Perseus Proteomics Inc.
(Securities code:4882)

FY2021 Business Results
May 16, 2022

Contents

01 About Perseus Proteomics

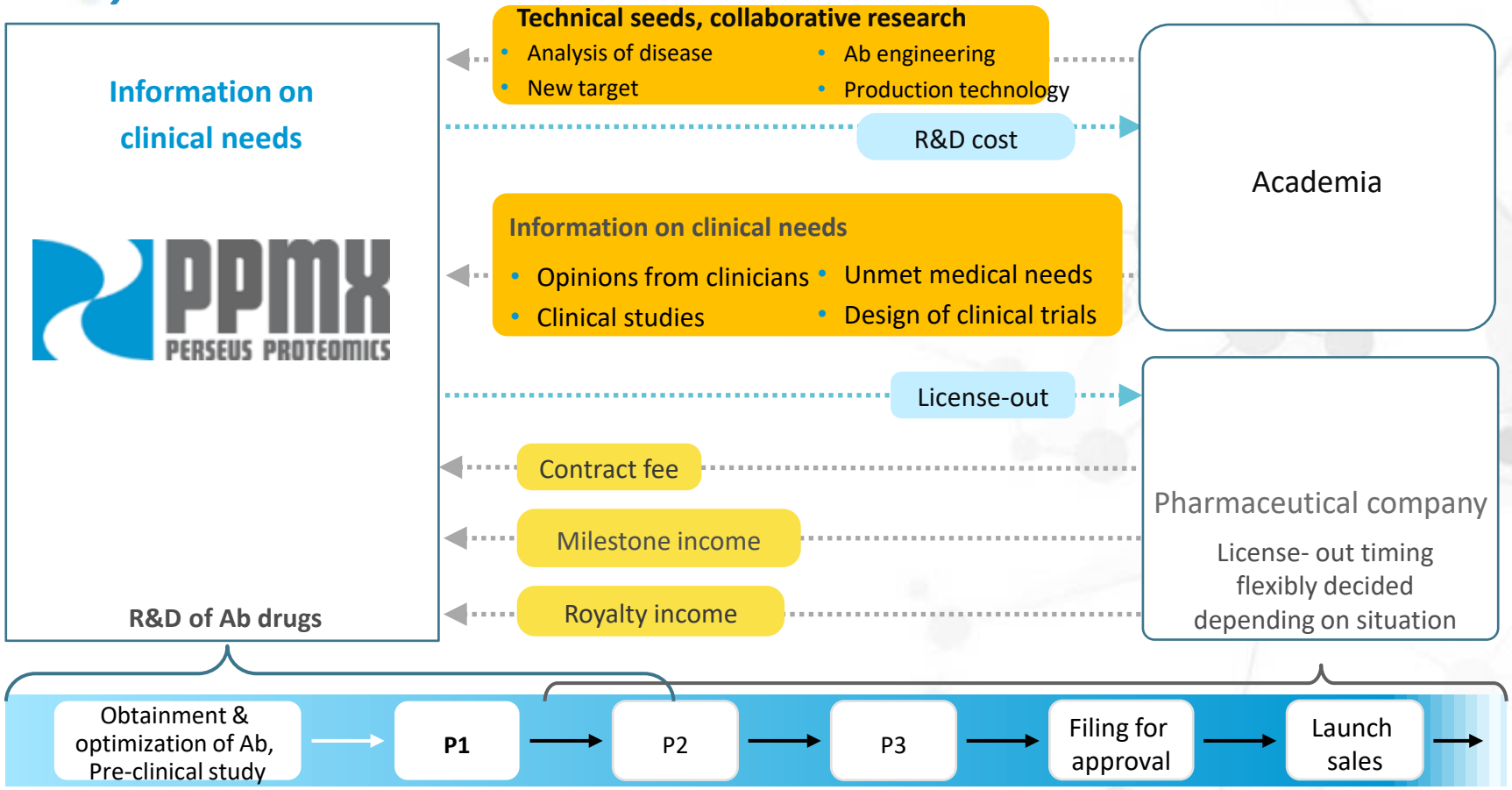
Company outline

Company name	Perseus Proteomics Inc.
Established	February 2001
Business	● Develop Ab drugs ● Support research on Ab ● Sales of Abs/reagents
Office	HQ : 4-7-6 Komaba, Meguro-ku, Tokyo Nagoya : 2-22-8 Chikusa-ku, Nagoya-shi, Aichi
Capital	1,939 million yen*
Employee	21 (R&D: 16, Administration: 5) * * as of 31 Mar. 2022

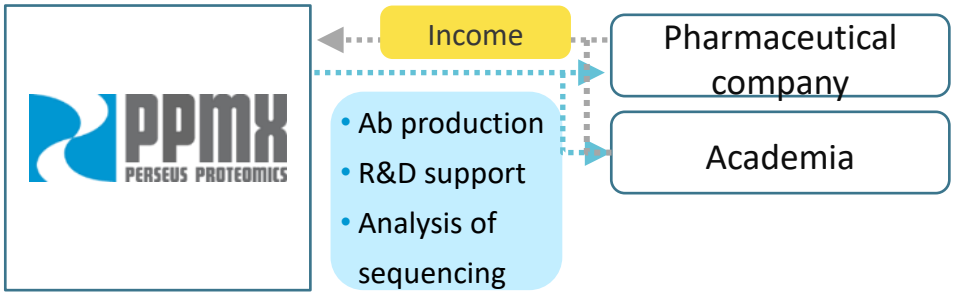
- 2001.2 **Established**
- 2005.9 Sales of Ab against 48 nuclear receptors starts
- 2006.9 **PPMX-T001** licensed out to Chugai Pharmaceuticals
- 2011.1 **PPMX-T002** licensed out to FUJIFILM (2022.3 returned to PPMX)
- 2014.12 **PPMX-T003** selected as JST drug discovery project (940 M yen)
- 2015.9 **PPMX-T004** licensed out to FUJIFILM (2022.3 returned to PPMX)
- 2019.1 Nagoya Laboratory opens
- 2019.11 **PPMX-T003** in-house P1 starts
- 2021.6 **Listed on Mothers (Growth) TSE**
- 2022.3 **PPMX-T003** Adopted as AMED project on ANKL (250 M yen)

Sales/Profit creating structure

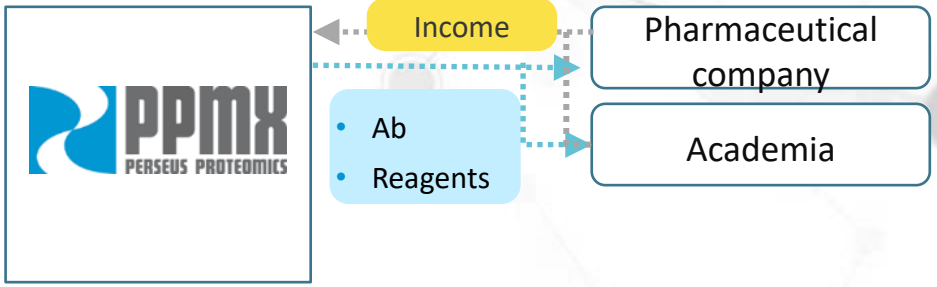
1. *Drug discovery*



2. *Support of Ab research*



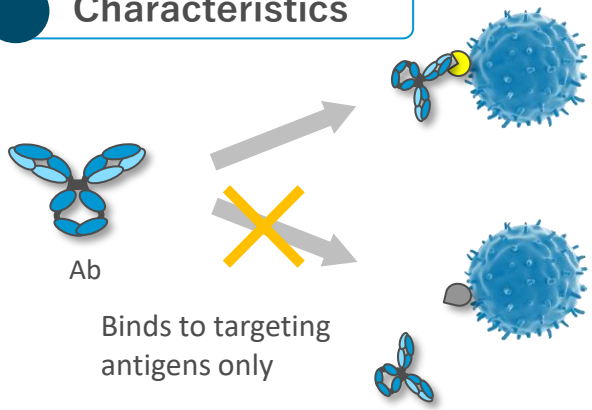
3. *Sales of Abs/reagents*



What are Ab drugs?

