



**A clinical-stage biotech company building on cancer immunotherapy and diagnostic platforms**

INVESTOR PRESENTATION SUMMARY

January 2022





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# Alissa Pharma Platforms

- **Proprietary radio-immuno-therapy drug platforms with anti-ferritin antibodies to address unmet medical needs in oncology and hematology by targeting cancer cells known to:**
  1. **Overexpress *ferritin* on the surface.**
  2. **Be radiosensitive.**
- Ferritin is a naturally occurring protein which regulates proliferation, angiogenesis, immune suppression and iron delivery.
- Human and animal studies\* indicate that Alissa's proprietary therapeutics, designed for single-dose outpatient administration, can treat a number of tumors efficaciously:
  - Hodgkin lymphoma
  - Hepatocellular carcinoma
  - Pancreatic cancer
  - Neuroblastoma

\* Ferritarg™ Type-B FDA Meeting Request 4/10/2015

# Alissa Pharma – Management



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**Stephane Allard, MD**

Founder, President & CEO

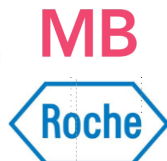


Stephane Allard, MD has over thirty-five years of experience in the pharmaceutical industry. He has played a significant role in successfully bringing major products such as Ambien® and Eloxatin® through the FDA process to the US market. He was President of Synthelabo Research and Vice President of Medical Affairs at Sanofi. Previously, Dr. Allard was President and CEO of Biovest and Chief Medical Officer at EpiCept/ Immune Pharmaceuticals. He received his Medical Doctorate from Rouen Medical College, France and subsequently earned a Diplome of Clinical Pharmacology and Pharmacokinetics from Pitie-Salpetriere Hospital in Paris, and a Diplome of CESAM (Certificate of Statistical Studies Applied to Medicine) from Jussieu University in Paris (Paris VI).



**Jean Kadouche, PhD**

Consultant

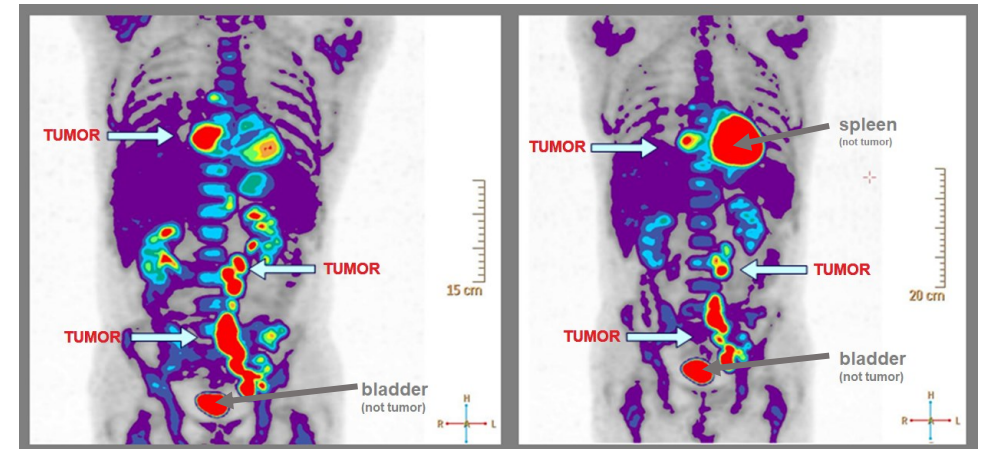


Jean Kadouche, PhD was the founder and CEO of MAT Biopharma (MAT). Prior to founding MAT, Dr. Kadouche was Head of the Immunology Department at Saint-Louis Hospital and Européen Georges Pompidou Hospital in Paris. He was a strategic consultant for the monoclonal antibody department of Merck's International Diagnostic Division and was Licensing Director at Sangstat Medical Europe, Scientific Consultant with Roche Molecular Systems in France and Scientific Consultant at Ortho-Diagnostic of Johnson & Johnson. He received a PhD. from the Pasteur Institute of Paris in Immunology and a MS in Pharmacy.

