EXECUTIVE INSIGHTS

The New Geography of Biopharma Innovation

- Global biopharma innovation is becoming more multipolar, with China emerging as a peer source of innovative Phase I programs. China's share of Phase I innovative asset starts rose from about 10% in 2021 to roughly 40% in 2025, approaching U.S. levels.
- China's pipeline growth has been supported by rising life sciences venture activity. From 2016 to 2025, Series A-C deal counts in China grew by about 10% annually, versus roughly 1% across other regions, helping fund new companies around China-originated clinical assets.
- China's rise is reshaping where novel R&D substrate can be found, especially in oncology, where innovation is increasingly concentrated within the Chinese clinical pipeline. Beyond oncology, areas like immunology and cardiometabolism are gaining traction as the top innovative R&D areas.
- Multinational organizations should further broaden business development (BD) sourcing to appropriately balance innovation sourcing across China, the U.S. and Europe. Western biotechs should reanchor around innovative strategies to avoid capital and market competition from China's rising output, while Chinese biotechs should focus on translating early clinical success into later-stage development and commercial wins.

Introduction

The global center of biopharma R&D innovation is shifting from a Western-led model to a more multipolar landscape anchored by the U.S. and China. Over the past five years, Chinese biopharma organizations have both rapidly expanded their total clinical pipeline size and grown their novel target strategy footprint, outpacing other regions and narrowing the innovation gap with the U.S. China has also surpassed Europe on several early-stage innovation measures, evolving from a chemistry-led, "me too" market into an increasingly critical source of first-in-class drug development.

In this edition of L.E.K. Consulting's *Executive Insights*, we quantify how global sources of R&D innovation are changing, with a focus on China's rise in novel clinical-stage biology. We examine where innovation originates, how it is concentrated across regions and what shifting venture capital flows suggest about the future pipeline. These findings point to emerging R&D pressure points for U.S., European and Chinese biopharma and biotech leaders and carry implications for how these organizations should set strategic priorities moving forward.

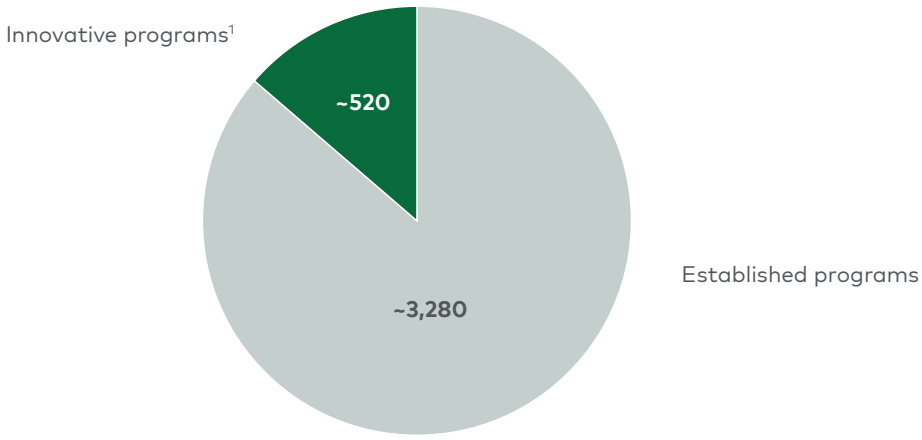
True biological innovation remains rare

Developing an "innovative" clinical asset, here defined as the first chemical to engage a specific biological target or pairing of targets (modality-agnostic) not previously tested, is difficult and uncommon. Of the approximately 3,800 Phase I R&D programs with disclosed targets initiated globally between 2021 and 2025, only 15% (roughly 520 programs) involved innovative clinical assets (see Figure 1).

Of these innovative assets, around 75% originated from U.S. and Chinese organizations (approximately 45% and 30%, respectively). Europe and the rest of the world each accounted for about 15% of activity. While the U.S. remains the leading source of Phase I innovative asset programs, China's near parity challenges the long-standing view that global clinical R&D innovation is driven by the West.

