ONCOLOGY INNOVATION LEADS GLOBAL BIOPHARMA GROWTH AS OTHER THERAPY AREAS PLATEAU AND COMPLEX MODALITIES SUCH AS ADCS, RADIOLIGANDS, AND CELL AND GENE THERAPIES GAIN MOMENTUM

Introduction

Over the past decade, oncology has evolved from one of many key areas in drug development to the undisputed growth engine of the global biopharmaceutical industry. In 2023, oncology alone accounted for USD 223 billion in global sales at ex-manufacturer prices, far outpacing other therapeutic areas which are beginning to plateau in growth. A confluence of factors including deepening biological insight, evolving regulatory flexibility, and an explosion of novel therapeutic modalities has placed oncology at the epicenter of innovation.

Over the next five years, more than 100 new cancer treatments are expected to launch, reflecting both the rich pipeline and the sector's urgency in addressing high unmet needs.

Emerging Biopharma Companies (EBPs): This surge in innovation is driven by a diverse and evolving ecosystem. Emerging biopharma companies (EBPs) are now dominant players in early-stage oncology R&D, originating 63% of new oncology drugs launched in the U.S. over the past five years. Their lean operational models, scientific agility, and increased access to capital have made them formidable innovators, often opting to self-commercialize rather than license or sell assets to larger companies. Notably, EBPs launched 57% of their own oncology products during this period, reflecting a significant shift in the commercial dynamics of drug development.

Biopharmaceutical Giants: Parallel to this, biopharmaceutical giants are strategically recalibrating their portfolios to align with oncology's innovation wave. For instance, Pfizer cited the implications of the U.S. Inflation Reduction Act which differentiates biologic and small molecule drug price negotiations, as a key reason for pivoting its oncology focus more aggressively toward biologics, including ADCs and bispecific antibodies. This strategic shift is supported by data from IQVIA, showing that among biologic therapies in clinical development, monoclonal antibodies, bi-/multi-specific antibodies, and ADCs represent 19%, 15%, and 8% of the oncology pipeline, respectively.

- AstraZeneca's "Ambition 2030 and Beyond" strategy underscores this trend, aiming for USD80 billion in revenue by 2030, largely fueled by its oncology pipeline. Several oncology assets such as Dato-DXd (an ADC), camizestrant, and T-cell engager platforms are central to this goal. AstraZeneca's diversified approach spanning next-generation immuno-oncology, radio-conjugates, and bispecifics illustrates the sector's increasing reliance on transformative platforms to sustain growth.

Novel Targets in Immuno-oncology: Indeed, oncology is at the crossroads of various breakthrough modalities. Immuno-oncology continues to evolve beyond checkpoint inhibitors such as PD-1/PD-L1, moving toward novel targets such as LAG-3, TIGIT, and TIM-3 to overcome resistance mechanisms. Simultaneously, genome-targeted therapies and biomarker-driven personalization have enabled greater precision, while combination regimens aim to deliver more durable responses across multiple cancer pathways. Therapeutic innovations such as ADCs (Enhertu), radioligand therapies (Novartis' Pluvicto), and degrader technologies exemplify multi-modal strategies designed for enhanced efficacy and broader therapeutic windows.

Regulatory Support and Strategic Initiatives: This innovation surge is also enabled by regulatory evolution. The U.S. FDA's Oncology Center of Excellence has launched initiatives such as Project Endpoint and Project Frontrunner to encourage the use of novel endpoints and earlier approval pathways, especially in high-need areas. Regulators are now more willing to accept single-arm trial data and surrogate endpoints, accelerating time to market without compromising safety.