## Ferritarg™ $^{90}\text{Y}$ anti-ferritin polyclonal antibody for treatment of Hodgkin lymphoma.

- Ferritarg™ approved by the FDA for a Phase 2b clinical trial in the US.
- Efficacy and safety demonstrated in >250 patients.
- Orphan drug protection granted in the US and EU.
- Ferritarg™ used with subsequent administration of PD-1 inhibitors (e.g., Keytruda).
- Originally developed at Johns Hopkins and MD Anderson.

PET Scan of a phase 2 patient highlighting (red) lymphatic tumors.



Pre-Ferritarg™

10 Days Post-Ferritarg™

Global decrease of fixation estimated at 50%

# Ferritarg™ Advisory Board



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- **Andrew Zelenetz, MD, PhD**

Former Chief of Memorial Sloan Kettering Cancer Center's Lymphoma Department



Memorial Sloan Kettering Cancer Center™

- **Sarah Rutherford, MD,**

Assistant Professor at Weill Cornell Medicine  
Specialty: Hematology/Oncology



**Weill Cornell  
Medicine**

- **Francois Lokiec, PhD, ScD**

Head of the Department of Radiopharmacology  
Institute Curie, Paris, France



- **Jean-Francois Gestin, PhD**

Head of Radiochemistry and Radiopharmacy  
Unit 892 INSERM, Nantes, France



# Ferritarg™ Competition



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**FERRITARG™**

**ADCETRIS® (SEAGEN, INC.)**

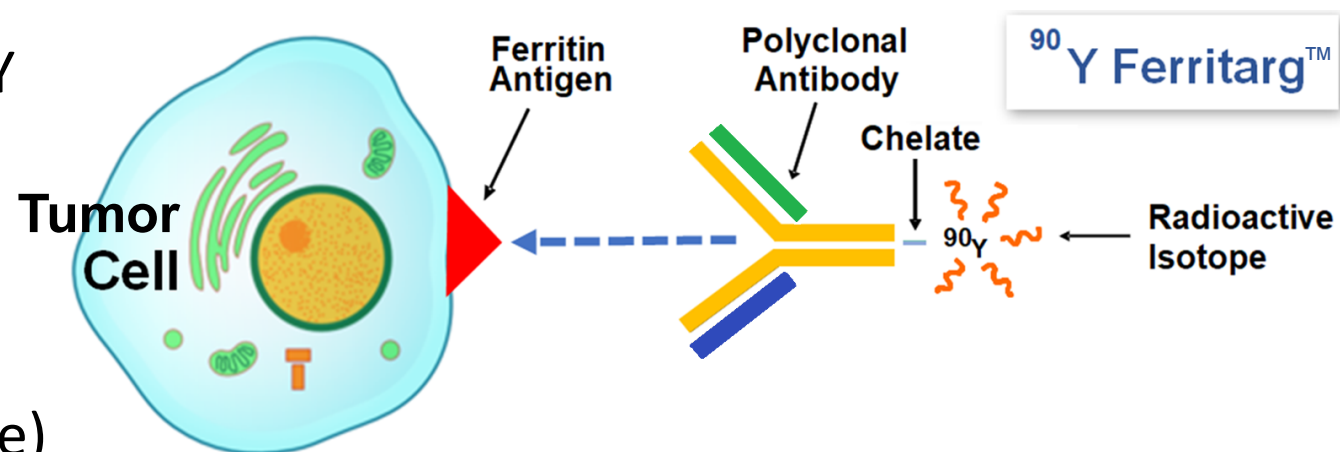
		<b>2019 sales* (US &amp; Canada): \$460 million (+34%)</b>
<b>Administration</b>	<p>Out-patient</p> <p>Single injection</p> <p>Boost after 3 – 4 months</p>	<b>≤16 cycles; 1 cycle every 3 weeks</b>
<b>Toxicity</b>	<b>Low</b>	<p>~50% of treated patients suffer severe peripheral neuropathy and blood system disorders.</p> <p>Black box warning: Risk of progressive multifocal leukoencephalopathy.</p>
<b>Treatment Pricing</b>	<b>~ \$50,000</b>	<b>&gt;\$300,000</b>
<b>Adjuvants</b>	<b>Study with PD-1 inhibitors planned</b>	<b>Conducting trials with PD-1 inhibitors</b>