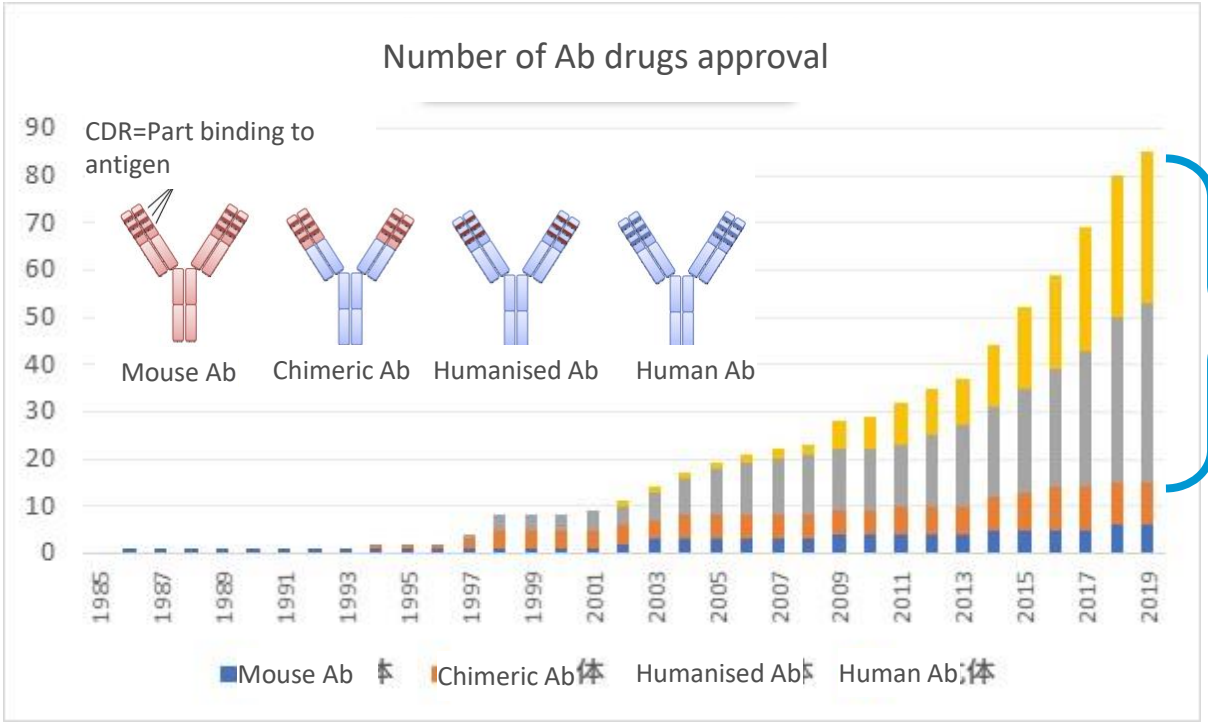
Abs are substances that remove foreign objects in human body
Ab drugs are Abs obtained against targets expressed on cancers or pathogens

Characteristics



Expected effects

- Blocks signal transmission and inhibits multiplication functions, etc.
- Activates immune cells including T cells to induce cytotoxicity
- Activates physiological functions
- Transmits drugs to cells where targets are expressed



No. of Approved Ab drugs increasing

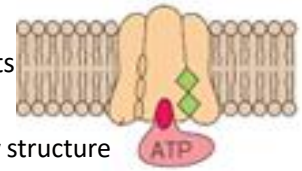
Humanized or human Abs are in mainstream

Source: data from National Institute of Health Sciences
Calculated based on Approval date in Japan, USA and Europe

Ab creation technology now required

Difficulty=High antigen

The most important targets
Still untouched



Quaternary structure

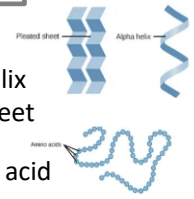
Difficulty=Medium antigen

Receptor-type targets
Needs functional Ab

Tertiary structure

Difficulty=Easy antigen

Antigen as targets already developed

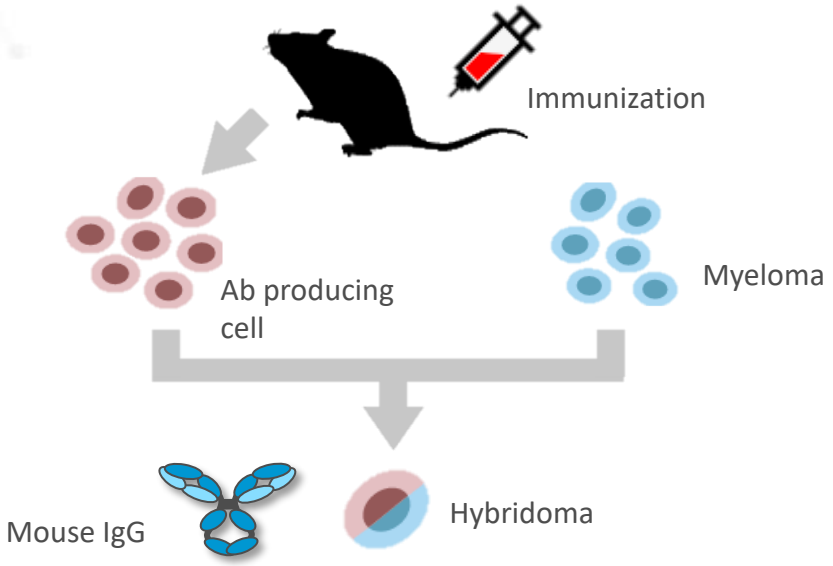


α helix
B sheet
Amino acid

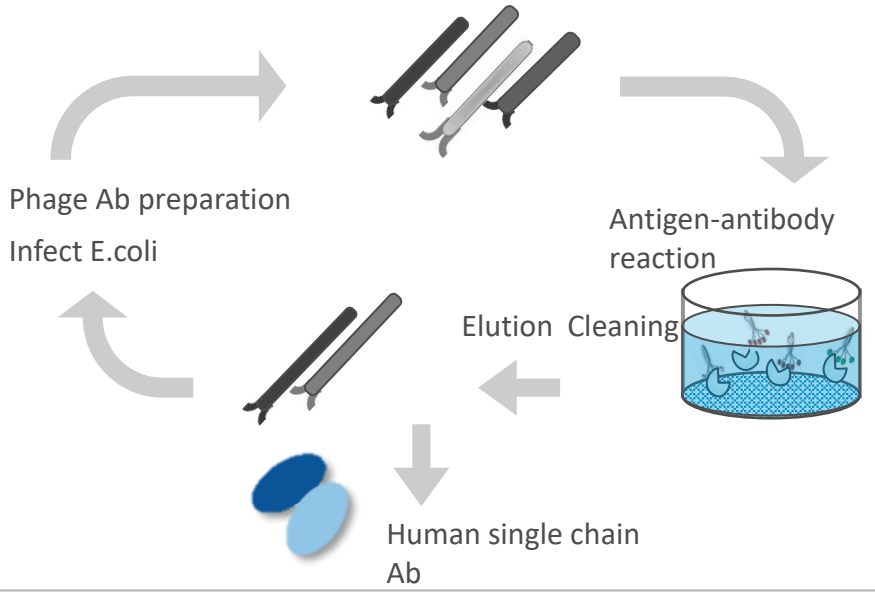
Technology required for obtaining Abs efficiently against medium to high level antigens

