Corporate Presentation

May 2023

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In some cases, you can identify forward-looking statements by terminology such as "may," "should," "expects," "intends," "plans," "anticipates," "believes," "estimates," "predicts," "potential," "continue," or the negative of these terms or other comparable terminology. These statements are only predictions. You should not place undue reliance on forward-looking statements because they involve known and unknown risks, uncertainties, and other facts, which are, in some cases, beyond our control and which could materially affect results. If one or more of these risks or uncertainties occur, or if our underlying assumptions prove to be incorrect, actual events or results may vary significantly from those implied or projected by the forward-looking statements. These risks and uncertainties include, but are not limited to, uncertainties inherent in the drug development process, including Fusions' programs' early stage of development, the process of designing and conducting preclinical and clinical trials, the regulatory approval processes, the timing of regulatory filings, the challenges associated with manufacturing drug products, Fusion's ability to successfully establish, protect and defend its intellectual property, risks relating to business interruptions resulting from the coronavirus (COVID-19) disease outbreak or similar public health crises and other matters that could affect the sufficiency of existing cash to fund operations. For a discussion of other risks and uncertainties, and other important factors, see the section entitled "Risk Factors" in the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2023, as well as other risks detailed in the Company's subsequent filings with the Securities and Exchange Commission. You should read this presentation and the documents that we reference in this presentation completely and with the understanding that our actual future results may be materially different from any future results expressed or implied by these forward-looking statements. The forward-looking statements in this presentation represent our views as of the date of this presentation. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should therefore not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this presentation.

This presentation also contains estimates, projections and other information concerning our industry, our business and the markets for our product candidates. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances that are assumed in this information. Unless otherwise expressly stated, we obtained this industry, business, market, and other data from our own internal estimates and research as well as from reports, research, surveys, studies, and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data and similar sources. While we are not aware of any misstatements regarding any third-party information presented in this presentation, their estimates, in particular, as they relate to projections, involve numerous assumptions, are subject to risks and uncertainties and are subject to change based on various factors.

Market data and industry information used throughout this presentation are based on management's knowledge of the industry and the good faith estimates of management. We also relied, to the extent available, upon management's review of independent industry surveys and publications and other publicly available information prepared by a number of third party sources. All of the market data and industry information used in this presentation involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. Although we believe that these sources are reliable, we cannot guarantee the accuracy or completeness of this information, and we have not independently verified this information. While we believe the estimated market position, market opportunity and market size information included in this presentation are generally reliable, such information, which is derived in part from management's estimates and beliefs, is inherently uncertain and imprecise. No representations or warranties are made by the Company or any of its affiliates as to the accuracy of any such statements or projections. Projections, assumptions and estimates of our future performance and the future performance of the industry in which we operate are necessarily subject to a high degree of uncertainty and risk due to a variety of factors, including those described above. These and other factors could cause results to differ materially from those expressed in our estimates and beliefs and in the estimates prepared by independent parties.

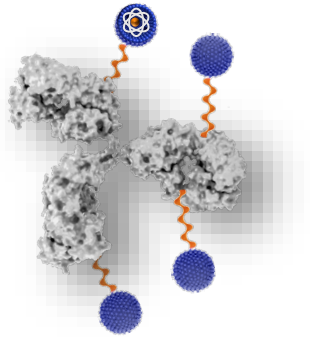
Radiopharmaceutical Resurgence

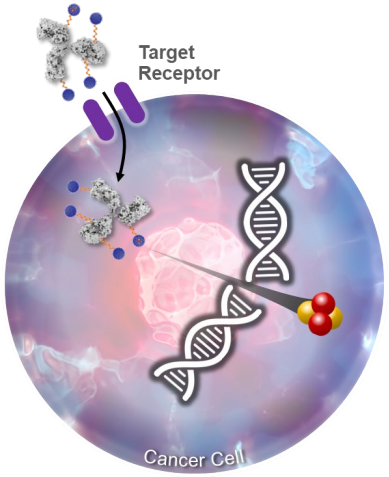
- Approach systemically delivers radiation directly to tumor cells
- Simple, proven MOA to kill cancer cells through direct DNA damage
- Opportunity to address unmet medical needs and replace existing therapies, including ADCs, with more precise targeting and leveraging radiation's potency and unique MOA
- True precision medicine - imaging biomarker allows for improved patient selection
- Technology advancements and clinical data have led to recent surge in investments, M&A, and product launches in the past five years:
  - **Approvals:** PLUVICTO, XOFIGO, LUTATHERA
  - **M&A:** ~$6B in deal value*

*Internal data source

Targeted Alpha Therapy

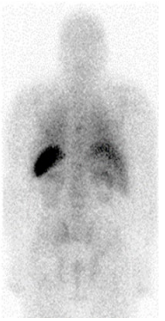
Targeting molecule + a medical isotope

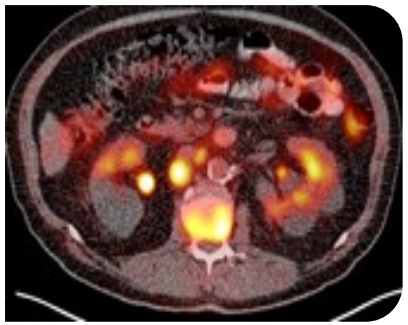




Medical Imaging

To Enrich Target Population

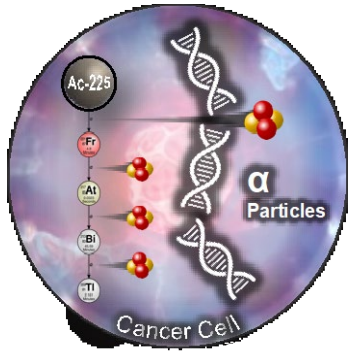




Radiopharmaceuticals are poised to become one of the primary pillars of modern cancer therapy

Fusion is Differentiated in the Emerging Radiopharmaceutical Space

Exploiting the power of alpha



- Sector with significant momentum and barrier to entry
- Targeting high unmet need
- Mono & combo therapies

Proven team, platform & internal R&D

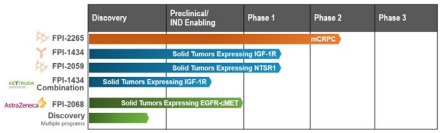
***FAST-Clear*™ Linker**

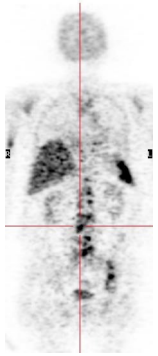
Radiopharma Expertise:

- R&D
- Non-clinical
- Clinical
- Manufacturing
- Commercial

Programs & IP

Deep clinical pipeline





- Combo IP: ^{225}Ac + checkpoint inhibitors

Supply chain advantage

Access to:

TRIUMF

NIOWAVE *Accelerating the Fight Against Cancer*

BWXT BWX Technologies, Inc.

