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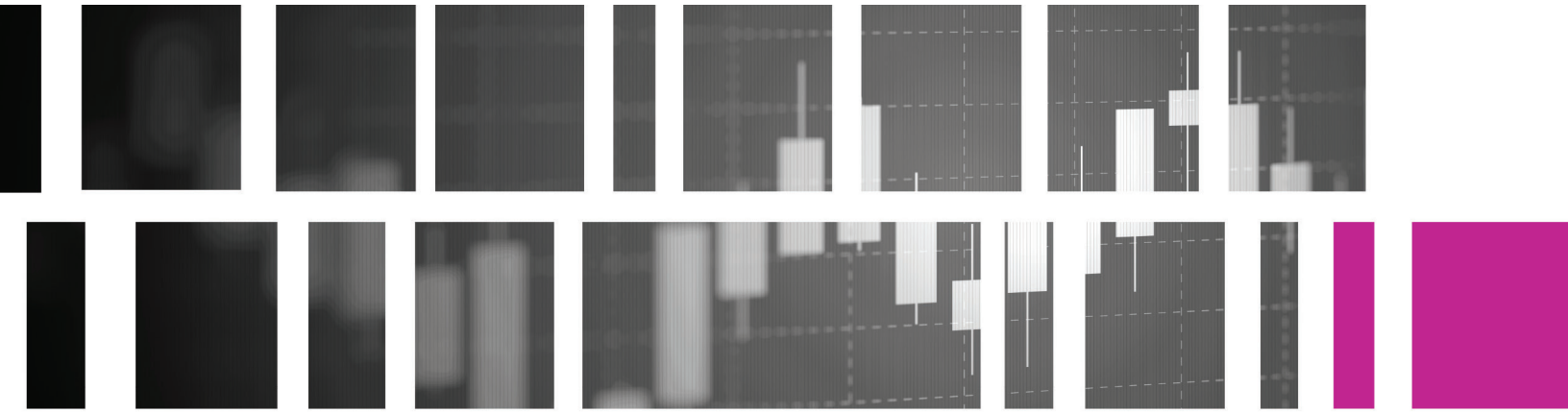

A WHITEPAPER FROM INSTITUTE@PRECISION

Wall Street Perspective on Radiopharmaceuticals

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The Institute@Precision is part of Precision Medicine Group, an organization purpose-built for precision with services spanning discovery to commercialization.

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Executive Summary

- Commercial validation is compounding: 13 straight quarters of combined YoY growth for Pluvicto® and Lutathera® (both Novartis); recent quarter at ~$605M (+70%) and ~$203M (+5%), respectively.
- IPOs, venture investments, follow on offerings and strategic M&A underscore platform value and capital remains committed across cycles: >$2.1B (2024), $930M (2025), $590M YTD (2026).
- Globalization expands the runway: China emerges as a demand and capability hub with increasing investment and cross-border licensing.
- Technology step-up: alpha-emitters and combinations accelerate differentiation and earlier-line potential.
- 2026 is catalyst-dense across trials, PDUFAs, NDAs, and isotope supply.
- Risk considerations that can be actively managed: isotope scaling, long half-life alpha safety, and diagnostic throughput.

Why Radiopharmaceuticals Are Entering Their Prime Time

Radiopharmaceuticals deliver targeted radiation to tumors by linking radionuclides with biologically selective vectors. Theranostics, which are diagnostics that identify target expression followed by matched therapy, create a precision oncology flywheel: better patient selection, faster adoption, and repeatable label expansions. Commercial adoption has broken out of the one-off pattern, with Pluvicto and Lutathera posting thirteen consecutive quarters of combined year-over-year growth since 3Q22, and demonstrating blockbuster opportunities. Leadership commentary from Novartis frames this category as a potential multi-billion-dollar business at a single-company level. For investors, this translates into visibility of revenue growth and a higher quality of earnings as supply chains and diagnostic pathways mature.

> "I believe my CEO has been on the record to say that he expects us to be at least a $10B business as a market for Novartis alone…And most importantly, of course, is how that translates into patient impact."
>
> – Geoff Towle, Head of RLT Business, Novartis

A Brief History — A Century in the Making

Radiopharmaceuticals trace their roots to the 1920s–1930s with diagnostic radiotracer studies that established physiologic tracking with radionuclides. In 1977, the FDA completed its process to regulate radiopharmaceuticals as drugs, formalizing development standards. The 2000s saw early radioimmunotherapies (Zevalin®, Bexxar) demonstrate clinical effect and regulatory viability. In 2013, Bayer's Xofigo® showcased Big Pharma's ability to commercialize radiotherapeutics. The subsequent success of Novartis' Lutathera and Pluvicto validated broad demand, payer willingness, and scalable commercial models. Today's acceleration reflects improved targeting ligands, dosimetry know-how, logistics, and companion diagnostics integration.