Our technology to obtain Abs

1) Hybridoma method



2) Phage display method



Merit

- Easy method, established technique
- Increased biological affinity
- Low cost

- Possible to obtain human Ab
- No animals used
- No need to consider biological toxicity
- Rich in screening conditions

Problem

- Abs with species crossing are hard to obtain
- Needs humanisation due to immunnogenicity
- Abs against complex antigens are hard to obtain
- Easy-to-obtain Abs already developed

  ⇒ Focusing on new targets and modified Abs including ADC*1 and RIT*2

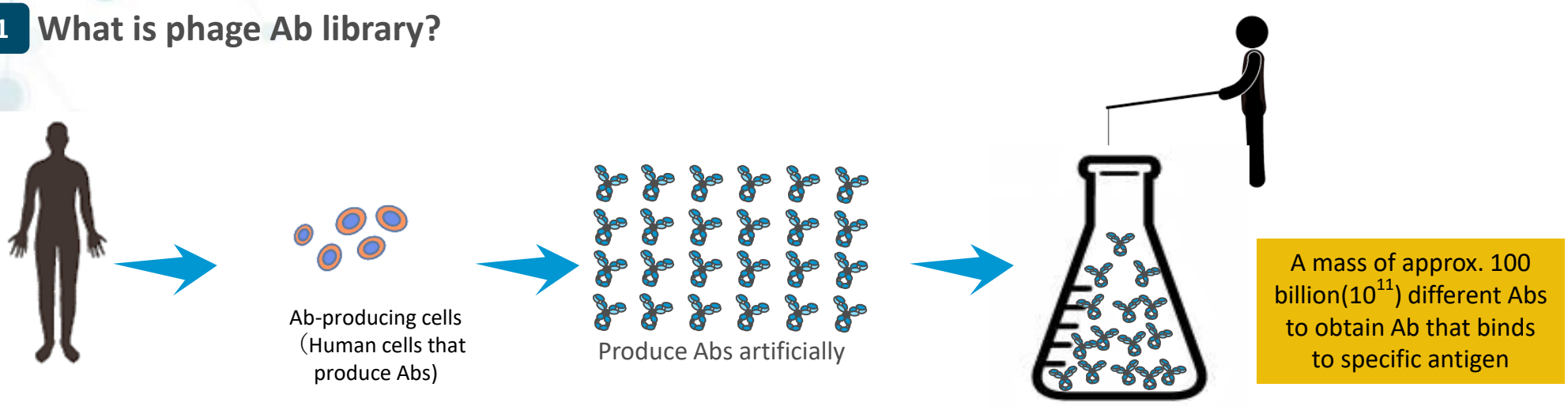
- Needs skills in creation of libraries
- More expensive than animal immunization
- Low affinity of antigen-antibody

  ⇒ Conquered this problem by maximising library diversity

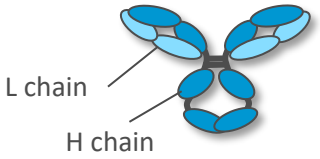
*1 ADC: Antibody drug conjugate. It delivers drug combined with Ab by utilizing Ab function.
*2 RIT: Radioimmunotherapy. Radioisotope combined with Ab irradiates cancer cells by utilizing Ab function.

Our strength: Phage Ab library

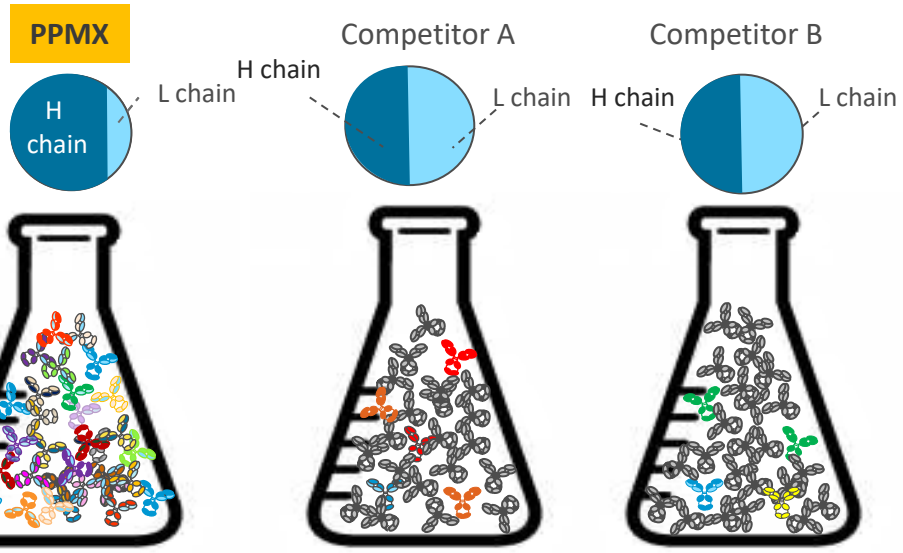
1 What is phage Ab library?



2 Our design of phage Ab library



We maximise diversity of H chain by focusing on H chain (our unique library)



While numbers of Abs are the same 10 billion, diversities are different

Phage display method utilizing maximised diversity of Ab library

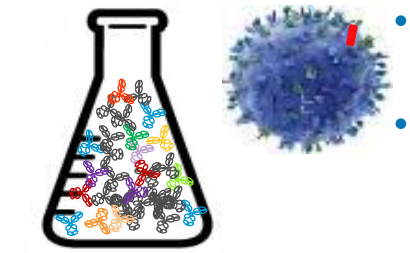
Our strength: Ab screening using cell (PPMX exclusive method)

Problem 1

During preparation of antigen, steric structure is lost.

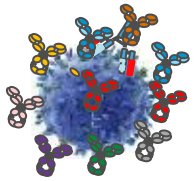
Solution

Ab screening using living cells



- Reflects complex steric structure through using living cells
- Directly obtains Abs against antigens on cell membrane

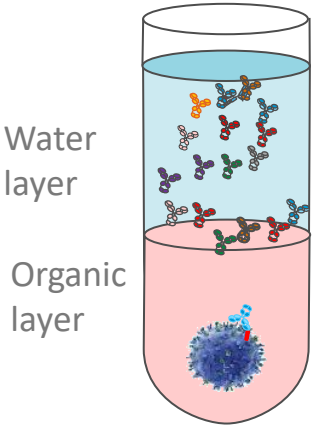
Problem 2



Numerous unrelated Abs also bind to cells.

Solution

ICOS* method: Ab screening utilizing organic solvent



- Obtains Abs that bind to antigen only
- Patent registered

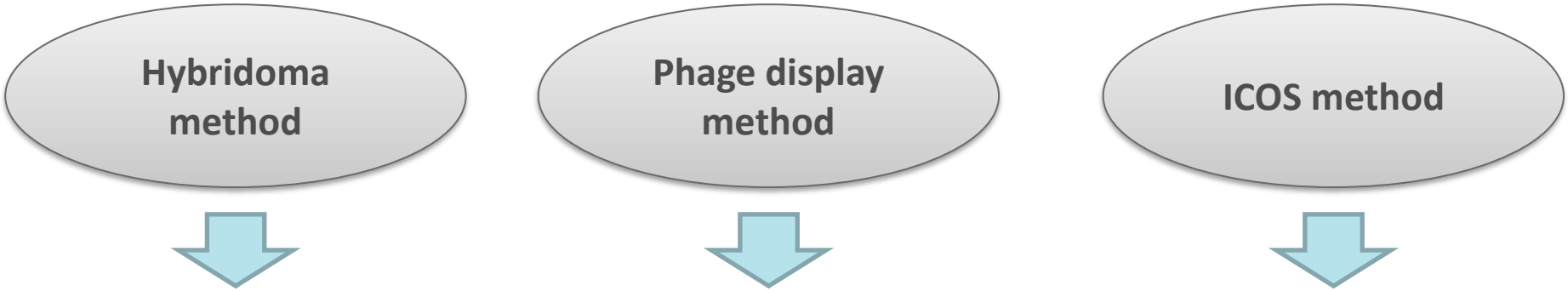
Efficiently separates Abs difficult to obtain by targeting cells