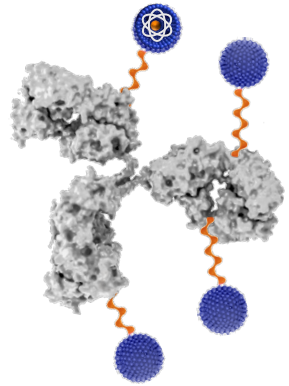
Ac-225

GMP TAT Production

Validating partnership

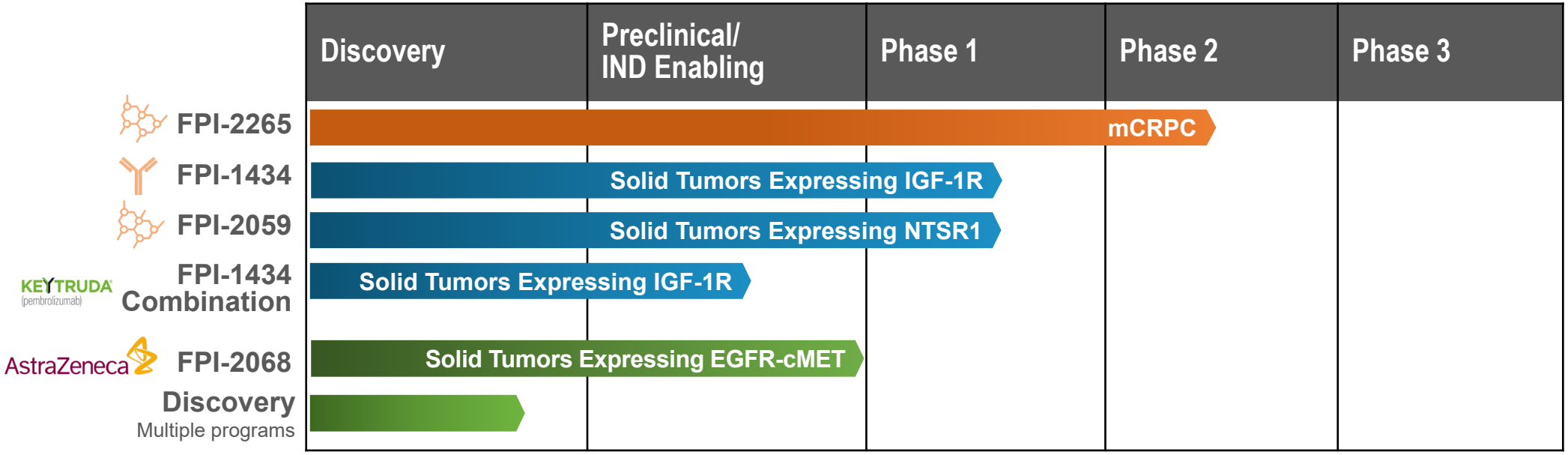
AstraZeneca

- Next gen ADCs
- Combo therapies



Fusion is a vertically integrated radiopharma company with a platform that is creating precision medicines in areas of high unmet need

Fusion's Platform Supports Multiple Development Opportunities



With four clinical stage programs we expect to have multiple clinical updates over the next 24 months

Fusion is well positioned to bring TATs to market from supply chain and alpha experience perspectives

Secure Actinium Supply

Global Leaders in Actinium Production Currently Producing and Shipping Material

Ac-225

Supply Agreement: U.S. DEPARTMENT OF ENERGY

Strategic Partnerships

TRIUMF

- **Preferential access** to supply
- **Ability to scale** to meet our needs
- **Co-ownership of NewCo** for production of Ac-225

NIOWAVE *Accelerating the Fight Against Cancer*

- **Guaranteed access** to % of capacity
- **Preferred access** to excess capacity
- **Option to invest** for additional production

BWXT Medical

- **Global** commercial medical isotope producer and distributor
- Partnership for **preferred access to actinium**

Largest dedicated TAT manufacturing facility globally

Fusion Pharmaceuticals Inc.

- Internal GMP manufacturing to be fully operational by 2024
- Clinical & commercial supply capabilities
- Adjacent to current R&D facility for efficiency
- Multiple CDMO relationships in place today to augment supply

Skills, infrastructure, and experience – Fusion is the only company with five ^{225}Ac-based radiopharmaceuticals, including a Phase 2 program, currently in the clinic

Fusion's Radiopharmaceutical & Oncology Drug Development Expertise

CEO
John Valliant, PhD

CMO
Dmitri Bobilev, MD

CTO
Eric Burak, PhD

CFO
John Crowley, CPA

CHIEF OF STAFF
Cara Ferreira, PhD

CSO
Chris Leamon, PhD

PRESIDENT & CBO
Mohit Rawat

CLO
Maria Stahl, JD

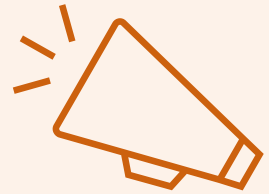
Fusion's team has deep radiopharmaceutical & oncology expertise:

- Creation and operation of a global radiopharmaceutical manufacturer
- INDs/CTAs and development of multiple radiopharmaceuticals including TATs
- Development of PSMA-targeted radiopharmaceutical acquired by Novartis
- R&D leadership at Nordion, a global leader in medical isotope and radiopharmaceutical production
- Commercial leadership within Novartis Oncology

abbvie · Advanced Accelerator Applications · charles river · cpdc Centre for Probe Development and Commercialization · ENDOCYTE · Idenix Pharmaceuticals · Rib-X Pharmaceuticals · Ironwood · Merus · NOVARTIS · TETRAPHASE PHARMACEUTICALS · VERTEX · nordion · SEPRACOR

Recent News and Highlights

- Fusion acquired a Phase 2 program for ^{225}Ac-PSMA I&T, targeting metastatic castrate resistant prostate cancer
  - Asset with Proof of Concept in multiple investigator sponsored studies
- First patient dosed in FPI-2059 Phase 1 trial
  - ^{225}Ac analogue of a ^{177}Lu-small molecule with prior clinical experience
- Anticipate providing an update on the FPI-1434 Phase 1 trial at the SNMMI Annual Meeting on June 27, 2023
- First program under the collaboration with AstraZeneca received IND clearance from the FDA
  - Bispecific antibody-based TAT targeting two validated targets (EGFR-cMET)