\* SEC Form 10-K; 2019



# Validated Ferritarg™ Mode of Action\*

- Alissa designed Ferritarg™ as an antibody to which safe  $\gamma$ -emitting (gamma)  $^{111}\text{In}$ ium or  $\beta$ -emitting (beta)  $^{90}\text{Y}$ ttrium is linked via a chelate.
- The antibody component of Ferritarg™ selectively attaches to the ferritin antigen known to be overexpressed on the surface of certain tumor cells.
- Then, 2.3 Mev emission from the  $^{90}\text{Y}$  radioisotope component kills the adjacent malignant cells.
- The short range of the  $\beta$ -ray (5 mm) and rapid decay of  $^{90}\text{Y}$  (64 hr. half-life) limits damage to nearby healthy cells as verified in prior clinical trials of >250 patients.

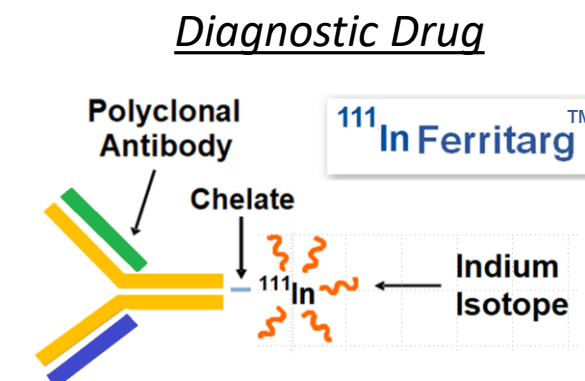
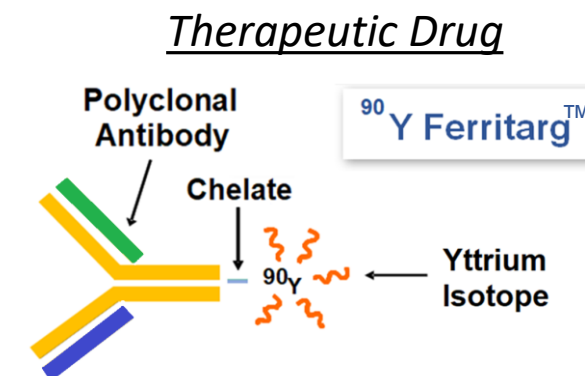






# Planned Ferritarg™ Development

- Originally developed for relapsed/refractory Hodgkin disease (R/R HD) at Johns Hopkins and MD Anderson.
- Preclinical studies confirmed specificity of anti-ferritin polyclonal antibody for ferritin-expressing tumors in cell culture.
- Strong isotope linkage to antibody using DOTA chelate.
- FDA has indicated no further preclinical data is needed before initiating Phase 2b clinical trial.
- Anticipating:
  - IND submission.
  - Fast track review.
  - Breakthrough designation.
- Gamma emitting  $^{111}\text{In}$  Indium isotope for diagnostic mapping