*Isolation of antigen/antibody Complexes through Organic Solvent

Summary of technology to obtain Abs

Our technology on Ab drug development

Our unique technology platform sophisticated
to aim at drug discovery for highly difficult targets



Showing our maximum value
in developing anti-cancer drugs

PPMX's sophisticated Ab obtaining platform

02 FY2021 Review

Topics

1. **PPMX-T003:**
   Development of medical drug for Aggressive NK Cell Leukemia adopted as AMED program

2. **PPMX-T003:**
   Recruit of Phase I clinical trial among polycythemia vera patients
   => Changed protocol to expand inclusion criteria

3. **PPMX-T002/T004:**
   License agreement w/FUJIFILM terminated
   Develop new RIT/ADC respectively

4. **Joint research w/pharmaceutical companies and universities**
   Smooth progress in various themes

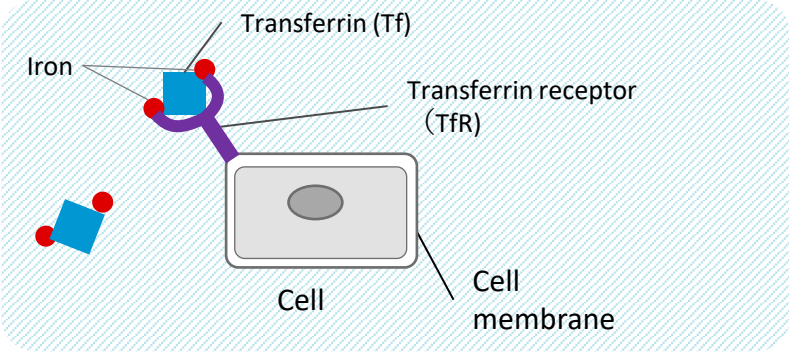
PPMX-T003

First-in-class anti-cancer drug candidate targeting transferrin receptor

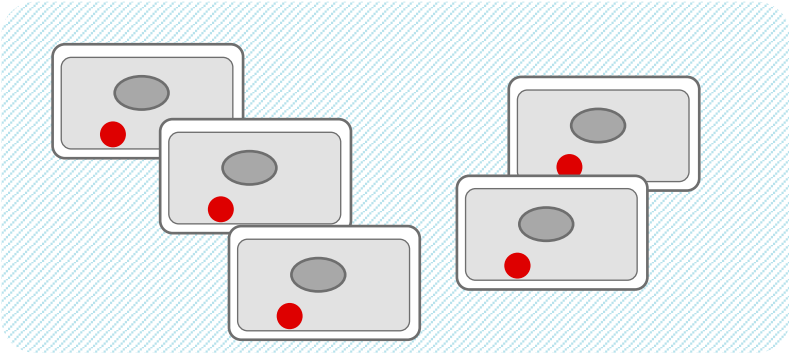
Transferrin receptor (TfR):

- Strong target molecule for anti-cancer drug
- Expressed on cell membrane. Binds to transferrin (Tf) carrying iron for cellular iron uptake

1 TfR binds to Tf



2 Cell proliferation



[Cells where TfR is highly expressed]

- Erythroblast (normal cell, RBC producing cell)
- Cancer cell (especially acute cancer which is actively proliferating)

Well-known concept

Blocking iron
⇒ Death or proliferation inhibition of cells

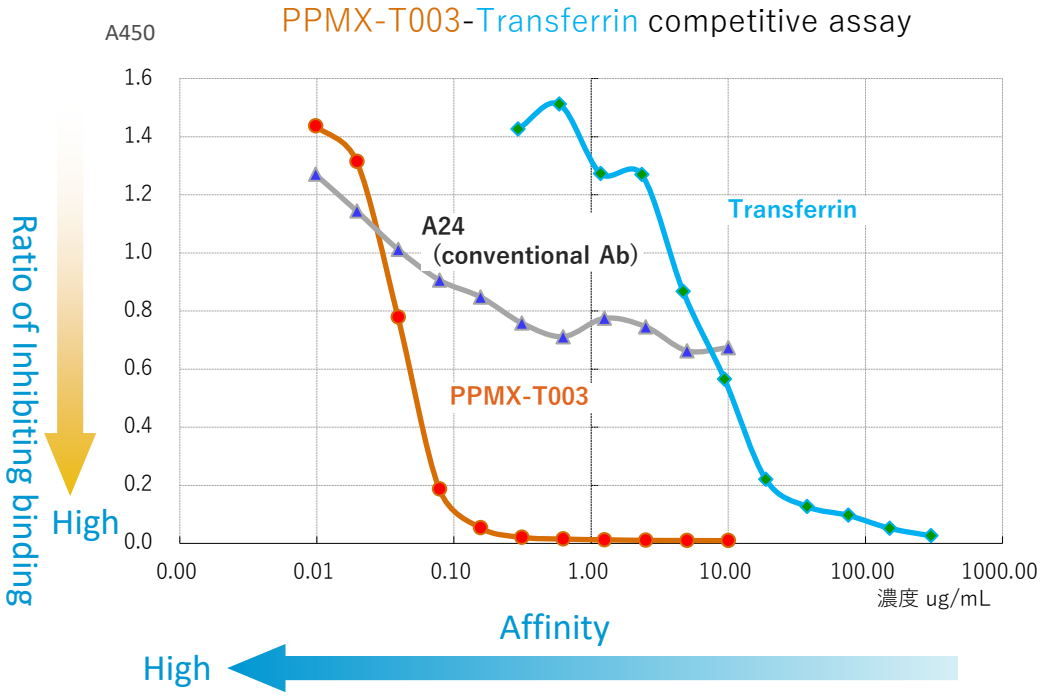
Inhibiting cellular iron uptake leads to death/proliferation inhibition of cancer cells

* Erythroblast: primitive red blood cell (RBC)

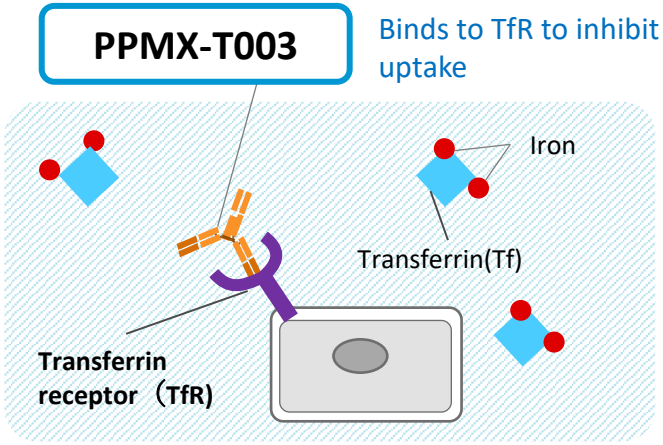
PPMX-T003

Highly functional Ab obtained by our phage display technology

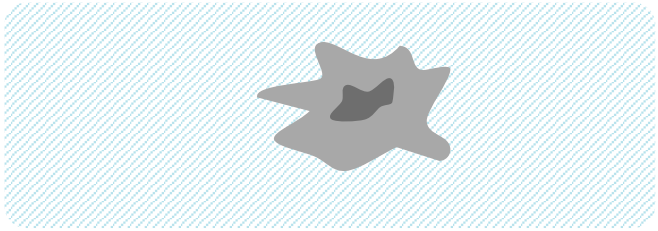
Shows unprecedented result in inhibiting ratio of binding Tf to TfR
Inhibits iron uptake into erythroblast and cancer cells and leads to cell death/proliferation inhibition



1 PPMX-T003 **binds to TfR more tightly than Tf**



2 Iron uptake inhibited. Death or proliferation inhibition of cells



Inhibition of iron uptake has been difficult, however, PPMX-T003 is expected to bring it to reality as the first therapeutic drug for cancer and PV.