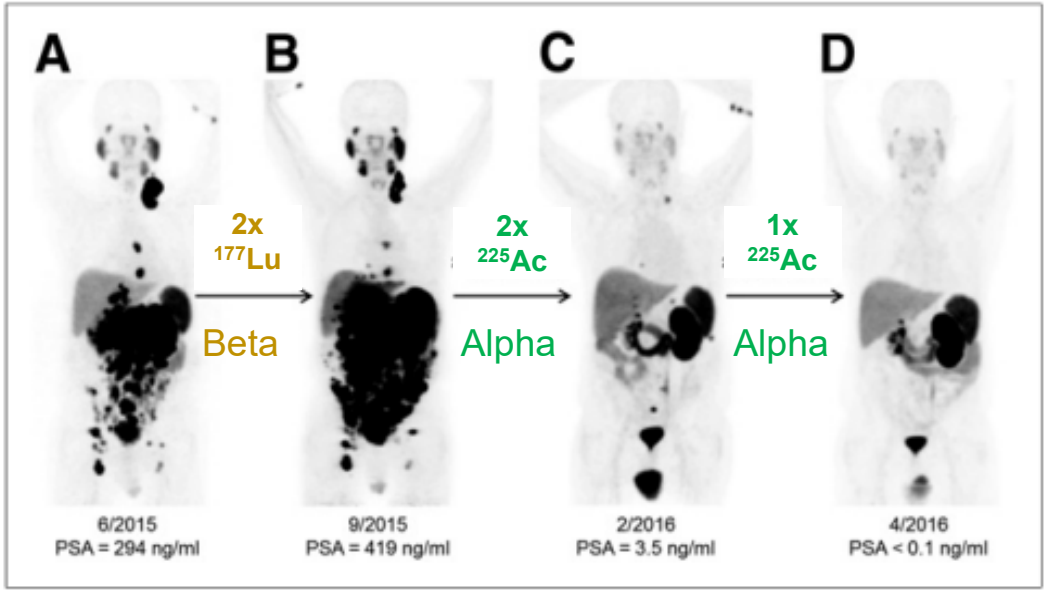
Programs

Fusion’s growing and diverse portfolio

FPI-2265: Fusion's Phase 2 Actinium-Based PSMA Program

- Clinical data is emerging showing documented activity of ^{225}Ac-PSMA in patients who did not respond or progressed on or after ^{177}Lu-PSMA
  - Creates opportunity to be a best-in-class therapy
  - ^{225}Ac-PSMA-I&T has achieved clinical POC already in mCRPC
- Actinium supply barriers are preventing large scale studies and commercialization of the potentially superior alpha therapies
- **Fusion is uniquely positioned with our ^{225}Ac supply and expertise to bring the first ^{225}Ac-PSMA agent to market**
  - Similar first-to-market opportunity to what Endocyte did with ^{177}Lu-PSMA-617 (which became Pluvicto)

Fusion acquired a Phase 2 IND (TATCIST trial) with plan to develop ^{225}Ac-PSMA-I&T as a potential first to market



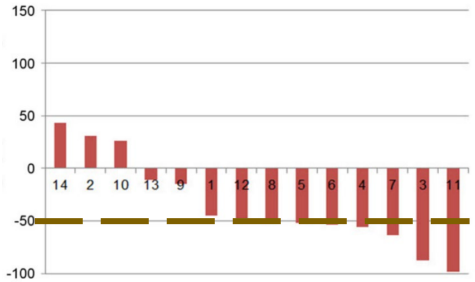
Kratochwil et al. (2016) J. Nucl. Med. 57:1941-1944

Multiple investigator sponsored studies support potential of ^{225}Ac-PSMA

- Over 250 patients treated with ^{225}Ac-PSMA globally, including ~100 post-^{177}Lu-PSMA
- Compelling efficacy data
  - ^{177}Lu-naïve: 63-66% biochemical response rates
  - Post–^{177}Lu: 28-65% biochemical response rates
- Safety results supportive of developability (no observed kidney toxicity, manageable heme tox and xerostomia)

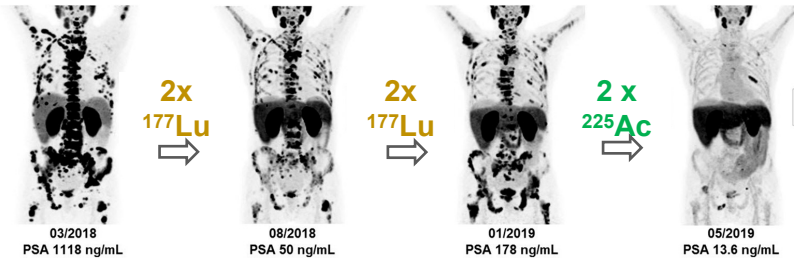
Literature Data: Radiographic improvement and PSA response on PSMA TAT after progression on Lu-PSMA

PSA-change (%) after first cycle



50% (7/14) biochem. response

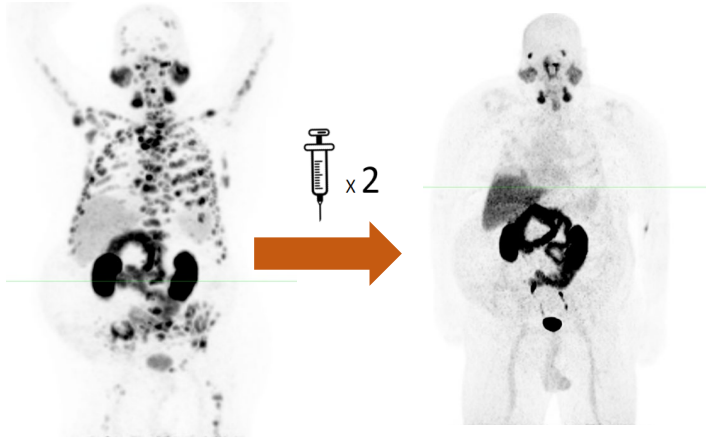
PSMA PET Images



Zacherl et al. (2021) J Nucl Med 62:669–674

Preliminary TATCIST data thus far is consistent with published data on ^{225}Ac-PSMA

Radiographic assessment by PSMA PET



Subject #4 - Complete Response (both by bone and PSMA-PET scans)

FPI-2265 Development Strategy

- **Initial Approval:** Potential first-to-market in patients who progressed on or after ^{177}Lu-PSMA - area of highest unmet need; addressing the expected growth in the number of patients treated with ^{177}Lu-PSMA agents
- **Follow-On Opportunities:** Potential to expand into the treatment of ^{177}Lu-naive patients and move to early lines of therapy leveraging our combination IP (I/O, DDRis)

In ~12 months Fusion will be able to report:

- Data for 20-30 patients, including safety and efficacy results (incl. PSA_{50} responses, ORR, rPFS)

In 2024:

- Anticipated completion of Phase 2 study
- Initiation of Phase 3 study activities (pending alignment with FDA on study design)

- Focus in 2023 will be expanding to additional sites, expanding manufacturing capacity and completing enrollment for initial set of data
- We expect high demand for access to the treatment

Notes:

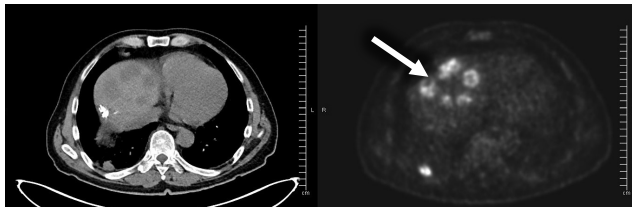
- Endocyte (acq. By Novartis) had data on just 30 patients from an IIT Ph2 trial before they commenced Ph3; POINT leveraged data from 27 patients from their lead-in study for SPLASH at ESMO 2022 to raise $225M
- PSMAfore trial (Ph3 chemo-naive, n=470) took 17 months to get to primary completion with actual start in June 2021 and actual primary completion in October 2022 per clinicaltrials.gov (NCT04689828)

FPI-2059: A small molecule TAT targeting *Neurotensin Receptor 1* (NTSR1)

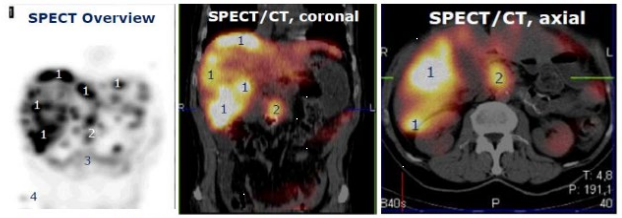
Fusion acquired the small molecule ^{177}Lu radiopharmaceutical, IPN-1087, from Ipsen