Figure 1

Worldwide Phase I R&D pipeline activity initiated between 2021 and 2025



*Innovative programs are defined as drugs with a first Phase I entry (within 2021-25) that is either associated with an identified new biological target or new combination of biological targets (i.e., novel bi-/multispecific antibodies, antibody-drug conjugates) not publicly linked to a previously recorded clinical pipeline program; dataset does not include programs associated with undisclosed/unidentified targets or with targets that are neither in the preclinical/clinical pipeline nor approved (e.g., excludes targets only associated with discontinued or withdrawn programs)
Source: Citeline Pharmaprojects (December 2025)

China's emergence as a source of Phase I R&D innovation

Between 2021 and 2025, the number of initiated Phase I innovative asset programs has fluctuated between around 70 and about 120 programs per year across the U.S., China and Europe. Chinese-originated companies specifically have gone from contributing approximately 10% to the total annual Phase I innovative asset programs to roughly 40% in 2025 across the three regions. Over the same period, the number of Phase I innovative asset programs initiated in the U.S. ranged between 40 and 60 per year, with no discernible growth trend. European output has remained largely flat, ranging from 15 to 20 programs each year. In parallel, the number of overall (innovative and other) China-originated Phase I starts has also increased in this time frame while the total number of overall U.S.- and European-originated Phase I starts has remained relatively consistent.

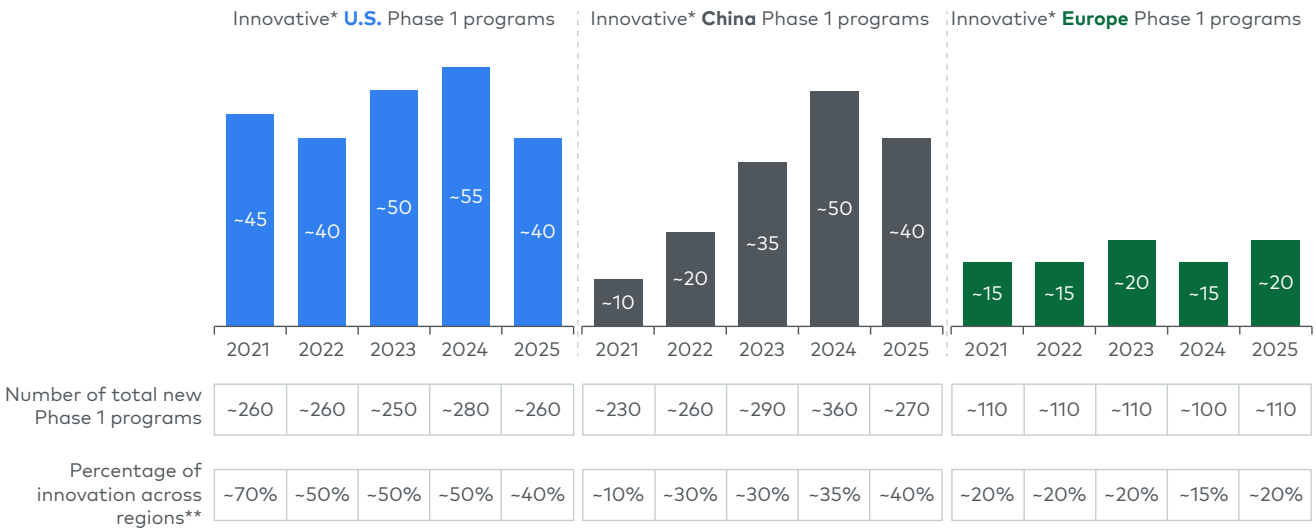
Chinese companies now represent the second-largest source of Phase I asset innovation globally in this five-year time frame, with approximately 160 innovative asset programs initiated between 2021 and 2025, compared with roughly 240 in the U.S. The share of innovative assets among all Chinese Phase I starts has increased markedly, and the ratio of innovative to overall programs now closely resembles what is seen in the United States (see Figure 2). This reflects a structural shift in how Chinese biopharma companies are approaching early-stage R&D. While this burst in innovation may feel sudden to this decade, China's R&D

strategy has been evolving since the early 2000s, moving from its established place as a "me too" R&D player in the early 2000s to focusing on cell therapy and antibody-drug conjugate (ADC) pipeline strategies/deals in the 2010s and early 2020s to its presence now as a leader of innovative and novel biology and drug mechanisms.