Anti-Transferrin receptor Ab with incomparable function of inhibiting binding

1 PPMX-T003: Development of medical drug for Aggressive NK Cell Leukemia adopted as AMED program*

Title: “Development of Therapeutic Drug for Aggressive NK Cell Leukemia”

(Patent application filed in Apr. 2022)

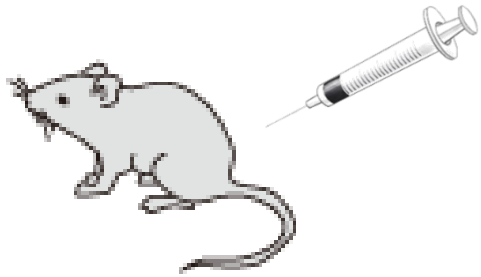
- **About ANKL** Aggressive NK Cell Leukemia
  Ultra-orphan disease whose cases are reported only in South/Middle Americas and Asia
  Very poor prognosis with unknown critical causes/ unestablished treatment method

TOKAI × PPMX PERSEUS PROTEOMICS

Found that transferrin is related to proliferation and treatment of tumor

Anti-TfR Ab PPMX-T003 obtained by PPMX

PPMX-T003



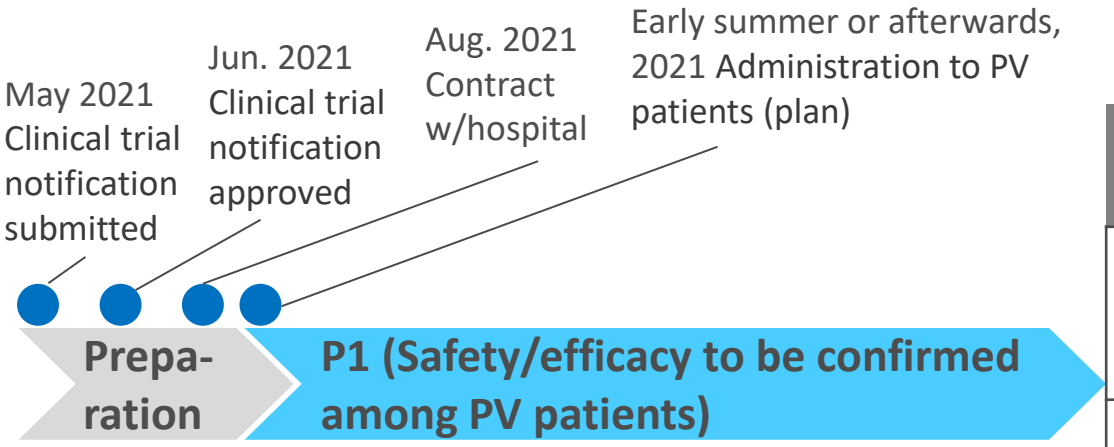
Confirmed **tumor disappearance by PPMX-T003 administration** in mouse transplanted human-cancer cell experiment

FY2022:	50M yen
FY2023:	100M yen
FY2024:	100M yen
Subsidy (max) total:	250M yen

Aim at approval of world-first effective therapeutic drug for ANKL after investigator-initiated clinical trials

* Project Promoting Support for Drug Discovery Support Program for Orphan drug prior to the Designation

2 PPMX-T003: Recruit of Phase I clinical trial among polycythemia vera (PV) patients => Changed protocol to expand inclusion criteria



< Protocol amendment> (expansion of subjects)

Before	After
Exclude patients w/high EPO ＊	Not exclude patients w/high EPO ＊ considering affects of phlebotomy
PV judgment: Prioritize WHO standards	PV judgment: Prioritize clinicians' judgment

＊ EPO (Erythropoietin)
Hormone to create RBC. EPO increases in case of anemia and functions to increase RBC.

- **Clinical trial information**

jRCT
jRCT2051210083: https://jrct.niph.go.jp/en-latest-detail/jRCT2051210083
clinicaltrials.gov
NCT05074550： https://clinicaltrials.gov/ct2/show/NCT05074550

PPMX-T003

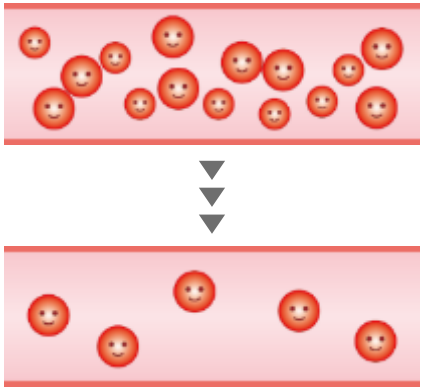
Indication: Polycythemia vera (PV)

- RBC increases to an abnormal level.
- Thrombosis is easily formed due to thick and slow blood flow. Various organs are affected by thrombosis.
- 2 out of 100,000 people develop this disease. Number of patients in Japan: 30,000 (estimated by PPMX. Average life expectancy: 16 yrs)

Current therapeutics

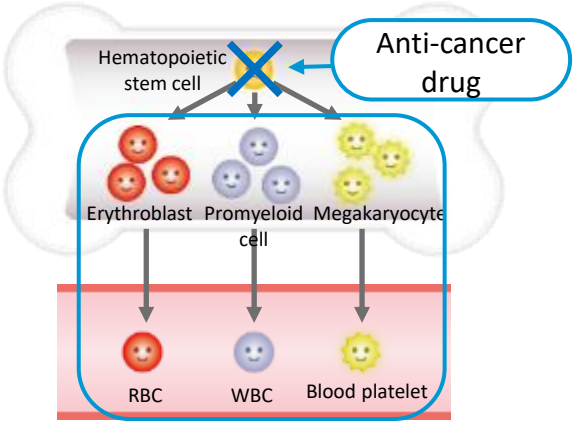
Therapeutic phlebotomy

Half of patients are treated by therapeutic phlebotomy only.



- Anemia
- Lassitude
- Depression
- Restless hands and legs
- Other diseases by iron deficiency

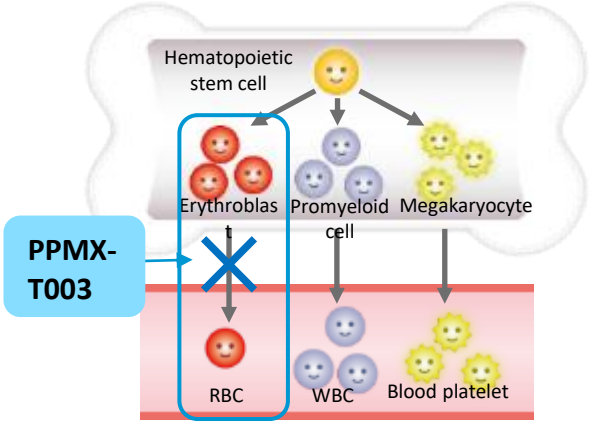
Anti-cancer drug, etc.