- Human imaging data
- Promising early clinical safety data

Imaging Shows Targeted Uptake In NTSR1 Positive Tumors



Colorectal Cancer Patient

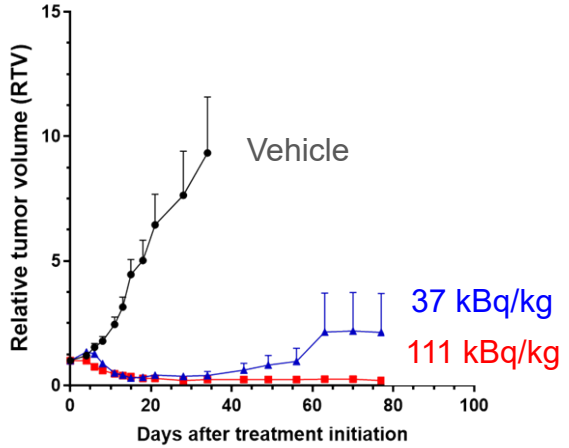


Baum et al., JNM, 2017 (also published JNM, 2018 May 59(5):809-814)

Early trials were focused on CRC, PDAC & Gastric cancers

Replace ^{177}Lu with ^{225}Ac

^{225}Ac-IPN-1087 Shows Single Dose Tumor Kill In Preclinical Models



Tumor regression with actinium-based FPI-2059 is achieved at doses **1500x-lower** than the lutetium-based compound

FPI-2059 augments Fusion's portfolio with a small molecule-based TAT in areas where there is high unmet medical need

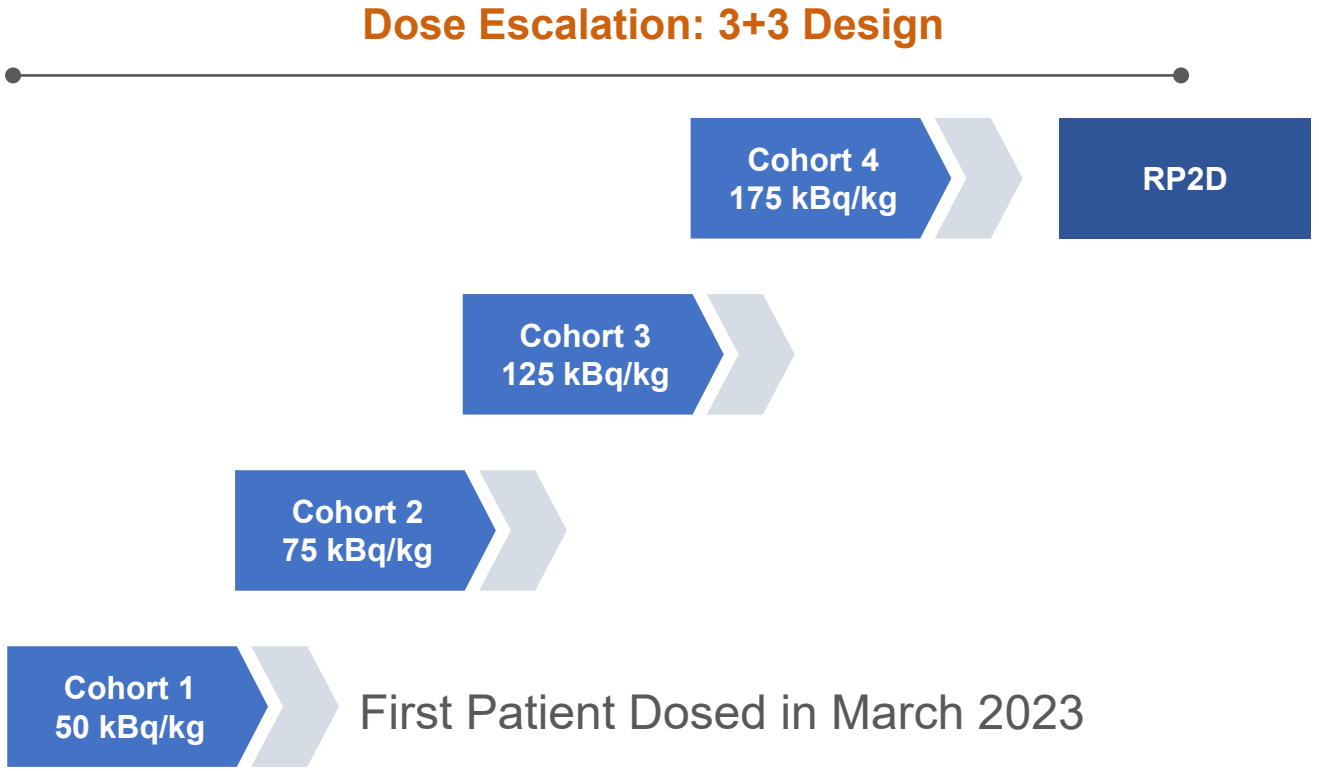
FPI-2059 Development Program

Patients with NTSR1+ solid tumors as determined by SPECT/CT imaging

Initial indications:

- Pancreatic ductal adenocarcinoma
- Colorectal
- Squamous cell carcinoma head & neck
- Gastric
- Ewings sarcoma
- NED prostate

Treatment: [^{225}Ac]-FPI-2059
every 56 days for up to **4 cycles**

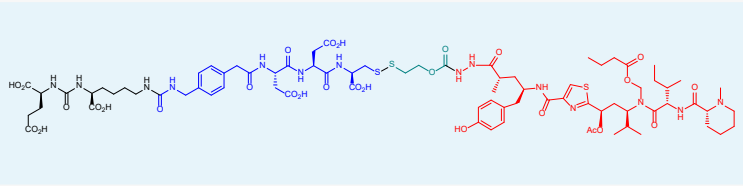


TATs as Next Generation ADCs

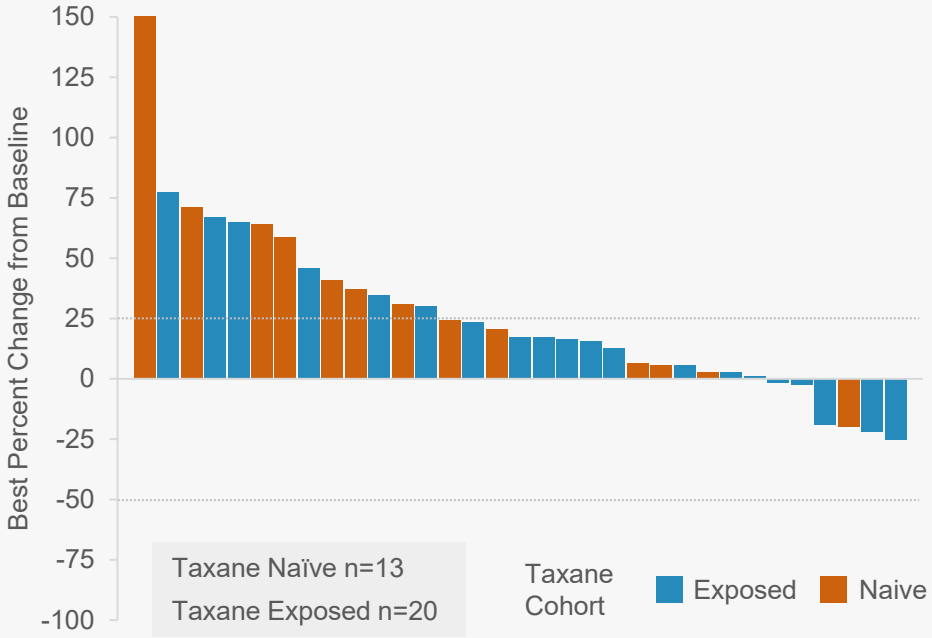
Creating Next Gen ADCs – replacing toxins with isotopes

Poison

EC1169
(PSMA-tubulysin)

