

Top 20 biopharma deals of 2023

We review the highest-value deals of the year with the help of DealForma.

Raveena Bhabra and DealForma

The top 20 highest-value deals of the year could be worth up to almost \$75 billion in total (Table 1). Each deal in the top 20 was potentially worth at least \$1 billion, with the biggest deal having a headline value of \$22 billion, making it one of the most substantial partnering deals in the past decade.

The largest deal by far was signed in October 2023 between Daiichi Sankyo and Merck & Co., for co-development and commercialization of three of Daiichi's oncology-focused antibody–drug conjugate (ADC) candidates: patritumab deruxtecan, ifinatamab deruxtecan and raludotatug deruxtecan. The deal involved a \$4 billion upfront cash payment—unheard of in recent dealmaking—and will see the two big pharma companies collaborating to develop the candidates worldwide, except in Japan where Daiichi will retain rights. Each of the drug candidates is being evaluated for multiple solid tumors. Patritumab deruxtecan, which targets HER3, is in phase 3 development as a therapy for metastatic non-small cell lung cancer, and was granted breakthrough therapy designation by the United States Food and Drug Administration in December 2021. Ifinatamab deruxtecan, which targets B7-H3, is being evaluated as a monotherapy in a phase 2 trial in patients with small cell lung cancer. Raludotatug deruxtecan, which targets cadherin 6, is in phase 1 trials in patients with advanced ovarian cancer. Merck will supply continuation payments of \$1.5 billion to Daichii over the next few years and could pay an additional \$16.5 billion in milestones.

The oncology therapeutic area has often taken the most investment in dealmaking in recent years, and as well as the highest-value deal of the year, nine more of the deals in the top 20 list in 2023 were around oncology assets and technology platforms. In the fourth highest-value deal of the year, Nurix Therapeutics entered a collaboration with Seagen in September 2023 for the development of a novel class of cancer therapeutics known as degrader–antibody conjugates (DACs). DACs are created using Nurix's targeted protein degradation (TPD) technology, DELigase, to generate targeted protein degraders, which will be used in combination with Seagen's antibody–drug conjugation technology to conjugate to one or more specific antibodies. The DACs will then be used to target solid tumors and hematological malignancies. Nurix will receive an initial upfront payment of \$60 million and, depending on the success and number of DACs generated, could receive a further \$3.4 billion in research, development, and commercialization milestones.

Other notable therapeutic areas featuring in the top 20 highest-value deals of the year include cardiovascular and neurological diseases, with three and two deals signed, respectively. In recent years, investment and deal activity has not been as plentiful in drug development for cardiovascular disease. This year, however, not only did Roche sign a \$2.8 billion deal for the rights to co-develop and co-commercialize Alnylam's RNAi therapeutic zilebesiran, for the treatment of hypertension in patients with high cardiovascular risk in the seventh highest-value deal of the year, but Novo Nordisk also signed a cardiovascular pact with Valo Health for \$2.7 billion. The latter deal focuses on the discovery and development of therapeutics for cardiometabolic disorders using Valo's Opal computational platform, which combines artificial intelligence and a large patient dataset.

The highest-value neurology-focused deal—and the third largest deal overall, just behind Pfizer's \$7 billion deal with Flagship Pioneering to license ten single-asset therapies for the treatment of undisclosed diseases—was a gene therapy partnership signed between Voyager Therapeutics and Neurocrine Biosciences. The deal will see Neurocrine pay \$175 million upfront to Voyager to gain worldwide rights to its *GBA1* gene therapy program for the treatment of Parkinson disease and other *GBA1*-mediated diseases. Mutations in *GBA1* have been linked to several diseases including Parkinson's disease, and *GBA1* encodes the lysosomal enzyme glucocerebrosidase. Voyager's TRACER (Tropism Redirection of AAV by Cell-type-specific Expression of RNA) platform will be used to combine a *GBA1* gene replacement payload with capsids for intravenous administration. As part of the deal, the TRACER platform will also be used for the development of three new gene therapy programs that will focus on central nervous system targets for rare diseases.

Another notable trend from the top 20 list was that more than half the deals were signed around platforms at the preclinical/discovery stage, revealing big pharma's appetite to secure access to platforms and next-generation therapeutics based on them before competitors. A further three deals were for assets or technologies at the preclinical or IND (investigational new drug) stage, and overall almost \$45 billion-worth of deals were signed at an early stage in development. Early-stage projects do, however, carry a large element of risk. Four deals were signed at the phase 2 stage, including the highest-value deal of the year between Daichii and Merck.