Most marketed agents are beta-emitters (e.g., Lu-177, I-131), which can carry known risks (myelosuppression, renal toxicity, xerostomia, hyperglycemia) and may not optimally debulk all tumor contexts. The field is broadly investing in alpha-emitters (e.g., Ac-225, Ra-223, At-211, Th-227) that offer higher linear energy transfer and shorter path length—promising more potent tumor cell kill with potentially reduced off-target effects. Early experience suggests activity even where beta agents underperform, supporting differentiation. In parallel, combinations—particularly with IO—may benefit from rapid debulking and an immunogenic tumor microenvironment, enhancing response depth and durability. Upcoming datasets will clarify dose optimization and patient selection for long half-life alphas.

Commercial & Reimbursement Realities — And Why They Are Improving

Radiopharmaceuticals win when care pathways are clear and site economics work. Community adoption depends on buy-and-bill margins, inventory risk management, staffing and training, and decay-aware scheduling. Hospital payor settings can introduce timing and reimbursement frictions until permanent coding stabilizes. Diagnostic (CDx) throughput is the metronome: when the funnel expands, therapy revenues follow. The last two years have brought meaningful progress due to clarifying codes, maturing diagnostic networks, and growing investment—all supporting smoother ramps, lower gross-to-net variability, and broader access.

Globalization Tailwind: China's Growing Role

There is growing global interest in radiopharmaceuticals. In 2024, 43.95% of the radiopharmaceutical market share was held by North America, 25.37% was held by Asia Pacific, 25.37% was held by Europe. China is becoming a bigger player in the radiopharmaceutical space, as there is increasing interest in funding development in China. For example, AstraZeneca's plan to invest $15B through 2030 into China specifically mentions radioconjugates.

China is becoming more visible as both a demand center and an innovation/manufacturing hub. Domestic players are scaling pipelines and fundraising; cross-border licensing is increasing; and radiopharmaceuticals are becoming a mainstream vertical in Asian capital markets (with IPO timings aligned to broader conditions). The implication for investors: expanded TAM, accelerated target innovation, and supply-chain diversification that supports modality resilience.

Investment in Chinese companies in the sector support its future potential as a key player in radiopharmaceuticals:

- Chengdu New Radiomedicine Technology Co., Ltd. raised a Series D round of $112M to advance their pioneering work in the research and production of radionuclides in China.
- Leading company, Jiangsu Hengrui, has added five radiopharmaceutical assets to its pipeline.
- Novartis in-licensed a radioligand therapy asset from Zonsen PepLib Biotech Inc.
- Radiopharmaceutical pure-play, Yantai Lannacheng Biotechnology, filed to go public on the HKEX (Shanghai exchange) in September 2025 and subsequently entered into a strategic collaboration with Harbour BioMed in December 2025 to advance their radionuclide drug conjugates.
- Full-Life Technologies Limited raised $77MM in a combined Series C round and debt financing.

Capital Markets: Ongoing Enthusiasm

"Radiopharmaceutical therapeutics represent a differentiated modality… approvals and commercial success are just the beginning of an evolution, much like ADCs."

– Jessica Fye, J.P. Morgan

"The field will reach an inflection as it becomes a centerpiece of cancer care; differentiation vs. ADCs and T-cell engagers will matter."