# Improvement of Radiolabeling for Ferritarg™



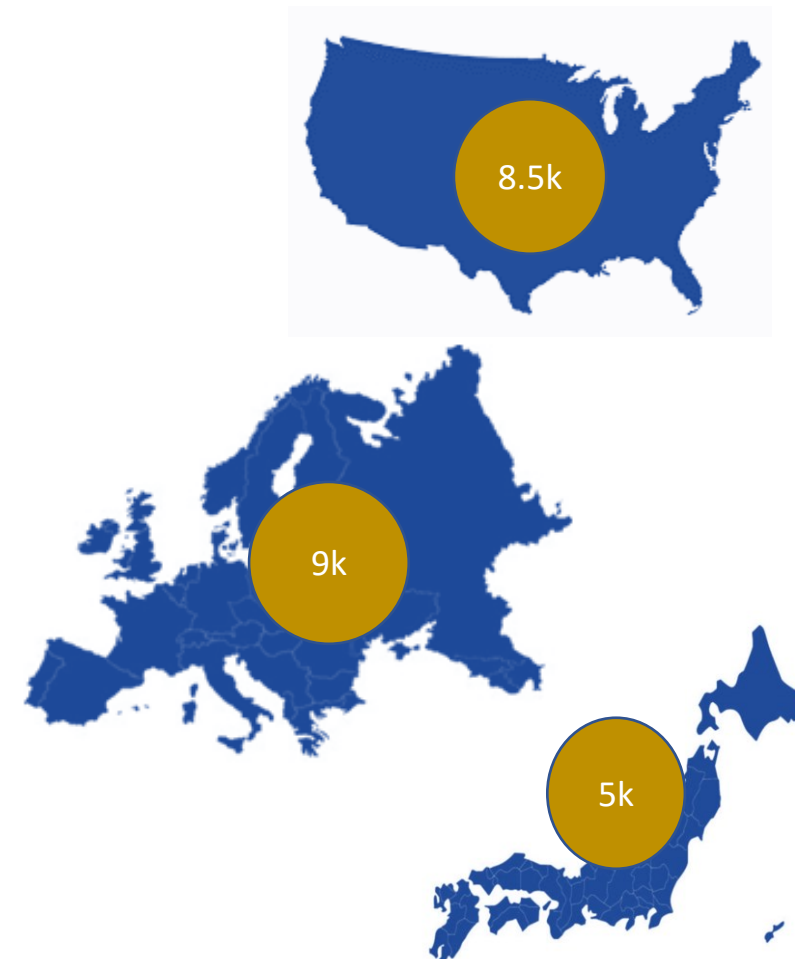
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	<b>Johns Hopkins &amp; MD Anderson Technology</b>	<b>Alissa Pharma Technology</b>
Chelate	15 steps to attach Chelate	GMP Manufacturing
Radiolabeling in Nuclear Medicine Department	5 steps to attach Isotope	Ready-to-use protocol
Human Serum Stability	66.5% after 2 hours	>93% after 48 hours



# Annual Incidence of Hodgkin Lymphoma

- US: 8,480 new cases/year\* 970 predicted deaths
- Europe: 9,000 new cases/year\*\*
- Japan: 5,000 new cases/year\*\*
- Patients with relapsed or refractory Hodgkin lymphoma represent ~20% and ~10%, respectively\*\*\*
- \$500mm+ Annual market potential\*\*\*\*



\* SEER estimates for 2020.

\*\* International Agency for Research on Cancer. Hodgkin Lymphoma. World Health Organization. 2018.

\*\*\* National Comprehensive Cancer Network (NCCN Guidelines) 2018.

\*\*\*\* Company Estimates.

# Ferritarg™ Projected US Penetration

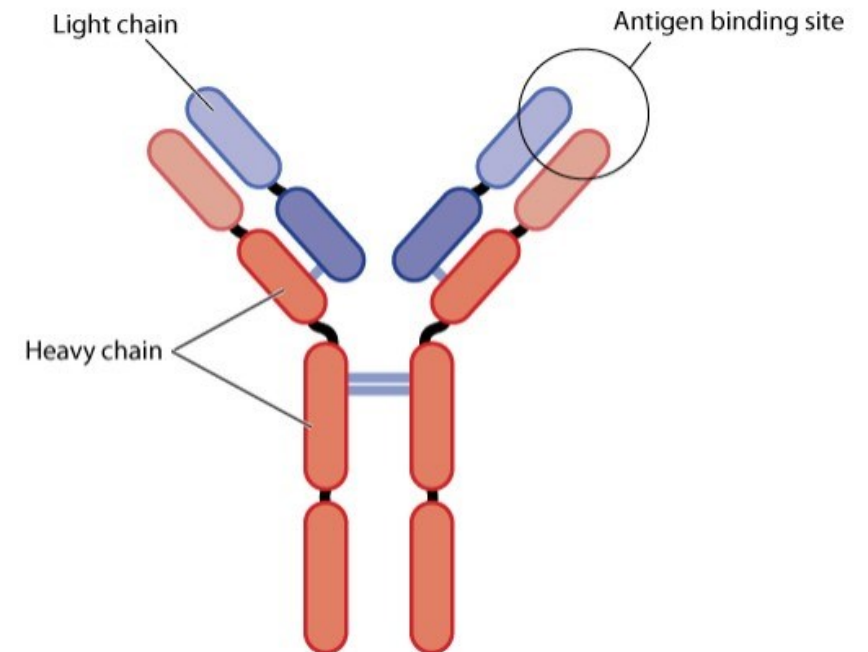
Alissa Pharma anticipates revenues for Ferritarg™ to begin in 2025