Table 1 | Top 20 R&D partnerships by total announced deal value in 2023

Licensor and licensee	Deal	Announced	Stage signed	Total deal value (upfront payment) (\$ million)	Primary therapeutic area
Daiichi Sankyo Co., Merck & Co., Inc	Development and commercialization deal for Daiichi's three antibody–drug conjugates	October 2023	Phase 2	22,000 (4,000)	Oncology
Flagship Pioneering, Pfizer	Research partnership with an option to license novel therapies	July 2023	Platform/discovery	7,050 (50)	Undisclosed
Voyager Therapeutics, Neurocrine Biosciences	Development and commercialization deal for the GBA1 program and three gene therapies	January 2023	Preclinical/IND	4,410 (136)	Neurology
Nurix Therapeutics, Seagen (formerly Seattle Genetics)	Development and commercialization deal for TPD–ADC therapies for cancer	September 2023	Platform/discovery	3,460 (60)	Oncology
Monte Rosa Therapeutics, Roche	Development and commercialization deal for molecular glue degrader therapies	October 2023	Phase 2	3,078 (78)	Neurology
Immunome, AbbVie	Research partnership with an option to license antibody–target pairs	January 2023	Platform/discovery	2,800 (100)	Oncology
Alnylam Pharmaceuticals, Roche	Co-development and co-commercialization deal for zilebesiran	July 2023	Phase 2	2,800 (310)	Cardiovascular diseases
Nanobiotix, Janssen Pharmaceuticals (Johnson & Johnson); Johnson & Johnson Innovation - JJDC	Co-development and commercialization deal for NBTXR3	July 2023	Phase 2	2,760 (30)	Oncology
Valo Health, Novo Nordisk (Novo Holdings)	Development and commercialization deal for AI-based small molecule therapies	September 2023	Preclinical/IND	2,760 (60)	Cardiovascular diseases
Aspect Biosystems, Novo Nordisk (Novo Holdings)	Development and commercialization deal for bioprinted tissue therapies	April 2023	Platform/discovery	2,675 (75)	Endocrine/metabolic diseases
Proxygen, Merck & Co., Inc.	Development and commercialization deal to develop molecular glue degraders	April 2023	Platform/discovery	2,550	Undisclosed
Quell Therapeutics, AstraZeneca	Research partnership with an option to license T _{reg} cell therapies	June 2023	Platform/discovery	2,085 (85)	Endocrine/metabolic diseases
Belharra Therapeutics, Genentech (Roche)	Development and commercialization deal for small-molecule therapies	January 2023	Platform/discovery	2,080 (80)	Oncology
Orionis Biosciences LLC, Genentech (Roche)	Development and commercialization deal for small-molecule therapies	September 2023	Platform/discovery	2,047 (47)	Oncology
Synaffix, Amgen	Development and commercialization deal with an option to license ADCs	January 2023	Platform/discovery	2,000	Oncology
Bliss Biopharmaceutical (Hangzhou), Eisai Co. (formerly Ajinomoto Pharmaceuticals)	Research partnership with an option to license BB-1701	May 2023	Phase 1	2,000	Oncology
Life Edit Therapeutics (ElevateBio), Novo Nordisk (Novo Holdings)	Development and commercialization deal for gene-editing therapies	May 2023	Platform/discovery	1,920	Cardiovascular diseases
Cullgen, Astellas Pharma	Research partnership with an option to license protein degraders	June 2023	Platform/discovery	1,900 (35)	Oncology
Generation Bio, Moderna	Research partnership with an option to license nucleic-acid therapies	March 2023	Platform/discovery	1,876 (40)	Autoimmune diseases
Immatics, Moderna	Development and commercialization deal for TCR therapies	September 2023	Preclinical/IND	1,820 (120)	Oncology

ADC, antibody–drug conjugate; AI, artificial intelligence; IND, investigational new drug; TCR, T cell receptor TPD, target protein degradation. Data retrieved as of October 25 2023. Financials in USD millions based on disclosed figures. Blank financials are n/d or n/a. Sorted by largest total deal value. Source: DealForma.com database