– Andy Hsieh, William Blair

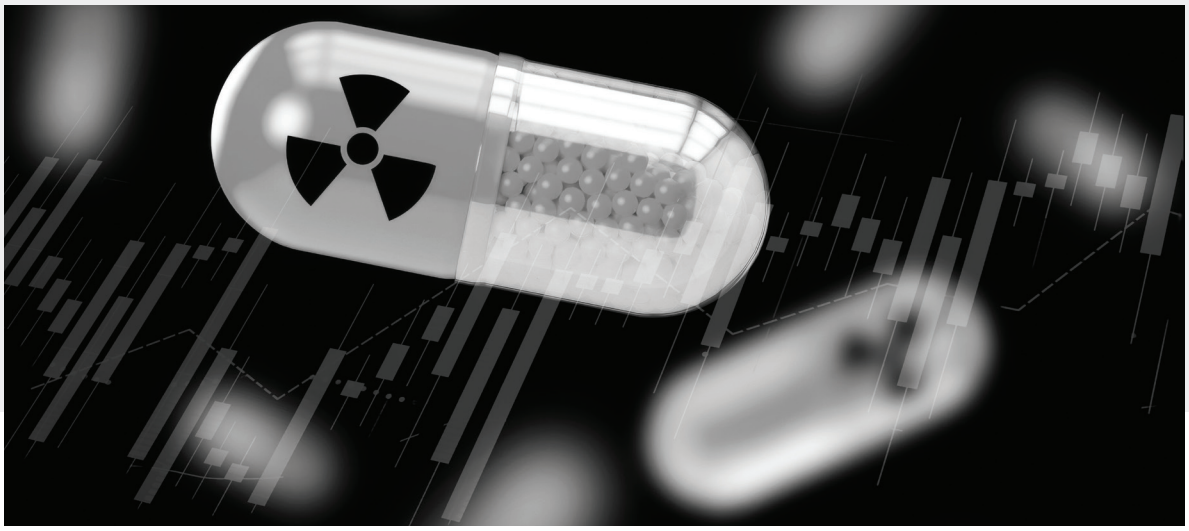
Capital formation has been robust: over $2.1B in 2024, $930M in 2025, and $590M YTD in 2026. The IPO window has reopened selectively for high-quality platforms (e.g., Aktis Oncology). Venture deal volume rose from 8 (2022) to 17 (2024) to 13 (2025), with later-stage rounds continuing to fund clinical advancement and capacity. Strategic M&A by Big Pharma (BMS/RayzeBio, AstraZeneca/Fusion, Lilly/POINT, Novartis/Mariana) confirms radiopharmaceuticals as a must-have pillar for oncology portfolios.

Fueling prospective growth is the fact that 88% of current assets remain in early development, symbolizing a potential "Boom" in the near future.[1]

> "Right now, there are a lot of fantastic assets. They're still in pre-clinical stages or maybe you're clinical, but we're still waiting on some of the data. I don't think the interest is waning at all. It's more of looking at the maturity of this space. And there's not a ton of mid- to late-stage radiopharmaceuticals out there right now. Most of the lines that do exist are, at least from our perspective, similar to things we're already doing. And thus, that keeps us on the sidelines, but it's still a very high area of interest for our organization and you'll continue to see us do deals in this space."[1]
>
> — Geoff Towle, Head of RLT Business, Novartis

And investors are willing to place their bets in support of this anticipated growth trajectory as underscored by:

- Aktis Oncology's $318M IPO in January 2026.
- ARTBIO's $132M Series B raise in July 2025 to advance AB001 for metastatic castration-resistant prostate cancer through Phase 2 trials.
- Alpha-9's $175M Series C in October 2024.
- Mariana Oncology, acquired by Novartis for $1.75B in May 2024, had previously raised a $175M Series B in September 2023.



2026: A Catalyst-Dense Validation Year

The 2026 calendar features numerous clinical, regulatory, and manufacturing milestones across prostate cancer, neuroendocrine tumors, breast, pancreatic, melanoma, CNS, RCC, and more. These milestones span alpha and beta payloads, copper-based constructs, and novel theranostic pairs. Several larger-cap and leading mid-cap names have Phase 2/3 inflections and PDUFA/NDA events, while new isotope suppliers and facilities bolster supply reliability.

[1]https://www.mckinsey.com/industries/life-sciences/our-insights/the-synthesis/unlocking-the-therapeutic-potential-of-radiopharmaceuticals-in-oncology

Upcoming Radiopharmaceutical Catalysts[2]