Figure 2

Phase I R&D pipeline activity initiated between 2021 and 2025

Estimated number of new clinical drug programs



	2021	2022	2023	2024	2025
Number of total new Phase 1 programs	~260	~260	~250	~280	~260
	~230	~260	~290	~360	~270
	~110	~110	~110	~100	~110
Percentage of innovation across regions**	~70%	~50%	~50%	~50%	~40%
	~10%	~30%	~30%	~35%	~40%
	~20%	~20%	~20%	~15%	~20%

*Innovative programs are defined as drugs with a first Phase I entry that is either associated with a new biological target not publicly linked to a previously recorded clinical pipeline program or associated with a multitargeting drug (modality) that has previously not been publicly linked to a previously recorded clinical pipeline program (e.g., bi-/multispecific antibodies, antibody-drug conjugates); dataset does not include programs associated with undisclosed/unidentified targets or with targets that are neither in the preclinical/clinical pipeline or approved (e.g., excludes targets only associated with discontinued or withdrawn programs)
**Inclusive of U.S., China and Europe only
Source: Citeline Pharmaprojects (December 2025)

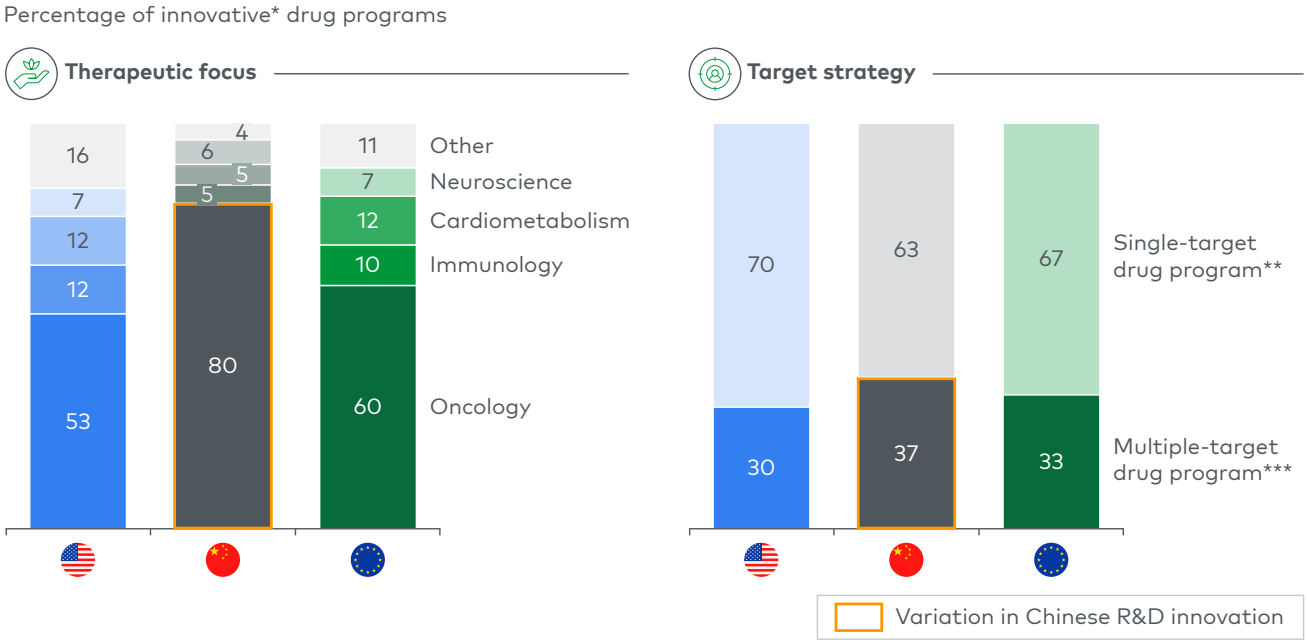
R&D innovation focus areas

While China's innovative output has expanded significantly, its composition remains distinct from that of the U.S. and Europe (see Figure 3). Chinese-originated innovative assets are heavily concentrated in oncology, which accounts for about 80% of Phase I innovative asset activity, versus approximately 53% in the U.S. and 60% in Europe. The remainder is distributed across immunology, cardiometabolic disease, neuroscience and other therapeutic areas, resulting in a narrower innovation focus than in Western markets.