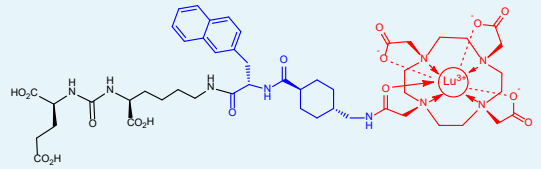


PSA
Best % change from Baseline

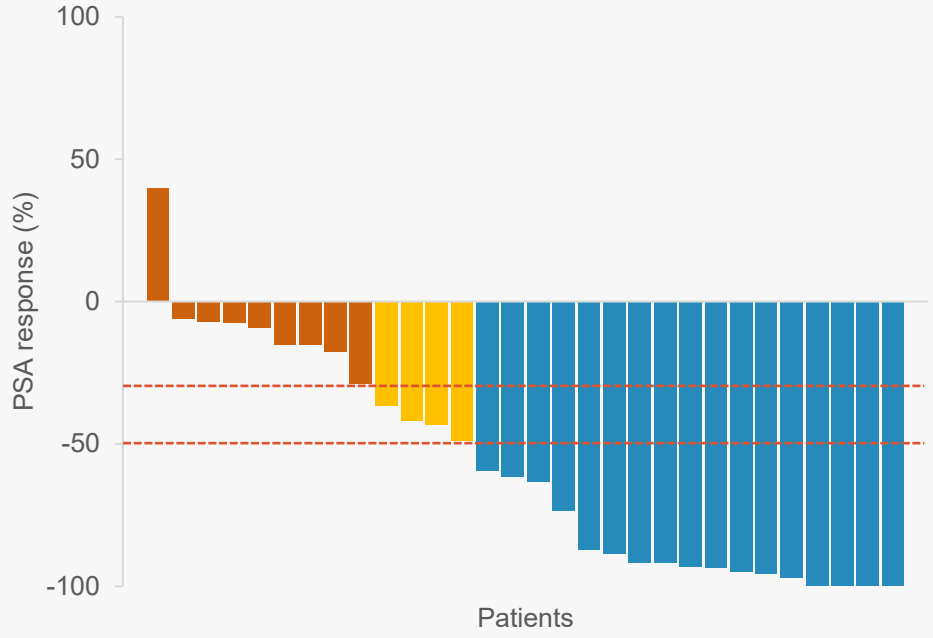


Morris et al. (2017) J Clin Oncol 35, suppl; abstr 5038

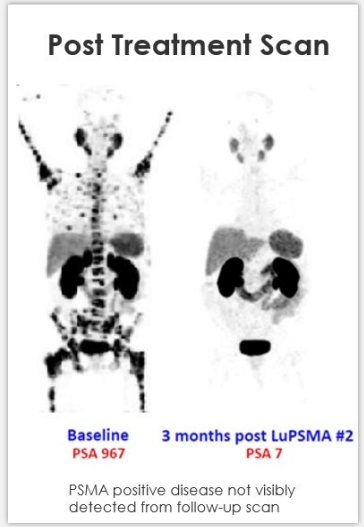
Pluvicto
(^{177}Lu-PSMA-617)



PSA
Best % change from Baseline



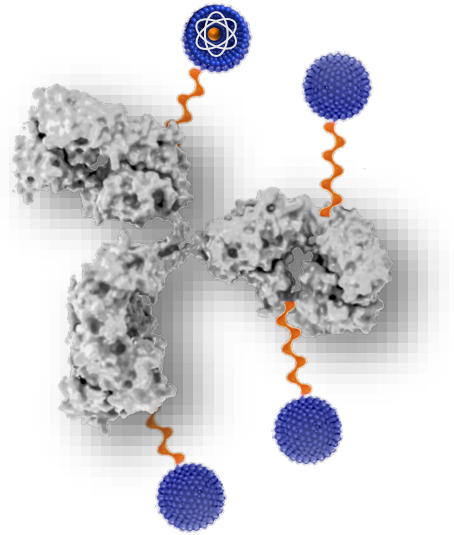
Hofman et al. (2018) Lancet Oncol 19:825–33



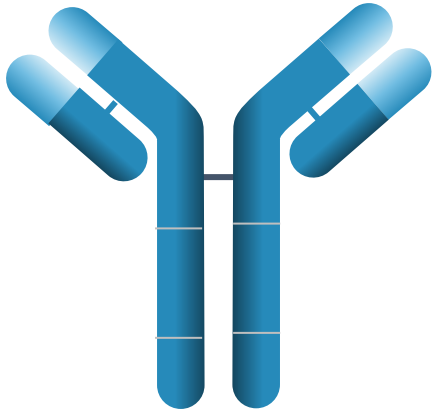
Fusion's Approach to Next Generation ADCs

Determining the optimal target profile and dosing paradigm to maximize the therapeutic index for ^{225}Ac-labeled antibodies opens the door to a new generation of radiopharmaceuticals beyond PSMA

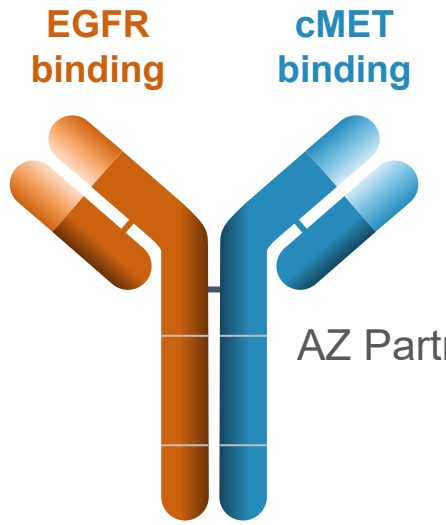
Previously Evaluated Pan-Tumor Targets (IGF-1R)



Validated Targets (FGFR3)



Targets with Approved ADCs/Antibodies (EGFR-cMET)



AZ Partnership

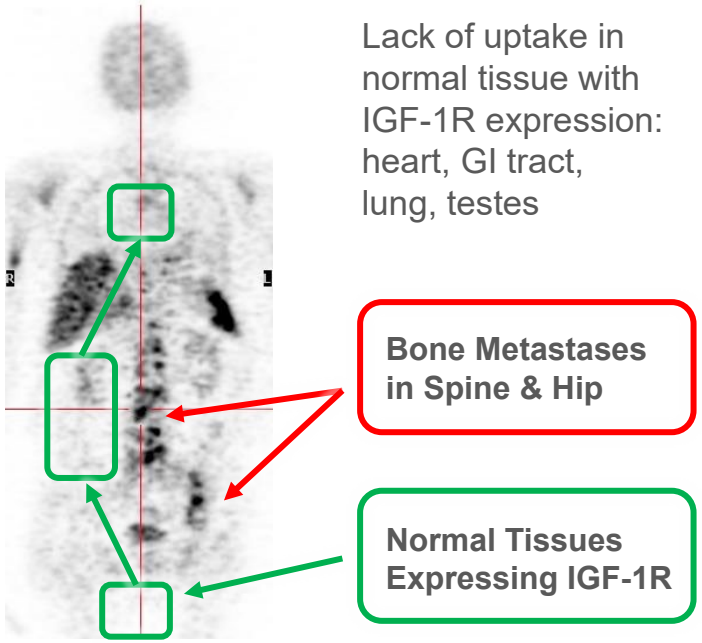
Each program utilizes Fusion's Fast-Clear Linker Technology

FPI-1434: Targeting *Insulin-like Growth Factor 1 Receptor* (IGF-1R)