Year	2025	2026	2027
Treatment sites	15	50	100
Patients per site	12	15	18
Total treatments	180	750	1800
Forecasted patient charge	\$50,000	\$52,000	\$54,000
Revenues generated	\$9mm	\$39mm	\$97mm

Note that the information contained in the forecast constitutes forward-looking statements, which involve risks and uncertainties. The Company's actual results may differ significantly from the forecast for a number of reasons, including failure to achieve any of the assumptions underlying such forecast or any number of risk factors including the inability to raise sufficient capital. See Risk Factors. The Company expressly disclaims any obligations or undertaking to release any updates or revisions to the forecast.

- A humanized monoclonal anti-ferritin antibody (mAb) to be patented for the treatment of:
  - Pancreatic cancer.
  - Hepatocarcinoma (liver cancer).
  - Neuroblastoma.
- Preclinical studies\* of an anti-ferritin chimeric antibody, used as a radio-immunotherapy like Ferritarg™, indicated efficacy in pancreatic cancer models.

Humanized monoclonal antibody

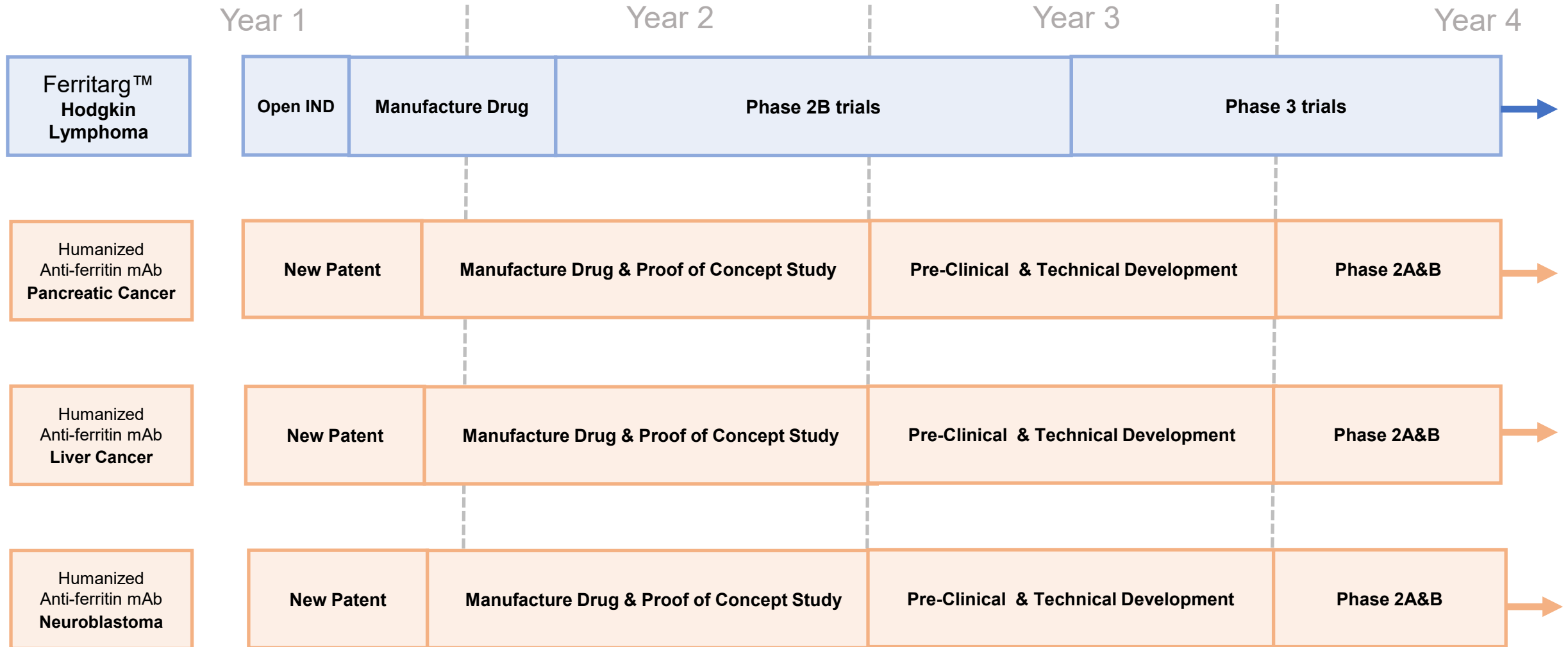


\*Nuclear Medicine and Biology 34 (2007) 293–304

# Development Timeline & Opportunities

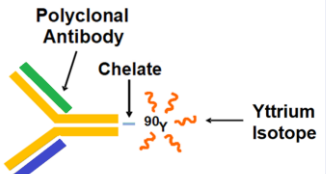
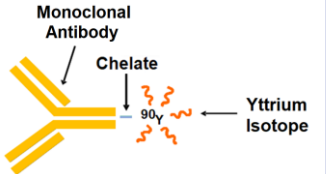
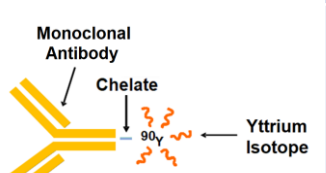
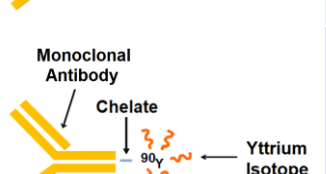


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# Alissa Pharma – Market Opportunities\*

Estimated Assumption		Disease Incidence		Market – Annual Sales	
Drug	Indication	USA	Global	USA	Global
<sup>90</sup> Y <b>Ferritarg™</b> 	Hodgkin Lymphoma	8,500	30,000	\$300,000,000	\$500,000,000
Humanized Anti-ferritin Monoclonal Antibody 	Pancreatic Cancer	57,000	300,000	\$500,000,000	\$2,000,000,000
Humanized Anti-ferritin Monoclonal Antibody 	Hepatocellular Carcinoma	50,000	850,000	\$500,000,000	\$2,000,000,000
Humanized Anti-ferritin Monoclonal Antibody 	Neuroblastoma	800	3,000	\$30,000,000	\$100,000,000
<b>Total Potential Annual Sales</b>				<b>\$1,330,000,000</b>	<b>\$4,600,000,000</b>