The focus within oncology has enabled China to build scale and momentum in a high-value therapeutic area (e.g., new target pairings, novel ADC targets) while also giving them an approach that could be expanded into new investment areas where significant unmet need remains (e.g., immunology, cardiometabolic).

Figure 3

Phase I R&D pipeline activity initiated between 2021 and 2025



*Innovative programs are defined as drugs with a first Phase I entry that is either associated with a new biological target not publicly linked to a previously recorded clinical pipeline program or associated with a multitargeting drug (modality) that has previously not been publicly linked to a previously recorded clinical pipeline program (e.g., bi-/multispecific antibodies, antibody-drug conjugates); dataset does not include programs associated with undisclosed/unidentified targets or with targets that are neither in the preclinical/clinical pipeline or approved (e.g., excludes targets only associated with discontinued or withdrawn programs)
**Includes radioligand-associated drugs and antibody-drug conjugates/drug conjugated treatments
***Primarily bi-/multispecific antibody therapies (e.g., cell engagers, trispecific antibodies)
Source: Citeline Pharmaprojects (December 2025)

Target-pairing strategies are broadly similar across regions, with multitarget approaches (e.g., prostate-specific membrane antigen x folate receptor alpha, cluster of differentiation 3 (CD3) x mesothelin) accounting for a comparable share of Phase I innovative asset programs in China (37%), Europe (33%) and the U.S. (30%). However, the composition of these pairings differs. Chinese Phase I programs show more-diverse target combinations, while U.S. and European activity is more heavily concentrated in novel CD3 immune-cell engager pairings. This reflects China's established strength in modality and antibody chemistry as well as a strategic focus on complex pairings that engage multiple disease pathways in ways not previously tested in humans.

Venture capital trends reshaping the innovation landscape

China's rise in innovative R&D has been supported by a major shift in life sciences venture funding that preceded the 2021-25 pipeline trends. Between 2016 and 2025, Series A-C deal counts in China grew by about 10% annually versus roughly 1% across all other regions combined. By 2025, China

had converged with the U.S. in Series A-C deal volume and surpassed Europe (see Figure 4).

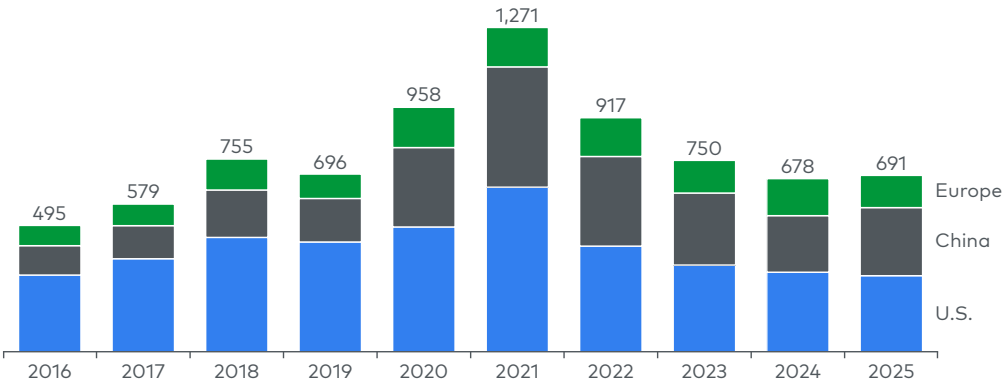
At an investment level, the 10-year view still shows a durable U.S. funding advantage. Between 2016 and 2025, the U.S. attracted approximately $173 billion in Series A-C life sciences investment versus $53 billion in China and $35 billion in Europe. Funding peaked across regions in 2021 before correcting, with the U.S. moderating to about $18 billion by 2025, China moderating to $3.8 billion and Europe rising to $6.3 billion, overtaking China in annual deal value over the past two years. China's deal sizes also remained consistently smaller, averaging about $20 million per deal versus $40 million in the U.S. and $25 million in Europe across Series A-C rounds.

