

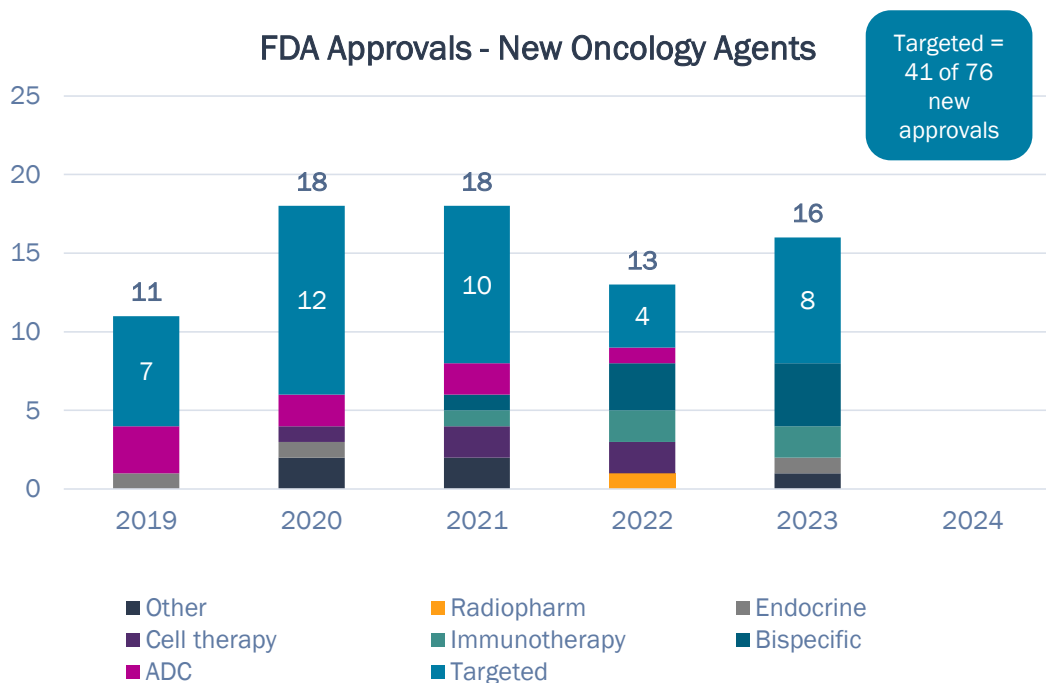
Oncology Pulse

New Oncology Agents – A Look Back and the Year Ahead

January 2024

Targeted therapy has been the driver of new oncology approvals in recent history, but a more diverse mix of MOAs have been approved in 2022-2023

New Oncology Agents – 2019 to Present



Targeted therapies account for ~55% of new approvals in past 5 years

10 new biomarkers have been added to the list busy oncologists need to track*

Only 1 new checkpoint, LAG-3, has emerged since PD-1, with applicability only to melanoma so far

Recent ADC launches and partnering have revived the category

Significant pipeline investment in cell therapies and bispecifics is leading to an uptick in approvals, with 15 so far

Drugs first approved in 2023 were dominated by targeted therapies and T-cell engaging bispecifics for liquid tumors

2023 New Oncology Agents

	Targeted	Cell/Gene Therapy	IO	Bispecific	ADC	Other	Radiopharm
Approved	Jaypirca (BTK) ^{AA} Vanflyta (FLT3) Ojjaara (JAK) Fruzaqla (VEGF) Augtyro (ROS1) Truqap (AKT) Ogsiveo (γ secretase) Iwifin (ODC)	Omisurge (enhanced CD34+ stem cells)	Zynyz (PD-1) ^{AA} Loqtorzi (PD-1)	Epkinly (CD20xCD3) ^{AA} Columvi (CD20xCD3) ^{AA} Talvey (GPRC5DxCD3)^{AA} Elrexio (BCMAxCD3) ^{AA}		Orserdu (SERD)	
Rejected	Hypericin (PDT ¹)		ALT-803 (IL-15) Cosibelimab (PD-L1)		Trastuzumab duocarmazine (HER2)		

- **Five new MOAs**, including **AKTi** for HR+ breast cancer (Truqap, AZ) and **GPRC5D** for multiple myeloma (Talvey), strengthening J&J's presence in multiple myeloma
- After many failures, **the first oral SERD** was approved for late line ESR1 mutated HR+ breast cancer (Orserdu, Menarini); programs from AZ, Lilly, and Roche could enter in earlier lines if Ph3 trials are successful
- 6 of 15 drugs received **accelerated approval** (all but 1 in liquid tumors); with 2023's FDA guidance on accelerated approval, this proportion is likely to decrease going forward

2024 is on track to surpass 2023 in terms of total approvals and new MOAs, with 18 new assets and 9 new targets pending before FDA

2024 New Oncology Agents

	Targeted	Cell/Gene Therapy	IO	Bispecific	ADC	Other	Radiopharm
Approved							
Filed	Rivoceranib (VEGF) Imetelstat (telomerase) Tovorafenib (RAF) Apatinib (VEGF) Axatilimab (CSF1R) Revumenib (menin)	Lifileucel (TILs) Afimi-cel (MAGEA4) Obe-cel (CD19)	Penpulimab (PD-1) Camrelizumab (PD-1) Tislelizumab (PD-1) ALT-803 (IL-15)	Tarlatamab (DLL3xCD3) Odronextamab (CD20xCD3) Zanidatamab (HER2xHER2) ¹	Patritumab-DXd (HER3)		
Filing Soon?	Vimseltinib (CSF1R)			Zenocutuzumab (HER2xHER3)	Dato-DXd (TROP2) Teliso-V (MET)		lopofosine lomab-B (CD45)
Rejected/Deferred	Zolbetuximab (claudin18.2)						

Select Novel MOAs Pending Before FDA

- First solid tumor cell therapies likely to have niche positioning: AdaptImmune **MAGEA4** in rare synovial sarcoma, and lovance melanoma **TILs** carries IL-2 requirement
- Tarlatamab (DLL3xCD3, Amgen): first solid tumor T-cell engager for 2L+ SCLC
- Zolbetuximab (**claudin18.2**, Astellas): new target for gastric cancer showed some OS benefit, but approval is held up by CMC

Key Questions for 2024

Recent Trends....

T-cell engagers and cell therapies are poised to enter in solid tumors

EV+ pembro earns standing ovation at ESMO, while TROP2 marginal in NSCLC – and ADC dealmaking continues

Enhertu filed for pan-tumor approval, including NSCLC and CRC data

Still waiting on SKY1 (TIGIT) – Gilead ups investment in Arcus' domvanalimab, GSK/iTeos planning Ph3 trials in NSCLC and HNSCC

...Emerging Questions

How will these therapies be adopted in settings where management of CRS or IL-2 is less familiar?

Where do ADCs demonstrate incremental vs. substantial benefit? Which ADC component(s) drive differentiation?

How viable are novel IHC companion diagnostics across tumor types? How much impact does marker prevalence have?

What is the path forward for IO beyond PD-1? How much impact will neo/adjuvant approvals have on metastatic cases?

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