Company	Compound	Event	Date
Actinium Pharmaceuticals	ATNM-400	Initial Tumor Targeting and Biodistribution Data	H1:2026
		Preclinical Data from mCRPC, NSCLC, and Breast Cancer	2026
	Actimab-A	Phase 1 data from MDSC Basket Trial	Mid 2026
		Multi-tumor Phase 1 Data from MDSC Basket Trial	H2:2026
AstraZeneca	FPI-2265	Phase 2 Readout	2026
		Phase 3 commences	2026
Bicycle Therapeutics	68 Ga Imaging	Human Imaging Data	H1:2026
	Target 1 (Undisclosed)	FTIH Imaging	2026
BWXT Medical	Tc-99	Submit NDA	2026
Cellectar Biosciences	Iopofosine I-131	EMA CMA Submission	Q2/3:2026
		WM Study Initiation U.S. NDA Submission	Q1:2026 Q3:2026
	CLR 125	Phase 1b Study Data in TNBC	Q1:2026
		Phase 1b Study Initial Dose Response	Q2:2026
		Initiation of Phase 1 Expansion Cohort	Q3:2026
	CLR 225	Enroll first patient in Phase 1 Study in Pancreatic Cancer	Q2:2026
		Imaging Data from Phase 1 Study in Pancreatic Cancer	Q4:2026
Clarity Pharmaceuticals	64Cu-SAR-bisPSMA	Top-Line Data from IIT Study at EAU	March 2026
	64Cu-SARTATE	Registrational Phase 3 Trial to Begin	2026
	67Cu-SAR-bisPSMA	Phase 3 CLARIFY Completes Enrollment	H1:2026
	64/67Cu-SAR-trastuzumab	FIH Trial Commences	H2:2026
	64Cu-SAR-bisFAP	FIH Trial Commences	H2:2026
Curasight AS	uTREAT plus uTRACE	Phase 2 Basket Trial to Start	2026
	uTRACE	Preliminary Efficacy Data and Topline Results in Phase 2 Trial (Curium Partnership)	H1:2026
Lantheus Holdings	PYLARIFY	PDUFA Date for New Formulation	6-Mar-26
	PNT2003	Commercial Launch	Mid-2026
	LNTH-2501/OCTEVY	FDA PDUFA Date	29-Mar-26
	MK-6240	FDA PDUFA Date	13-Aug-26
	NAV-4694	NDA Filing	2026

[2]Dolliver, K., Ahmed, F. (2026). Radiopharma Roundup Recent Developments in Radiopharma. *Brookline Capital Markets*

Monopar Therapeutics	**MNPR-101-Zr**	**Report Open-Label Data**	**2026**
	MNPR-101-Lu	**Report Open-Label Data**	**2026**
Molecular Partners	New Program	Nomination of New RDT Program	Mid 2026
	MP0533	Initial Data	H1:2026
	MP0712	Initial Safety Data Activity Data	H1:2026 H2:2026
	Switch-DARPin	Lead Candidate Selection, Update at AACR	H1:2026
Nusano	**Isotope Availability**	**Cu-67**	**Q1:2026**
Oncoinvent ASA	Radspherin	Phase 2 Ovarian Cancer, 9 Months Data (Interim)	H2:2026
Pentixapharm	**PentixaFor**	**Phase 3 Study in Primary Aldosteronism (PA) Commences**	**2026**
Perspective Therapeutics	VMT-a-NET	Phase 1/2a Updates	2026
	VMT01/VMT02	ICI Combo Expansion in Melanoma Preliminary Readout	Mid-2026
	PSV359	Initial Phase 1/2a Data Updates	Late-2026
PLUS Therapeutics	**REYOBIQ**	**Leptomeningeal Metastases Data**	**2026**
		GBM Data Updates	**2026**
		To Begin Pediatric Ependymoma & High Grade Glioma	**2026**
Radiopharm Theranostics	RAD101	Enrollment to Complete in Phase 2b	2026
	RAD204	Phase 1 Trial Completion	Q1:2026
	RAD202	Complete Phase 1	2026
	RV01	First Two Dose Levels Complete	Mid 2026
	RAD402	First Two Dose Levels Complete	Mid 2026
Telix Pharmaceuticals	**TLX591**	**Phase 1 Data Readout for mCRPC**	**2026**
	TLX250	**Site Activations for LUTEON Study, ccRCC**	**2026**
	TLX090	**SOLACE, for Bone Pain, Complete Enrollment**	**2026**
	TLX102	**FIH Study Commences GBM and Leptomeningeal**	**2026**
	TLX252	**Phase 1 Study Commences for ccRCC and CAIX-tumors**	**2026**
	TLX400	**Clinical Development Commences**	**2026**
Thor Medical		Commences Production at AlphaOne	Q3:2026

What the Market Is Still Underestimating

Despite growing enthusiasm across Wall Street, we believe several foundational drivers of long-term value in radiopharmaceuticals remain underappreciated. First, **diagnostics continue to be the true pacing mechanism for adoption**. Imaging and CDx throughput—not clinical demand—ultimately govern how many patients can be identified, referred, and treated in a timely fashion. Companies that expand diagnostic capacity, streamline referral pathways, or integrate imaging tightly with therapy will see materially steeper and more reliable launch curves.