Combined with the growth in Chinese-originated Phase I starts and deal count, this suggests Chinese companies are advancing programs into the clinic with less external capital. These assets are increasingly supporting new company formation, often around small research teams, focused funding and Chinese-originated clinical programs.

Figure 4

Life sciences Series A-C VC investment* (2016-25)

Total annual number of deals and value*



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-year cumulative total
Europe	~$1.1B	~$1.2B	~$2.4B	~$2.0B	~$3.5B	~$5.1B	~$4.1B	~$3.9B	~$5.2B	~$6.3B	~$35B
China	~$1.4B	~$1.4B	~4.0B	~$3.2B	~$9.6B	~$14.7B	~$7.8B	~$4.5B	~$3.0B	~$3.8B	~$53B
U.S.	~$7.1B	~$10.2B	~$15.1B	~$14.3B	~$20.7B	~$32.4B	~$19.5B	~$17.1B	~$18.2B	~$18.3B	~$173B
											10-year cumulative total
Europe											~1,200 deals
China											~2,500 deals
U.S.											~4,000 deals

*Includes all completed and announced/in-progress Series A, B and C global venture capital investor deals (primary investor type only) classified within the life sciences industry
Source: Pitchbook Data Inc. (March 2026)

What this means for industry leaders

The convergence of China's growing share of early clinical innovation, the distinctive character of Chinese R&D investment and the acceleration of venture capital into the region carries different implications depending on where an organization sits in the global biopharma landscape.

For large multinational pharma companies

One strategic priority should be to continue actively expanding BD and R&D engagement beyond traditional U.S.-centric sourcing models. As Chinese biotech companies gain credibility in innovative biology, particularly in oncology, antibody engineering and multitarget modalities, they are becoming an increasingly important source of early-stage assets that can strengthen and accelerate global pipelines.

For multinational pharma companies, this requires sustained diligence in building deeper scientific, clinical and commercial capabilities in China through single-asset deals or broader partnerships. Rather than relying primarily on isolated single-asset transactions, pharma companies should increasingly benefit from multiasset collaborations and platform-oriented partnerships that provide multiple "shots on goal" across rapidly evolving therapeutic areas and modalities (see Table 1).

Table 1

Example of recent large pharma activity in China

Year	Pharma company	Chinese company partner	Description
2026	AstraZeneca	CSPC	Collaboration to advance the development of multiple next-generation obesity and Type 2 diabetes programs
	BMS	Hengrui	Collaboration to advance 13 early-stage research programs across oncology, hematology and immunology
	Sanofi	Earendil Labs	Collaboration on AI-supported development of bispecific antibodies for autoimmune and inflammatory diseases
2025	AstraZeneca	CSPC	Collaboration to develop and advance AI-enabled R&D tools
	GSK	Hengrui	Collaboration to advance up to 12 early-stage research programs across respiratory, immunology, inflammation and oncology
	Merck & Co.	Hengrui	Collaboration to develop Hengrui's HRS-5346 worldwide (excluding China)

Note: AI=artificial intelligence
Source: Company press releases

In a market where the pace and volume of innovation are accelerating, broader partnerships can help organizations build more-durable access to emerging science while reducing dependence on the success of any single program. Deeper engagement with Chinese biotech ecosystems may improve visibility into emerging targets, translational research capabilities, clinical development infrastructure and high-performing local talent networks. Over time, this can strengthen sourcing capabilities, accelerate early-stage development timelines and create a more embedded position within one of the fastest-growing centers of global biopharma innovation.

China's expanding clinical trial infrastructure and efficient development environment also create opportunities to run faster, lower-cost early-stage studies that can de-risk novel biology before transitioning to U.S. or global development. Companies may increasingly look to China not only for asset licensing but also for translational research partnerships, platform collaborations and early proof-of-concept generation.