- Entire hematopoietic stem cell affected
- Secondary cancer risk
- Many side effects

New candidate

PPMX – T003

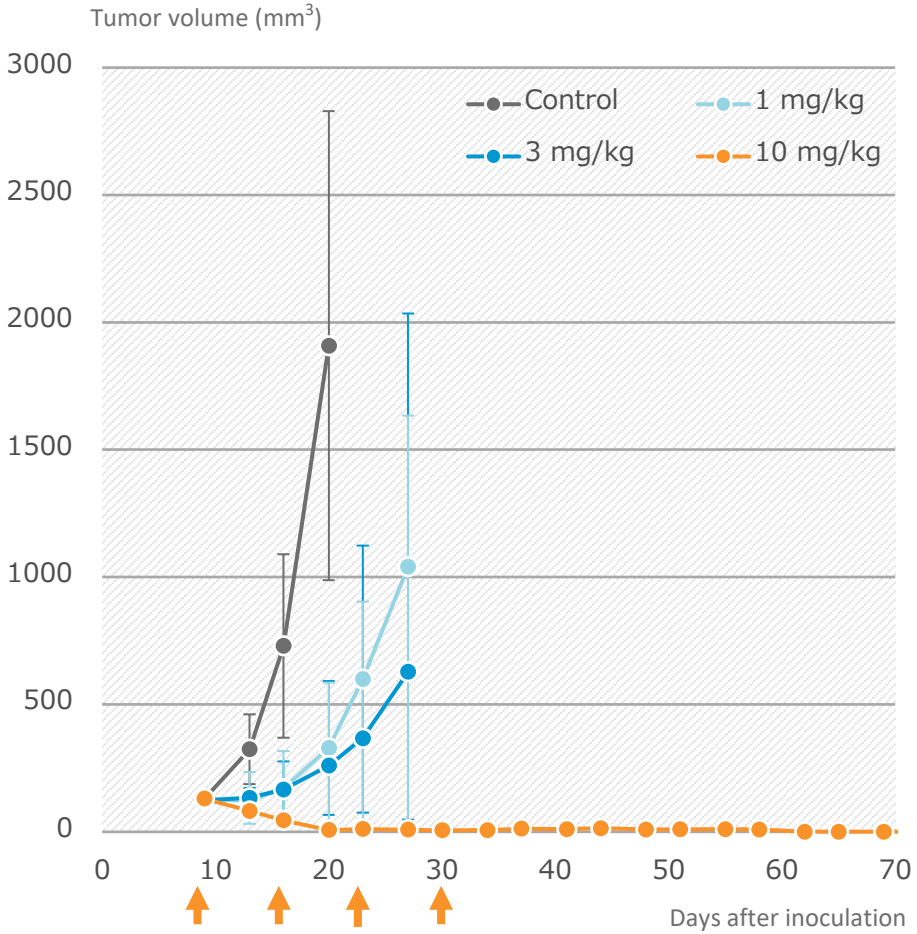


- **Acts only on erythroblast**
- **Few side effects**
- **Safe to use**

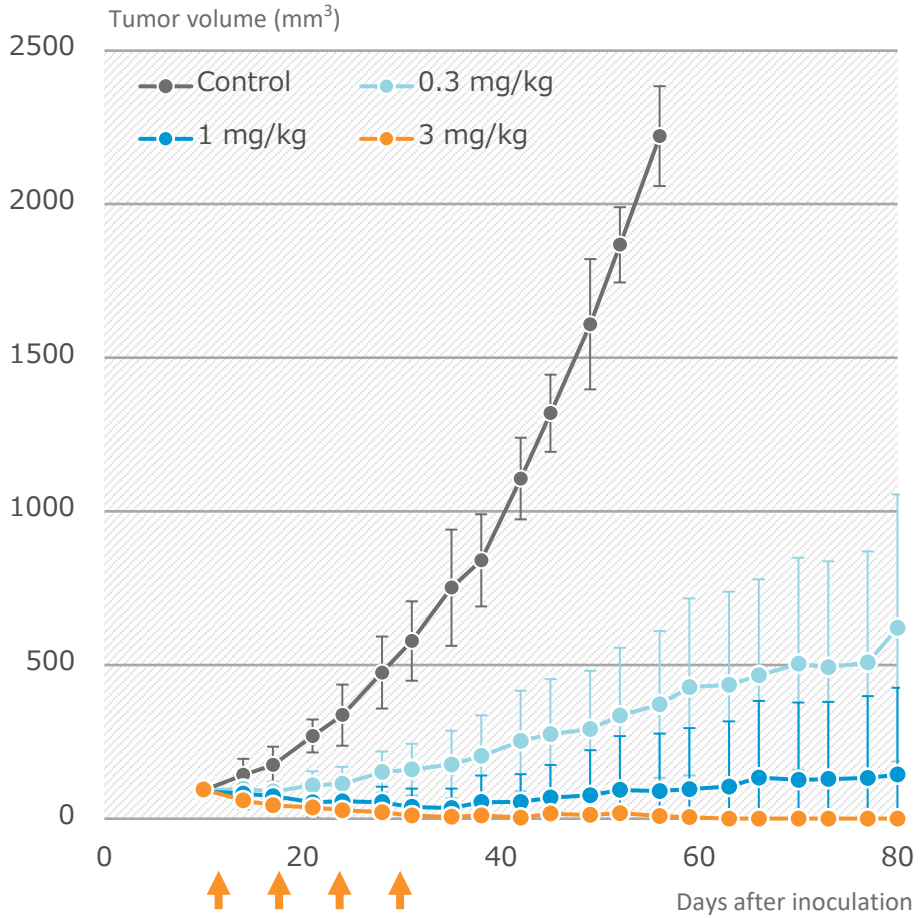
PPMX-T003: effects on inhibiting abnormal proliferation of RBC expected

PPMX-T003: Confirmed efficacy against blood cancers in mice

AML



Malignant Lymphoma

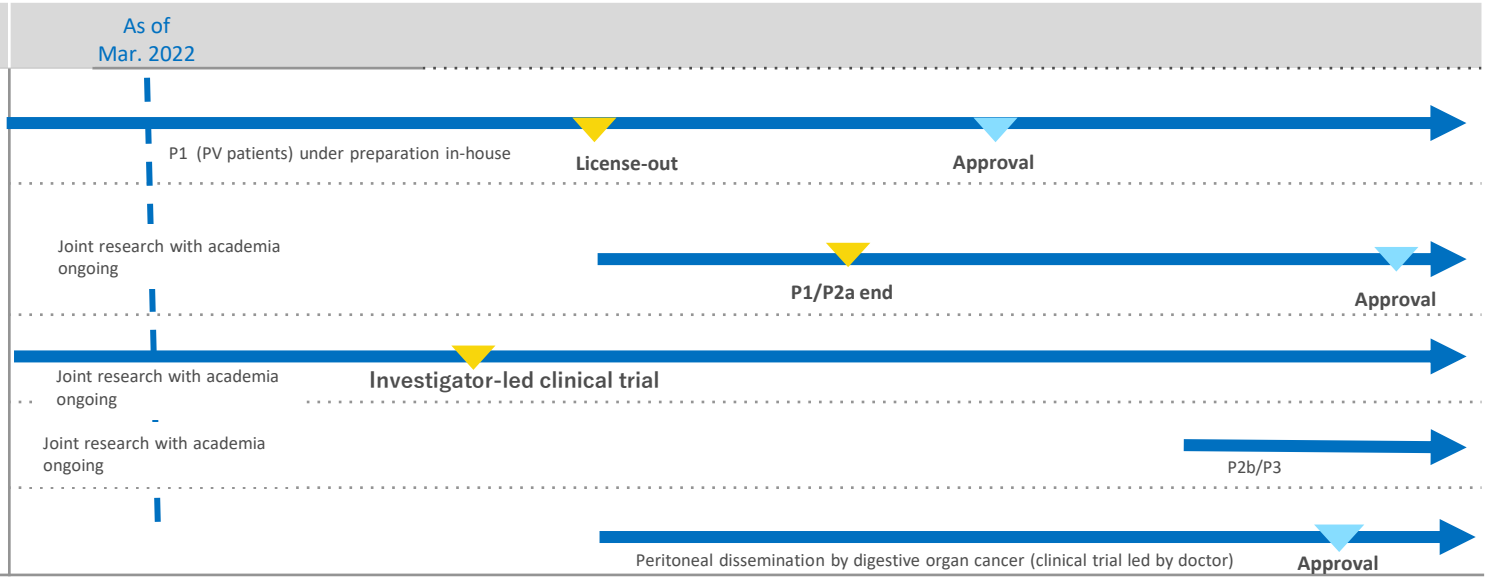


Excellent efficacy against AML and various blood cancers is confirmed

Source: Zhang et al.(2017) AACR Annual Meeting, Chicago, USA DOI: 10.1158/1538-7445.AM2017-5586