Second, Wall Street is only beginning to assign appropriate value to **operational redundancies**, particularly in isotope supply and radiopharmacy networks. Firms that secure multisource actinium, lutetium, or copper, or that operate dual radiopharmacy infrastructures, meaningfully reduce the probability of stockouts or scheduling disruptions. These operational safeguards directly de-risk revenue ramps and should command higher valuation multiples.

A third underappreciated factor is **community activation**, which ultimately determines the slope of adoption beyond early academic hubs. The companies that invest early in buy-and-bill financial models, staff training, workflow optimization, and decay aware scheduling protocols will convert community oncology into a durable, scalable growth engine. This is where market leaders will widen their share advantage.

We also believe the potential for **alpha-based radiopharmaceuticals and combination regimens** is poised to reset expectations. Alpha emitters offer the promise of higher LET and activity in tumors unresponsive to beta agents, while combinations—especially with IO—may unlock earlier line indications that expand total addressable markets and significantly lengthen duration of therapy. As these datasets mature, earlier line penetration could represent a step function shift in both patient impact and financial value.

Finally, **globalization—particularly the rapid expansion of radiopharmaceutical innovation and investment in China—is additive in ways the market has not fully priced in**. China's growing research ecosystem, capital availability, and manufacturing capabilities expand end markets, deepen pipelines, and enhance supply chain resilience. Over time, this global diversification should strengthen the modality's scalability and cement radiopharmaceuticals as a core oncology pillar worldwide.

Further Insights from the Institute@Precision Radiopharmaceutical Series

This article is part of the Institute@Precision radiopharmaceutical series, which examines these therapies across the full clinical development-to-access continuum. Additional articles in the series extend the analysis, exploring:

- **Development strategy**—how access constraints intersect with trial design, regulatory expectations, and evidentiary robustness in global radiopharmaceutical development
- **Operationalization**—isotope supply resilience, radiopharmacy capacity, workforce readiness, and end-to-end logistics.
- **Regulatory strategy**—comparator feasibility, evolving evidentiary expectations, and global alignment for infrastructure-dependent therapies.
- **Commercialization**—pricing and reimbursement dynamics, provider adoption, and market readiness across global regions.

To read more about the unique challenges posed by radiopharmaceutical development and commercialization, and for quarterly expert insights into other timely precision medicine topics, please visit: www.instituteatprecision.com

About Precision AQ

Drawing on deep oncology and radiopharmaceutical expertise, Precision AQ partners with sponsors to support commercialization and market access with data-driven engagement and evidence strategies, enabling patients to access critical therapies.

Authors

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Hannah Deresiewicz is an Executive Vice President and Managing Director of Investor Relations & External Communications at Precision AQ, where she leads a team that supports biotech and pharmaceutical clients through critical inflection points, including IPOs, M&A transactions, and major clinical and commercial milestones. As a seasoned communications strategist with deep expertise in investor relations, public relations, and corporate communications for life sciences companies, Hannah's career spans over a decade of advising companies at the forefront of innovation, helping them navigate the complexities of public markets and strategic growth. Hannah has played a key role in supporting dozens of transactions, including IPOs, PIPEs, follow-on offerings, and high-profile acquisitions. Her insights into capital markets and stakeholder engagement make her a trusted partner to executive teams and boards preparing for transformative events.

Anne Marie Fields

Anne Marie Fields is a Managing Director and Team Lead at Precision AQ, where she brings decades of life sciences communications expertise to guide biotech and pharmaceutical companies through pivotal moments—from financing strategies to clinical and corporate milestones. A seasoned investor relations and corporate communications specialist, Anne Marie has built a career advancing the strategic positioning of innovative healthcare companies, drawing on extensive agency and in-house experience across biotechnology, medical technology, and global biopharmaceutical companies. Throughout her career, Anne Marie has developed and executed high impact investor relations programs, leveraging strengths in corporate messaging, investor targeting, crisis communications, event planning, and collateral development. Her ability to align strategic narratives with capital market expectations makes her a trusted advisor to executive teams navigating complex growth pathways. With a blend of analytical rigor, creative strategy, and deep sector insight, Anne Marie continues to drive successful engagement outcomes for clients seeking to elevate visibility, strengthen investor relationships, and advance their corporate objectives.

Andrew Dymon

Andrew Dymon is an Associate Director at Precision AQ where he has spent the last four years providing strategic investor relations counsel to private and public biotech companies across the evolving biotechnology landscape. Andrew's deep analytical skills and attention to detail have enabled him to act as an advisor to companies through a variety of pivotal inflection points, including data readouts, key financings, product approvals, M&A, IPOs, and more.

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