Top 10 Immuno-Oncology Collaborations

Merck & Co. and Ablynx

Value: **€5.78B** (**\$6.49B**)
Date announced: **July 22, 2015**

In an up-to-€4.08B (\$4.6B) expansion of a collaboration launched in 2014, the companies agreed to discover and develop up to 12 additional cancer drugs based on Nanobodies® through preclinical proof of concept. Sanofi acquired Ablynx for €3.9B (about \$4.4B) last year and, on February 7, disclosed "the anticipated termination [of the] collaboration with Merck & Co."

2 Merck & Co. and Eisai

Value: Up to **\$5.77B**, **\$300M** upfront Date announced: March 8, 2018

The companies will co-develop Eisai's Lenvima® (lenvatinib mesylate) for additional oncology indications, alone and with Merck's Keytruda® (pembrolizumab), and will launch clinical studies of Lenvima/Keytruda in 11 indications covering endometrial cancer, NSCLC, hepatocellular carcinoma, plus a multiple-cancer"basket" trial. In November 2018, the companies presented positive Phase Ib/II Lenvima/Keytruda data.

Genentech, a Member of the Roche Group, and Affirmed

Value: Up to **\$5B, \$96M** upfront Date announced: **August 27, 2018**

Genentech agreed to use Affimed's ROCK® platform to discover and advance first-inclass, tetravalent, innate immune cell engager-based immunotherapies against multiple undisclosed solid and blood tumor targets. They have agreed to partner on the discovery, early research, and late-stage research phases, with Genentech agreeing to oversee clinical development and commercialization.

GlaxoSmithKline (GSK) and Merck KGaA

Value: Up to €3.7B (\$4.2B), €300M (\$337M) upfront Date announced: February 5, 2019

The companies agreed to co-develop and co-commercialize M7824 (bintrafusp alfa), a bifunctional fusion protein immunotherapy designed to simultaneously target two immunosuppressive pathways commonly used by cancer cells to evade the immune system—a transforming growth factor- β "trap" and an anti-programmed cell death ligand-1.

5 Bristol-Myers Squibb (BMS) and Nektar Therapeutics

Value: Up to \$3.6B+, \$1.8B upfront Date announced: February 14, 2018

The companies agreed to co-develop Nektar's lead immuno-oncology program NKTR-214 in combination therapies with BMS' Opdivo® (nivolumab), and with both Opdivo and BMS'Yervoy® (ipilimumab), in 20+ indications across nine tumor types. They also agreed to study combination therapies with other anticancer agents originating from either company, and/or third parties.

6 Kite, a Gilead Company, and Sangamo Therapeutics

Value: \$3.16B+, \$150M upfront Date announced: February 22, 2018

Kite agreed to modify genes through Sangamo's zinc finger nuclease platform to develop autologous and allogeneic next-generation ex vivo cell therapies for different cancers. Kite will pay up to \$3.01B tied to milestones across 10+ products, plus royalties. In February, Gilead said it intends to file an IND for collaboration candidate KITE-037 in 2H 2019.

7 Bristol-Myers Squibb (BMS) and CytomX Therapeutics

Value: Up to **\$2.88B, \$200M** upfront Date announced: March 20, 2017

Expanding an up-to-\$1.242B, four-target collaboration launched in 2014, the companies agreed to discover up to eight more targets—six oncology, two non-oncology. BMS gained exclusive rights to the eight targets and agreed to pay up to \$448M per candidate tied to milestones, plus royalties. In January 2019, BMS announced the termination of three targets.

Cellectis and Allogene

Value: Up to **\$2.855B, \$80M** upfront Date announced: June 18, 2014

Cellectis and Pfizer launched their CAR T-cell collaboration in 2014. Servier later licensed UCART19 from Cellectis for up to \$338M+, granting U.S. rights to Pfizer. Last year, Pfizer contributed UCART19 and 16 preclinical candidates licensed from Servier and Cellectis to Allogene Therapeutics, which will pay Cellectis up to \$185M per product tied to milestones, plus royalties.

Merck KGaA and Pfizer

Value: **\$2.85B, \$895M** upfront Date announced: **November 17, 2014**

Merck KGaA, Darmstadt, Germany, and Pfizer agreed to jointly develop and commercialize a Merck PD-L1 checkpoint inhibitor, one that is now called Bavencio® (avelumab), both alone and in combinations with the companies' oncology therapies. Bavencio reached the market in 2017, with indications in metastatic urothelial cancer and Merkel cell carcinoma (MCC)—the first approved MCC treatment.

10 Celgene and Jounce Therapeutics

Value: \$2.6B+, \$225M upfront and \$36M equity
Date announced: July 19, 2016

Celgene received options to jointly develop and commercialize Jounce's lead candidate JTX-2011 and other cancer immunotherapies. Celgene also gained options for up to four early-stage programs to be selected from a defined pool of B cell–, regulatory T cell–, and tumor-associated macrophage targets, as well as an option to share JTX-4014, Jounce's PD-1 product candidate, equally with Jounce.

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