PPMX-T003: Development plan

Code	Indication	Country
PPMX-T003	PV (Polycythemia vera)	JP, others
	AML (Acute myeloma leukemia)	
	ANKL (Aggressive NK cell leukemia)	
	ML (Malignant lymphoma)	
	(Solid tumor)	



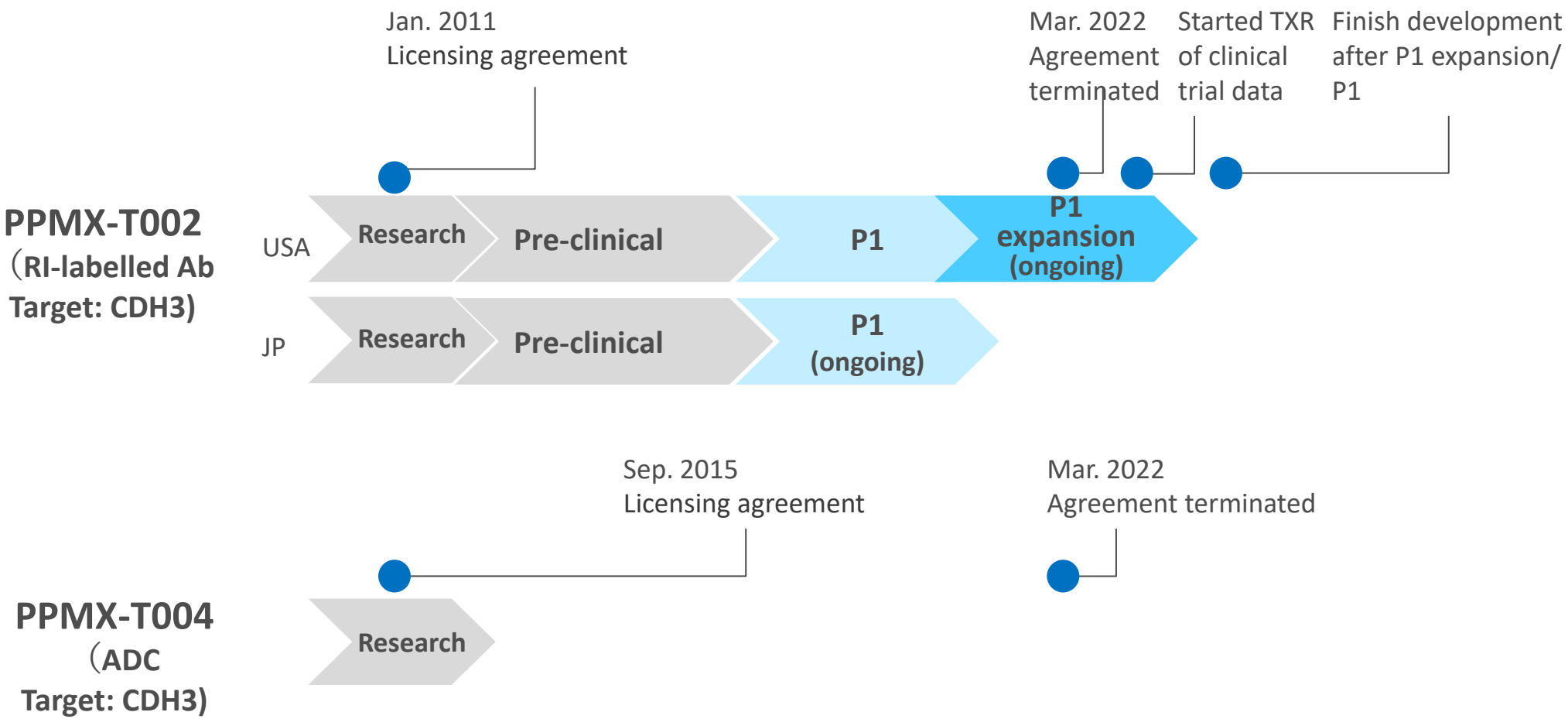
Number of patients

Indication		No. of patients ww (rounded)	Note
PV (Polycythemia vera)	Chronic blood disease	280,000	Calculated with onset risk rate at 2 in 100,000*, life expectancy at 14 years*, population at 1 billion (developed countries)
AML (Acute myeloma leukemia)	Blood cancer	200,000	WHO data (assumes 40% of leukemia)
Malignant lymphoma	Blood cancer	590,000	WHO data (number of non-Hodgkin lymphoma patients)
Multiple myeloma	Blood cancer	190,000	WHO data
Peritoneal dissemination of cancer	Solid tumor	N/A	Over 10,000 and several thousand new patients annually in Japan

* This chart is based on our assumption and does not guarantee the progress as shown here.
* All the development after out-licensing is determined by the development strategies of licensing partners.

3 PPMX-T002/T004: License agreement w/FUJIFILM terminated Develop new RIT/ADC respectively

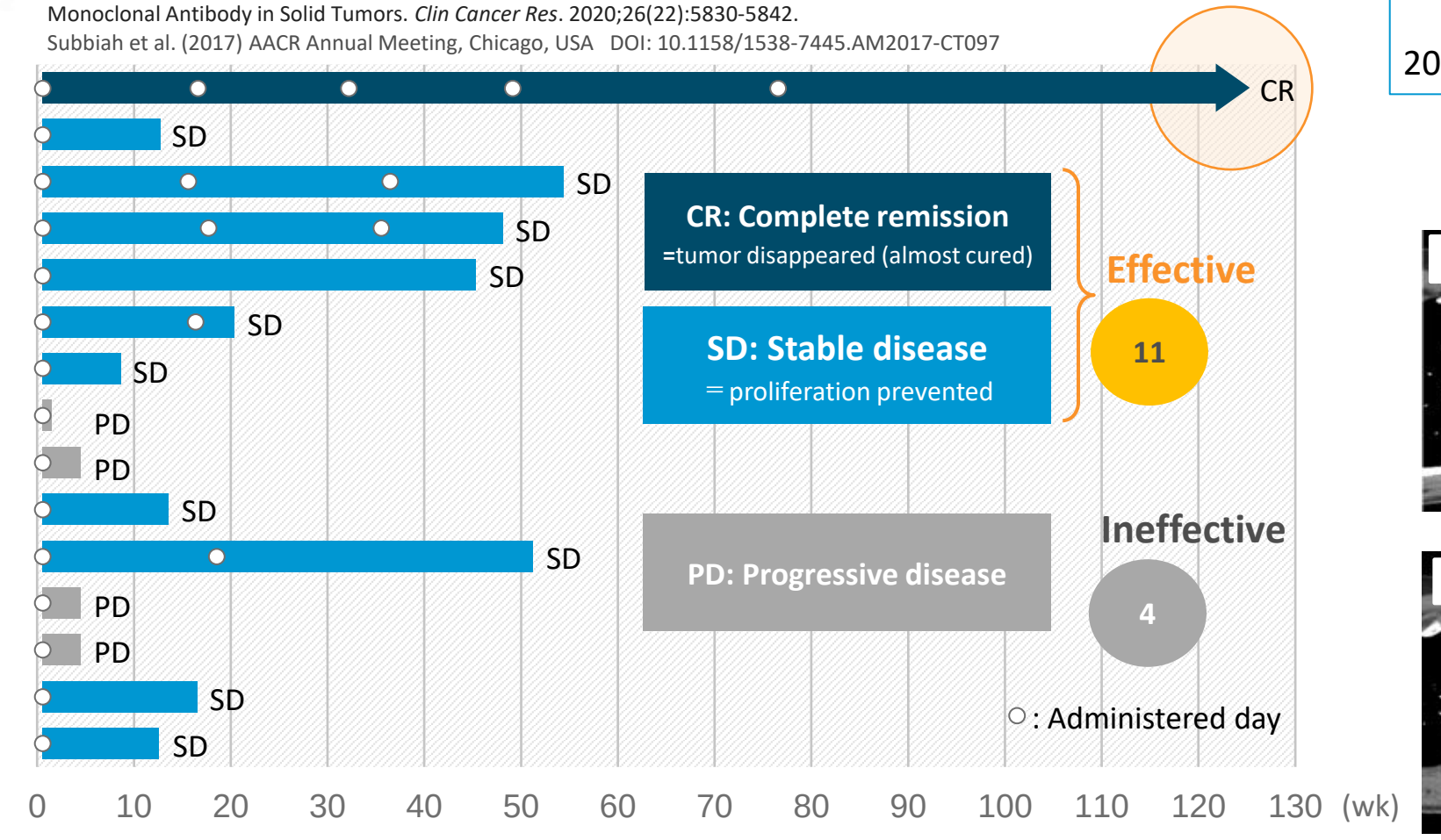
Mar. 2022　FUJIFILM transferred its radiopharmaceutical business to PeptiDream Group