The power of alphas creates the opportunity to explore antibody/ADC oncology targets in new ways

- **IGF-1R: Attractive alpha therapeutic delivery mechanism**
  - Over-expressed on the surface of cancer cells
  - Low expression on surface of normal tissue
  - Rapidly internalizing receptor to concentrate alpha-particles inside tumor cells
- **MOA: Alpha particle-based cell kill – NOT based on blocking the IGF-1R pathway**
  - IGF-1R is used only to identify and deliver the alpha emitting payload to the tumor

Imaging shows ability to selectively target tumors expressing IGF-1R



IGF-1R Expression in Solid Tumors

100%	Ovarian
100%	Bladder
90%	Sarcomas
62%	Head & Neck
62%	Prostate
59%	NSCLC
57%	Pancreatic
50%	Colorectal
50%	Liver
47%	Breast
43%	Small Cell Lung
40%	Esophagus
36%	Renal
36%	ACC

IGF-1R addresses a large market opportunity in multiple solid tumors

FPI-1434 Development Strategy For a First in Class TAT

Step 1. SAD

Fusion completed SAD study: Good safety and imaging in multiple solid tumor types

Step 2. MAD with lowest AUC

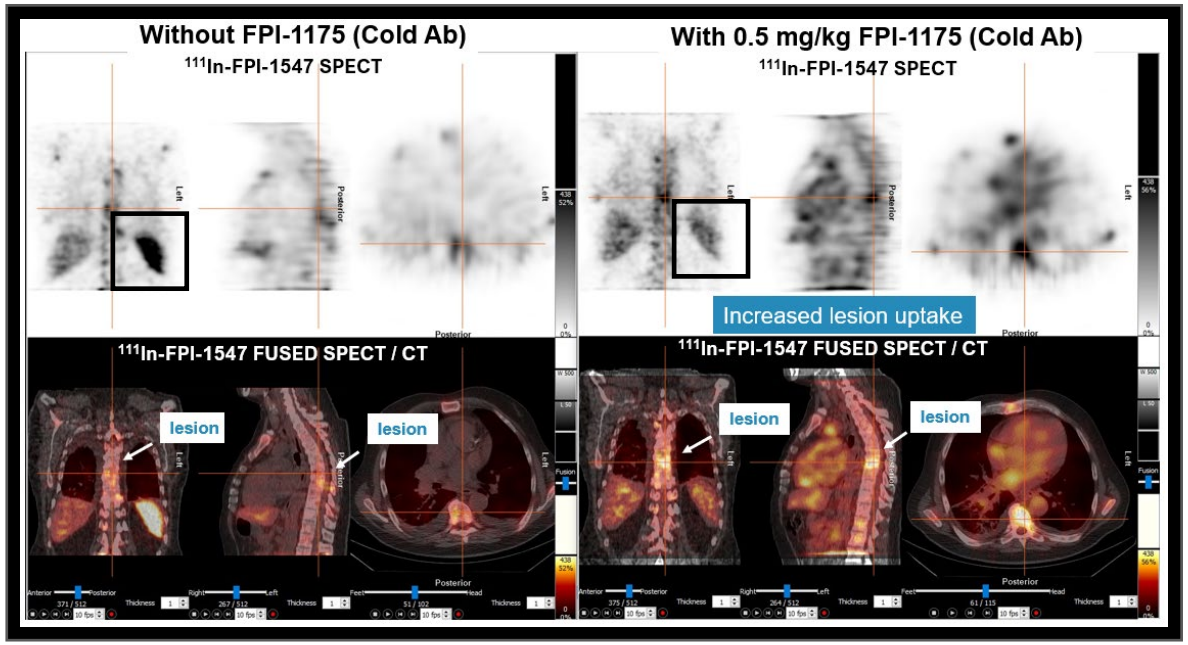
Initiated multiple ascending dose study beginning with hot-only arm

Step 3. MAD with increased AUC

Addition of cold antibody

Cold Antibody Dosing Regimen Showing Promising Early Data

Multiplanar Views ~48 h



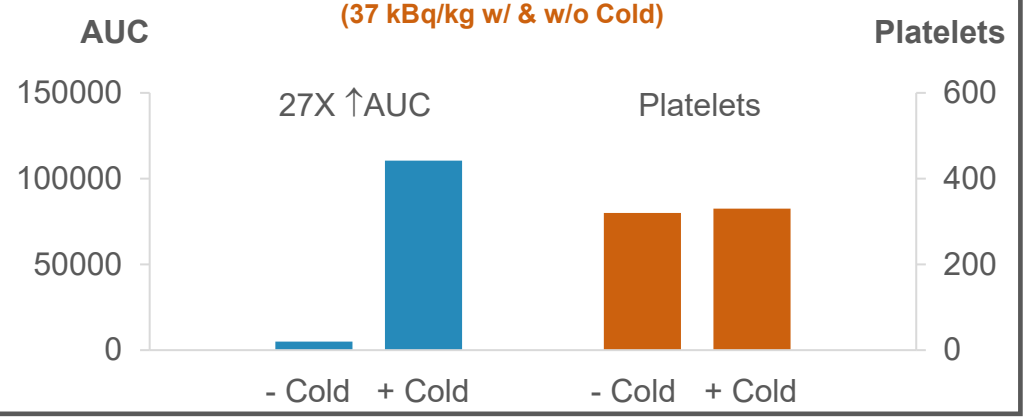
Dose (Gy)

Liver	15% ↓
Spleen	42% ↓
Av. of 16 tumor lesions	47% ↑

NHP Data

Adding Cold Ab Does Not Lead to Decreases in Platelets

(37 kBq/kg w/ & w/o Cold)



AstraZeneca Collaboration

FPI-2068: Bispecific-based TAT provides enhanced tumor specificity

Dual targeting of EGFR & cMET is a validated approach

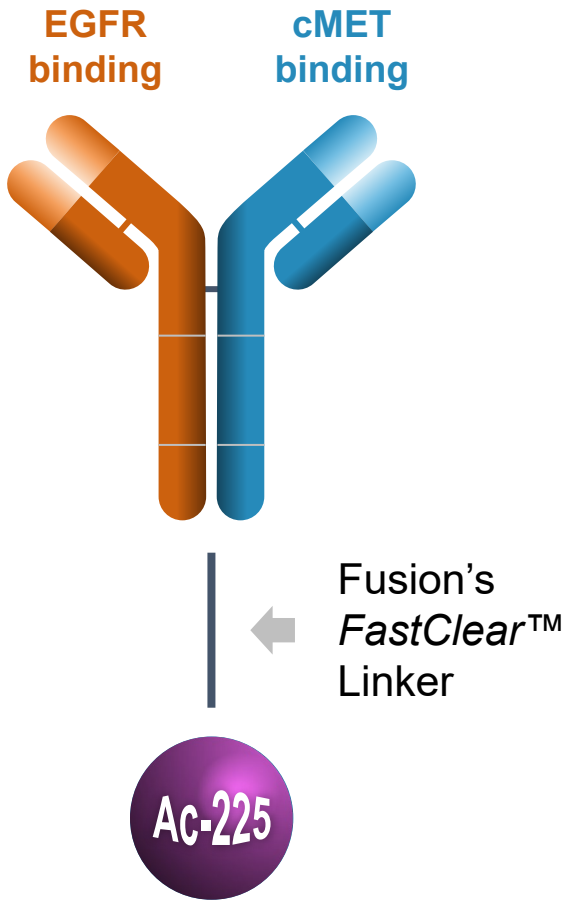
Potentially **large addressable patient populations** in

- Non-Small Cell Lung Cancer
- Head and neck squamous cell carcinomas
- Pancreatic ductal adenocarcinoma
- Colorectal cancer

Preclinical data supportive of development based on efficacy and biodistribution in various animal models

IND cleared in April 2023

Co-expression and co-localization of EGFR and cMET improve binding to and internalization in the tumor



Collaboration Agreement with AstraZeneca

Fusion Pharmaceuticals Inc. + AstraZeneca

1 Three Novel Targeted Alpha Therapies

- Co-fund
- Co-develop
- Option to co-commercialize in U.S.