For biotech companies

For U.S. biotech, China's rising innovative output reinforces the need to refocus on the differentiated science that has historically defined the U.S. life sciences ecosystem. China is likely to sustain high volumes of innovative Phase I activity, supported by growing access to global licensing and partnership opportunities. As a result, U.S. companies pursuing incremental or target-following strategies may face increasing pressure in both early-stage funding and future market competition. Maintaining leadership will require continued investment in novel biology, alongside regulatory reforms that accelerate early clinical development, such as shorter time-to-Investigational New Drug application timelines and expanded pathways comparable to China's Investigator-Initiated Trial model.

For European biotech, the implications are similar but more acute. Europe's contribution to innovative Phase I activity has remained relatively stagnant over the past five years, with its global position falling further behind both the U.S. and China. Reversing this trend will likely require stronger investment environments, faster regulatory pathways and more coordinated support for early-stage innovation.

For Chinese biotech, the next challenge is converting early-stage innovation leadership into globally successful commercial products. China has rapidly evolved from a fast-follower market into a credible source of first-in-class programs, but sustaining that position will require stronger late-stage development capabilities, global regulatory expertise and commercial infrastructure. Continued ecosystem maturation, supported by venture funding, pharmaceutical partnerships and broader investment, will also be critical. At the same time, China's

concentration in oncology creates a strategic need for greater diversification into other therapeutic areas to reduce crowding and broaden long-term innovation opportunities.

Beyond these organizational considerations, China's focused expansion toward more innovative oncology asset R&D creates a second-order consideration for the global biopharma ecosystem: balancing the growing therapeutic category crowding against the incremental improvements and natural competitive pressure associated with newer, next-generation therapies. With the right diligence, this level of therapeutic area crowding will support greater scientific validation of the most clinically feasible targets, enable a consistently higher bar for therapeutic success and best-in-class products in a competitive market, and support the need to consistently pursue the development of the most meaningful medicines. This can be beneficial to all life sciences stakeholders, ranging from the patients receiving better medicines to physicians having more drug options all the way to investors and biopharma organizations who can more confidently invest in more de-risked, clinically meaningful biology.

Conclusions

Taken together, the data makes clear that global biopharma innovation is no longer primarily centered in the West. China has established itself as a major source of novel clinical biology, reshaping how the industry sources, evaluates and competes around innovation. At the same time, the rapid growth in innovative asset volume, particularly in oncology and antibody-based, is increasing the risk of therapeutic crowding and asset commoditization across global pipelines.

As the innovation landscape becomes more multipolar, success will increasingly depend on balancing exposure across China, the U.S. and Europe while remaining selective about where to play. Organizations will need to prioritize therapeutic areas and modalities with durable differentiation and avoid overconcentration in crowded target classes. Broader partnerships with Chinese biopharma companies may also become increasingly important, providing not only access to emerging assets but also deeper insight into how leading Chinese organizations rapidly identify, develop and advance innovation.

Ultimately, competitive advantage will depend less on access to innovation alone and more on the ability to identify differentiated science, build the right strategic partnerships and translate innovation into durable clinical and commercial value.

We can help biotech and biopharma organizations navigate this evolving R&D landscape by:

- Mapping global mechanism and modality landscapes to identify differentiated

opportunities and avoid overcrowded categories

- Prioritizing clinical-stage BD and M&A opportunities based on scientific differentiation, competitive intensity, development risk and return on investment
- Designing balanced China/U.S./Europe sourcing strategies that align external innovation with portfolio priorities
- Assessing when to pursue single-asset deals versus broader platform or multiasset collaborations with scaled Chinese partners
- Developing R&D strategies that optimize portfolio size, therapeutic focus and long-term commercial positioning

Additional L.E.K. reading

- Advancing Innovation and Global Reach: The Next Chapter in China's Clinical Trial Development (November 2025)
- Is Biopharma Doing Enough to Advance Novel Targets? (May 2025)
- Oncology BD&L: Winning in an Increasingly Competitive Environment (September 2024)

For more information, please **contact us**.

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