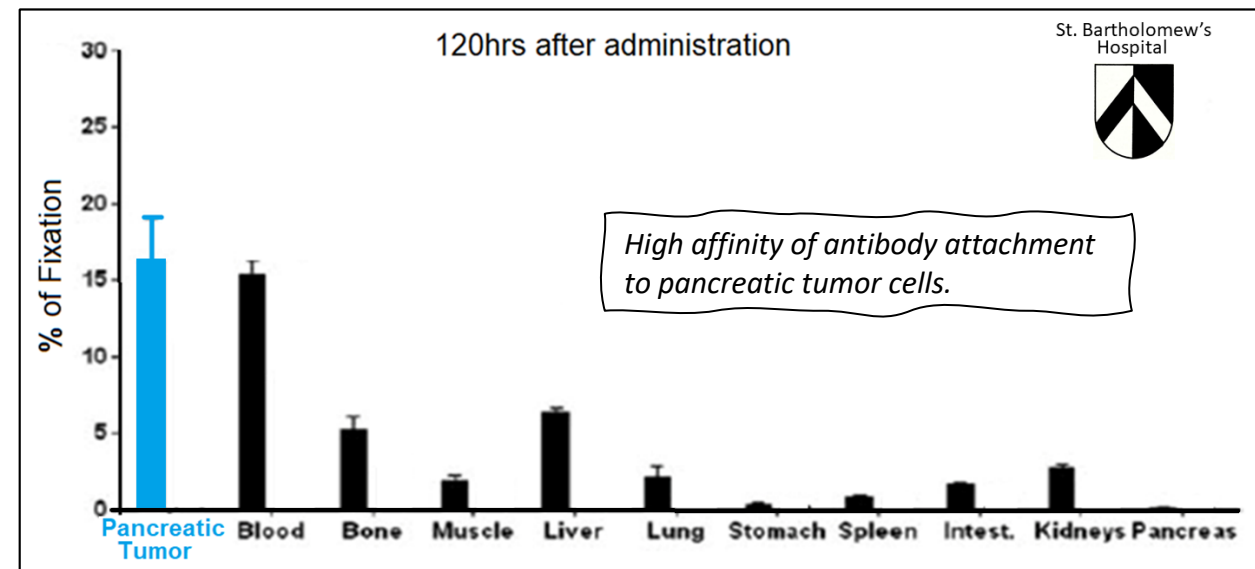
\* Company estimates

# Second platform - Humanized mAb to Treat Pancreatic Cancer



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- The overexpression of ferritin on the surface of the pancreatic tumor cell is the rationale for the clinical development of a radio-immuno-therapy drug using the humanized anti-ferritin monoclonal antibody.
- A preclinical bio-distribution study with Capan-1 tumor-bearing nude mice was performed in 2008 at the Nuclear Medicine Research Laboratory at St. Bartholomew's Hospital, London.
- 120 hours after injection of  $^{90}\text{Y}$ -labelled chimeric anti-ferritin antibody, demonstrates high affinity of antibody attachment to pancreatic tumor cells.
- The  $^{90}\text{Y}$  immunoconjugate showed greater than 98% stability over 7 days.







# Pancreatic Cancer Drug Potential

- **A humanized anti-ferritin monoclonal antibody to be patented and developed to treat pancreatic cancer.**
  - 57,600 new cases of pancreatic cancer were diagnosed in 2020\*.
  - 80% of cases are diagnosed at later, more difficult to treat stages.
  - Current treatments include surgery, radiation and general chemotherapy.
  - Since there are no existing chemotherapies that specifically target the pancreas, this product potentially fills a large unmet need.
  - Market potential is greater than \$2 Billion\*\*.
  - Anticipate fast-track review as an orphan drug.

\* National Cancer Institute, 2020

\*\* Company estimates.





# Humanized mAb to Treat Hepatocarcinoma

- *Alissa plans to develop its humanized anti-ferritin monoclonal antibody to treat hepatocarcinoma (liver cancer).*
  - Hepatocarcinoma is a cancer that starts in the liver (rather than one that spreads to the liver).
  - Hepatocarcinoma overexpresses ferritin on the surface of the tumor cell.
  - Hepatocarcinoma is known for poor outcomes.
  - If tumor cannot be removed, survival rate is less than a year.
  - Worldwide 905,677 new cases and 830,180 deaths in 2020\*.
  - The current treatments are kinase inhibitors primarily.

\* International Agency for Research on Cancer. Liver. World Health Organization. 2020



# Humanized mAb to Treat Neuroblastoma

- **The humanized anti-ferritin monoclonal antibody (mAb) will also be developed to treat neuroblastoma as a third indication.**
  - The overexpression of ferritin on the surface of the neuroblastoma tumor cell is the rationale for the clinical development of a radio-immuno-therapy drug using the humanized anti-ferritin monoclonal antibody.
  - Neuroblastoma is a rare cancer affecting the peripheral nervous system, mainly in children.
  - Alissa anticipates:
    1. Orphan drug status.
    2. Breakthrough status.
    3. Fast-track review.



# Next Steps: Building Value

- File IND and initiate Ferritarg™ Phase 2b clinical study for relapsed/refractory HD.
- Initiate Phase 3 studies in R/R HD; Ferritarg™ with subsequent PD-1 inhibitors administration.
- Proof of concept studies with Ferritarg™ in humans targeting:
  - Pancreatic cancer (Curie Institute, France)
  - Hepatocarcinoma (Curie Institute, France)
  - Neuroblastoma (Curie Institute, France or US institution)
- Preclinical development of humanized mAb anti-ferritin antibody.
- File IND for pancreatic cancer, hepatocarcinoma and neuroblastoma.



# Established 3<sup>rd</sup> Party Providers



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- Manufacturing (GMP):

VALBEX, Centre de Bio-experimentation  
Villeurbanne, France.

AXCELL BIOTECHNOLOGIES  
Saint-Genis L'Argentière, France.

INSTITUT PASTEUR – Texcell  
Paris, France.

- Clinical Development:

TARGET HEALTH,  
New York, NY

WEILL CORNELL MEDICINE  
New York, NY

CURIE INSTITUTE,  
Paris, France

# Contact Information



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