2 Up to 5 Combination Therapies with TATs

- DNA Damage Response Inhibitors (DDRis)
- Immuno-oncology agents
- AZ solely funds unless Fusion opts-in

Collaboration combines AstraZeneca's ADC and oncology expertise with Fusion's TAT discovery, development and manufacturing platform

Fusion's Strategy Around Combination Therapies

Combining I/O and DDRi Therapeutics with TATs to potentially improve efficacy and increase addressable patient populations

Fusion is Pioneering TAT + I/O Research

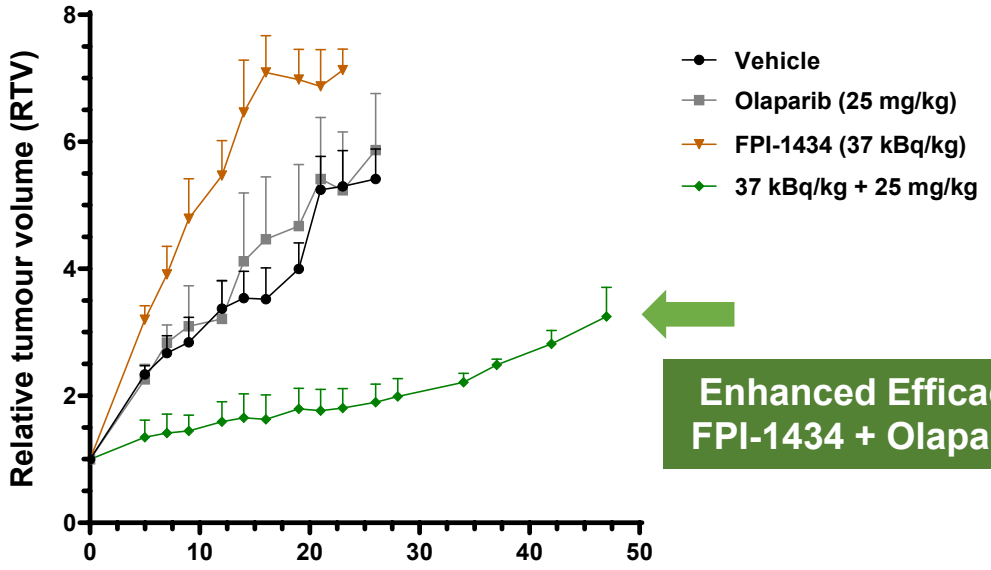
Immune Competent Mouse
CT-26 Colorectal Tumor
(muIGF-1R^{++}, CTLA^{++}, PD-1^{+} Tumor)

↓ Treat (TAT + CPIs)

↓ Try to re-grow the tumor

Results: 13 of 15 animals did not grow a second tumor
"Vaccine effect" indicates synergistic effects of combining with I/O and supports opportunity expand market

FPI-1434 + Olaparib
PARP Insensitive Tumor



Enhanced Efficacy FPI-1434 + Olaparib

Fusion has issued IP on combination of ^{225}Ac and I/O drugs and patent pending on combination of ^{225}Ac and DDRi

Scitaris analysis prepared for Fusion Pharmaceuticals, Inc (2022)

Financials and Key Milestones

Scalable Capacity to Support Multiple Programs with TAT Platform
Pro Forma as of 5/11/23

Balance Sheet	Expected Cash Runway	Outstanding
$241.2M* Cash, Cash Equivalents and Investments	Cash to Fund Operations **into Q2 2025**	**68.6M**** Basic Common Shares

*Includes cash, cash equivalents and investments as of March 31, 2023, together with gross proceeds from a private placement executed in May 2023
**Includes shares issued in private placement executed in May 2023

Future Milestones by Program

Milestone	Timing*
FPI-1434 Phase 1 Preliminary Data	Q2 2023
FPI-2265 Preliminary Data on 20-30 Patients	Q1 2024
FPI-1434 Combo Studies KEYTRUDA®	6 – 9 months post-RP2D in monotherapy
FPI-2059 Clinical Data Update	TBD
FPI-2068	TBD

*Timelines assume no additional disruptions of clinical activities

Fusion Pharmaceuticals Inc.

Thank You

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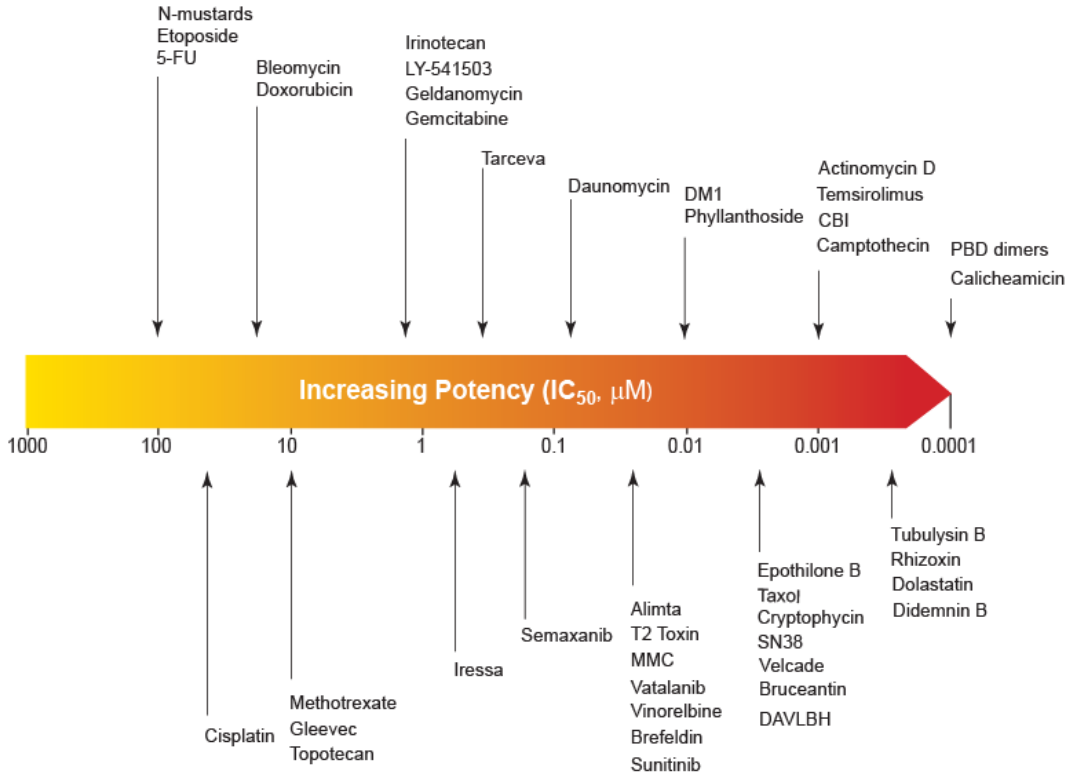
Fusion Pharmaceuticals Inc.

