales. In July, Kelun sold Merck the rights to an undisclosed solid tumor ADC in exchange for \$35m up front and up to \$901m in milestones. That deal followed a decision by Merck in May to exercise an option for worldwide rights, except Greater China, to Kelun's TROP-2-targeting SKB264 (renamed MK-2870), which is in Phase III for metastatic triple-negative breast cancer and in Phase II for non-small cell lung cancer and advanced solid tumors. (Also see "[*Asia Deal Watch: Kelun Partners With Merck A Third Time, Optioning Rights To Seven ADCs*](#)" - Scrip, 22 Dec, 2022.)

5. Takeda And Nimbus

[*Takeda Pharmaceutical Co. Ltd.*](#) agreed to pay privately-held [*Nimbus Therapeutics, Inc.*](#) \$4bn upfront for a Phase IIb asset, with plans to take it into Phase III in psoriasis next year and potentially a host of other autoimmune indications down the road. The alliance is structured as an M&A transaction, with the Japanese mahor acquiring the Nimbus Lakshmi Inc. affiliate – but the deal essentially is a licensing of NDI-034858, now renamed TAK-279. Beyond the upfront payment, Nimbus can earn up to \$2bn in sales-based milestone fees under the agreement. Boston, MA-based Nimbus released top-line results from a 259-patient Phase IIb study in moderate-to-severe psoriasis in November 2022, reporting that NDI-034858 showed a statistically significant advantage compared to placebo on the primary endpoint of PASI-75. The company indicated that the data were superior to the pivotal data used for US Food and Drug Administration approval of BMS's Sotyktu (deucravacitinib) the previous September. BMS has said its goal is to unseat Amgen, Inc.'s PDE4 inhibitor Otezla (apremilast) as the standard-of-care in psoriasis after topical therapies and before biologic use. (Also see "[*Takeda Aims At BMS's Sotyktu In \\$4bn Deal For Nimbus's TYK2 Inhibitor*](#)" - Scrip, 13 Dec, 2022.)

[*Top Alliances Of 2022*](#)

Top Financings Of 2022

1. Altos Labs' Mega Startup

[*Altos Labs*](#) was launched in January 2022 with a record \$3bn in venture capital funding to support a stellar cast of biotech leaders and academic researchers in pursuing their vision of “transforming medicine through cellular rejuvenation programming.” Altos is based around hubs in San Francisco Bay Area, San Diego and in Cambridge, UK, and is working on groundbreaking work to understand how cells remain healthy and resist disease. Key to this is pioneering research by Nobel Prize winning scientist Shinya Yamanaka, who together with colleague Takahashi Kazutoshi, who discovered how to make induced pluripotent stem cells (IPSCs) more than a decade ago. The company’s co-founders are chief scientific officer Rick Klausner, former director of the National Cancer Institute, and president Hans Bishop, who were previously colleagues and leaders at Grail and Juno Therapeutics. Ex-GlaxoSmithKline research head Hal Barron is CEO. (Also see "[*Big Names Backers Give Altos \\$3bn To Pursue Cell Rejuvenation Science*](#)" - Scrip, 19 Jan, 2022.)

2. *Karuna Therapeutics’ FOPO*

Boston-based [*Karuna Therapeutics, Inc.*](#) had the biggest follow-on public offering of the year after reporting good data from its second Phase III trial for its schizophrenia drug KarXT (xanomleinetropsium). It launched a follow-on public offering (FOPO) in August, raising \$862.5m at closing from the sale of four million shares at \$215 each, to fund regulatory filings for KarXT, an M1/M4-preferring muscarinic receptor agonist, as well as commercialization of the product and development of other psychiatric and neurological programs in the company’s pipeline. (Also see "[*Finance Watch: Karuna, Cerevel And Others Benefit From Improving Biotech Sentiment*](#)" - Scrip, 12 Aug, 2022.)

3. *PTC Secures Blackstone Funding*

In an example of an alternative path to raising cash without doing an offering at unattractive terms while stock valuations are reduced in a tough market, South Plainfield, NJ-based [*PTC Therapeutics, Inc.*](#) announced in October 2022 that it has access to as much as a \$1bn from the private equity firm Blackstone. It received \$350m of an initial \$500m commitment under its agreement with Blackstone Life Science and Blackstone Credit. The deal included \$300m in senior secured debt, a \$50m purchase of PTC common stock, \$150m in delayed draw debt for up to 18 months and a \$500m potential credit facility. The funding supports ongoing PTC development programs in addition to business development activities at a time when the rare disease specialist is spending through its cash in support of multiple late-stage programs with near-term readouts. (Also see "[*Finance Watch: PTC Secures Up To \\$1bn In Funding From Blackstone*](#)" - Scrip, 4 Nov, 2022.)

4. *Eikon Therapeutics’ Series B Raise*

Having launched in 2021 with a \$148m series A round of financing, the Roger Perlmutter-headed [*Eikon Therapeutics, Inc.*](#) started 2022 with a mega-round of funding, \$517.8m in series B cash to accelerate the buildout of its platform, rapidly scale its growth and advance multiple undisclosed drug discovery programs. Its therapeutic platform is rooted in super-resolution fluorescence microscopy, developed by Eikon co-founder Eric Betzig, for which he won the 2014 Nobel Prize in Chemistry. Since launch, Perlmutter has recruited ex-Merck CEO Kenneth Frazier as a board member, and long-time R&D leader Roy Baynes to become chief medical officer. (Also see "[*Mysterious Perlmutter-Helmed Start-Up Eikon Raises \\$517.8m*](#)" - Scrip, 6 Jan, 2022.)

5. Argenx's FOPO

The Dutch biotech [*argenx N.V.*](#) raised an initial \$700m in a follow-on public offering in March 2022. It released positive Phase III results for the subcutaneously injected version of its newly approved product Vyvgart (efgartigimod) for generalized myasthenia gravis, an IV-administered drug. The company launched its global offering two days later, selling 1.55 million American depository shares (ADSs) in the US and certain countries outside the European Economic Area at \$300 per ADS, as well as 782,290 ordinary shares at €273.10 each in the European Economic Area and the UK, to initially gross \$700m. On closing the FOPO had raised \$805m in total. (Also see "[*Finance Watch: Public Markets Open Back Up For Biopharma Offerings*](#)" - Scrip, 25 Mar, 2022.)

[Top Financings Of 2022](#)