- The explosion in oncology R&D is reflected in global clinical trial activity. Between 2014 and 2023, the annual number of novel active substance (NAS) launches in oncology more than doubled from 12 to 25. Over the same period, total global NAS launches tripled from 68 to 192. Most of these were for solid tumors, although hematologic malignancies remain a strong area of innovation as well. The global oncology pipeline currently consists of 2,565 assets in stages from discovery through Phase 3, with roughly 60% of clinical-stage assets being biologics.
- China's ascent in oncology innovation has also shifted the global landscape. In 2023, Chinese companies accounted for 35% of all oncology trial starts, a dramatic increase from just 5% a decade ago. This growth, fueled by domestic incentives, improved regulatory alignment, and increased investment, now surpasses the U.S. and EU4/UK in new clinical activity—a development that underscores the globalization of oncology innovation.
- Deal activity within oncology further illustrates its dominant position. In 2023, oncology represented 40% of all asset-focused biopharma transactions. Novel modalities were particularly attractive, with ADC-focused deals increasing threefold over the past five years. Major acquisitions, such as Pfizer's USD 43 billion purchase of Seagen for its ADC platform, Lilly's USD 1.4 billion acquisition of Point Biopharma for radiopharmaceutical capabilities, and BMS's USD 4.1 billion acquisition of RayzeBio, demonstrate how strategic investments in these areas are reshaping the competitive landscape.
- What's striking is the early-stage focus of these transactions. Discovery and preclinical-stage assets accounted for up to 73% of oncology deals across modalities such as ADCs, radioligands, bispecifics, and cell and gene therapies. This appetite for early, higher-risk investments contrasts with a broader trend of risk aversion seen elsewhere in biopharma and signals the intense competition to secure access to potentially game-changing platforms.
- The growing complexity of oncology regimens, driven by a shift to multi-targeted, multi-modal combination therapies, is adding new layers to R&D, clinical development, and commercialization strategies. Biopharma companies must now not only identify the right targets but also consider optimal delivery systems, mechanisms of resistance, tolerability, and biomarker-guided patient selection.

Market and Competitive Landscape

ADCs combine monoclonal antibodies with cytotoxic drugs to target tumors while sparing healthy cells. With 15 approvals and explosive pipeline growth—204 industry-sponsored programs as of 2024 ADCs now dominate oncology deal-making, accounting for 80% of total deal value in 2023. Innovations in payloads (Topo-1 inhibitors), novel targets (TROP2, CD155), and cleavable linker chemistry are driving enhanced efficacy and safety.

Bispecific antibodies (bsAbs) can bind two targets simultaneously, enabling mechanisms such as T-cell engagement and dual checkpoint inhibition. Ten bsAbs are approved globally, and the pipeline is expanding across 50 target combinations. T-cell engagers dominate, offering off-the-shelf immunotherapy options, while future formats—tri-specifics and bispecific-ADCs, promise greater immune precision and tumor targeting.

Radioligand Therapies (RLTs) deliver radioactive isotopes to tumors with high specificity. Novartis leads with Lutathera and Pluvicto, while interest grows in alpha emitters such as Actinium-225 and Lead-212. With 121 assets in development and expansion beyond prostate and neuroendocrine cancers, RLTs are poised for broader application, including in combination therapies and theranostics.

Adoption depends on overcoming key barriers: infrastructure, clinician burden, care pathway misalignment, and evidence generation. Companies that excel in system readiness, real-world data strategy, and stakeholder engagement will lead the next era in oncology. These innovations are not isolated breakthroughs—they represent a new foundation for cancer care, one that is more targeted, personalized, and transformative for patients worldwide.

CONCLUSION

In conclusion, oncology's ascendance as the dominant therapeutic growth engine is no longer a forecast it is a present-day reality. Driven by scientific innovation, regulatory evolution, and a dynamic blend of emerging and established players, the sector is pushing the boundaries of what is possible in cancer care. As other therapeutic areas plateau, oncology stands out as the frontier where clinical promise and commercial opportunity most strikingly intersect. Looking ahead, the integration of novel modalities, greater personalization, and accelerated patient access will continue to define the next chapter in oncology's transformation cementing its position at the heart of the biopharmaceutical industry's future.