Appendix

www.FusionPharma.com

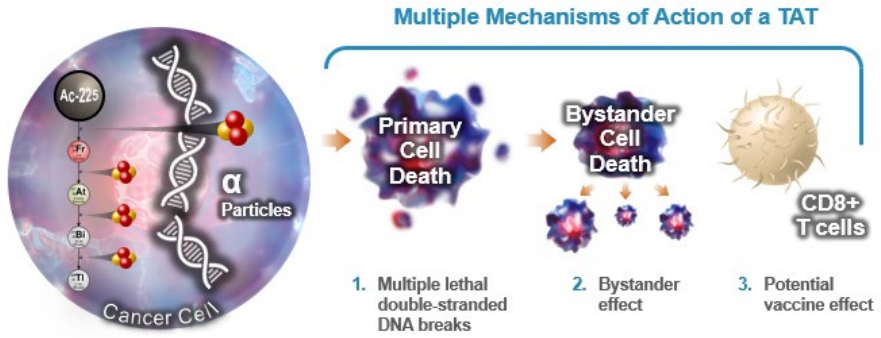
Targeted Alpha Therapy (TATs) as Next Generation Antibody Drug Conjugates (ADCs)

The search for more potent ADC toxins:



Increasing the potency of the payload has resulted in multiple approved ADC products (e.g. Enhertu)

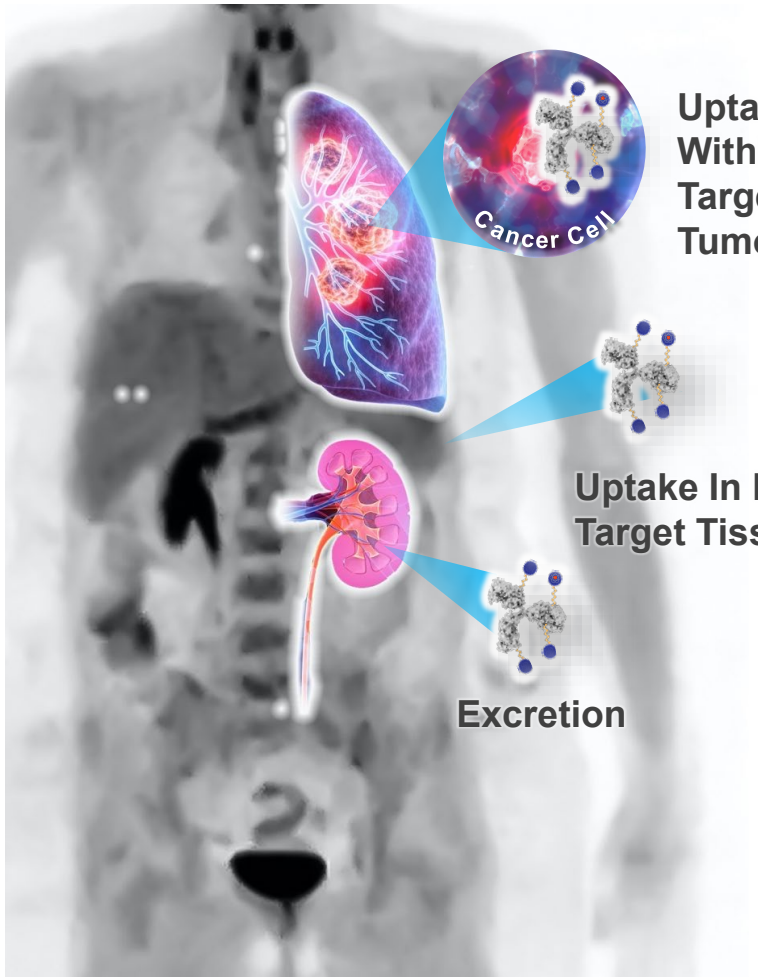
Leveraging the power and precision of alpha emitters



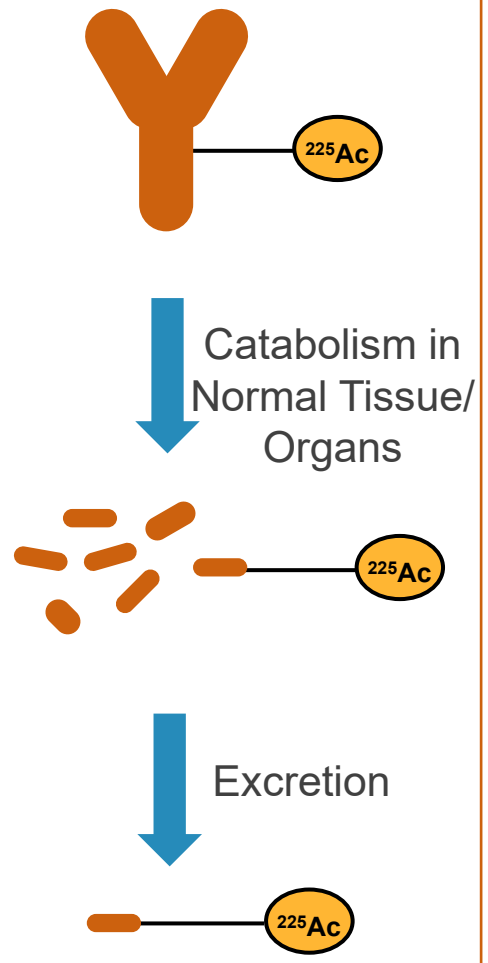
TAT Advantages Over ADCs	
Potent / differentiated mechanism of action to help overcome resistance to conventional toxins	✓
Avoids toxin recycling - potentially better tolerability	✓
Adds a wider "range of kill" vs toxins	✓
Effective against both dividing and non-dividing cells	✓
Opportunity to **differentiate** vs conventional ADC technologies	✓
Built in **imaging biomarker** to support patient selection	✓
Ability to pursue targets that show "some" activity	✓

"Radioconjugates are the next generation to the mainstays of cancer care." - *BioWorld*, April 11, 2022

Fast-Clear™ Linker Enables Development of Next Generation Antibody-Based TATs

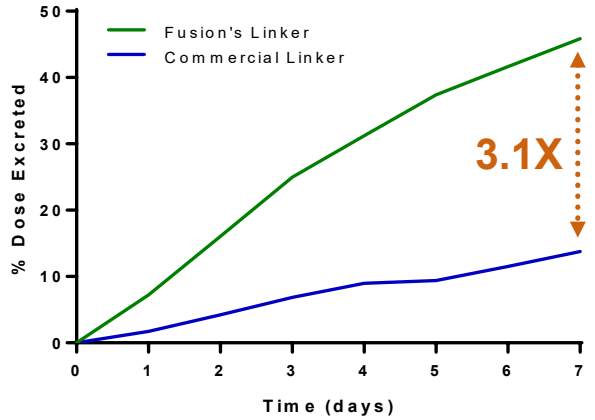


Excretion Process



Fast-Clear™ Linker Enhances Clearance of Non-Tumor Localized TAT in Mice

- ✓ **Same tumor uptake and efficacy**
- ✓ **Faster and improved excretion**



Strategy: Use Fast-Clear™ to develop TATs for

- Tumor agnostic targets (IGF-1R)
- Validated antibody/ADC targets (FGFR3)
- Bispecifics

Utilize both proprietary and partnered antibodies