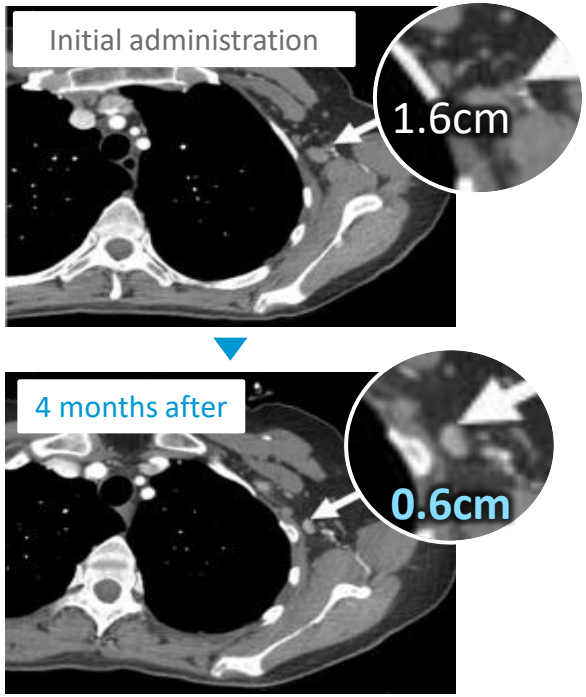
PPMX-T002: Result of P1 in USA

Clinical trial among stage IV ovarian cancer patients
Confirmed efficacy in 11 out of 15 cases, Published at conference, paper submitted

Subbiah V, et al. Phase I Study of P-cadherin-targeted Radioimmunotherapy with 90Y-FF-21101 Monoclonal Antibody in Solid Tumors. *Clin Cancer Res*. 2020;26(22):5830-5842.
Subbiah et al. (2017) AACR Annual Meeting, Chicago, USA DOI: 10.1158/1538-7445.AM2017-CT097



2016/1 - 2019/3: P1 in USA
▼
2019/3: P1 expansion (P2) started
▼
2020/4: P1 started in JP



Complete remission on poor prognosis patient with no therapeutics (POC obtained*)

※ POC(proof of concept) obtained: Efficacy of new drug candidate under development was confirmed by administration to human.

PPMX-T002:
Develop as new RI-labelled Ab

Indication	biliary tract cancer, ovarium cancer, cancer of the head and neck, etc.
Target	CDH3 (Cadherin 3)

[Development strategy]

New partner
(RI drug discovery company)

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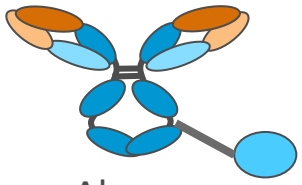


Ab

RI

^{90}Y
(beta emitter)

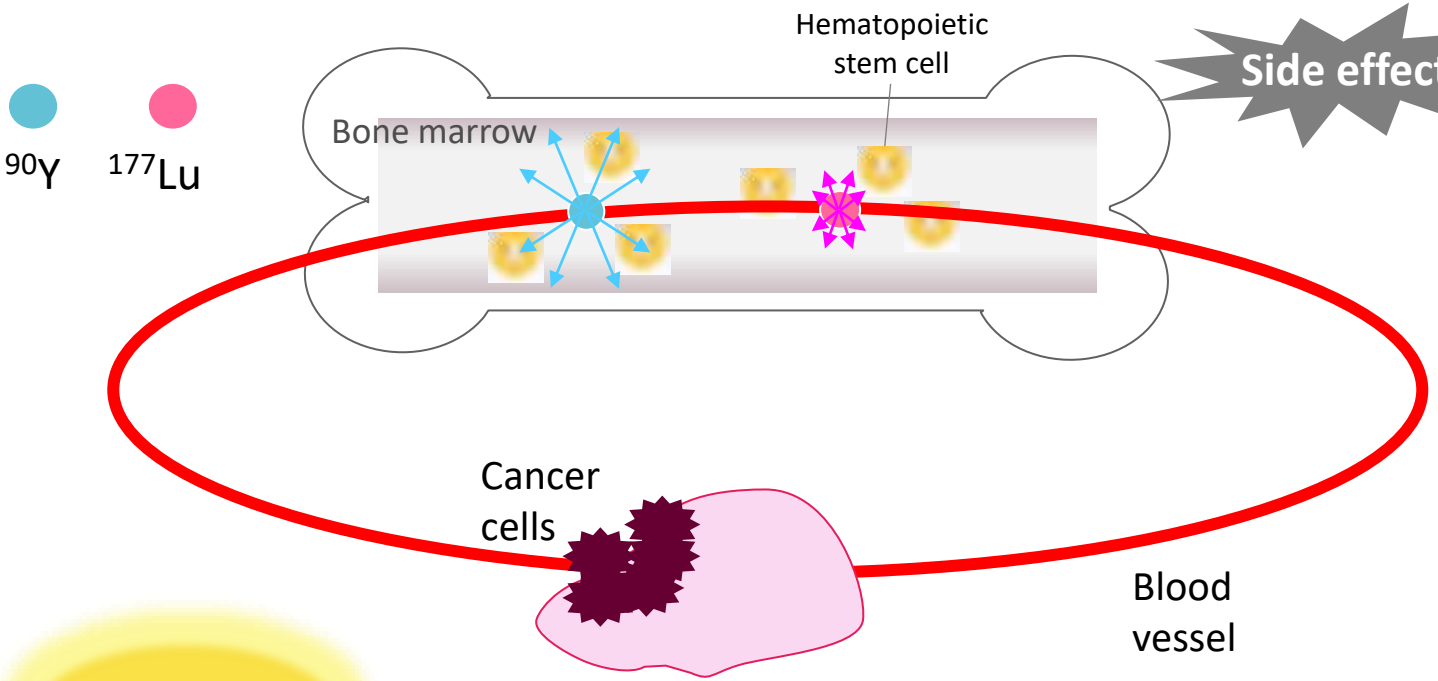
- **^{177}Lu** (beta emitter)
- or
- **^{225}Ac** (alpha emitter)

Confirmed accumulation on cancer → **Utilize as is**

Utilize Ab as is, change RI from ^{90}Y to that w/higher effectiveness

PPMX-T002:
Promote development through RI change to increase effectiveness

RI	Radiation	Half-life	Energy	Max range	Feature	Medical drugs
^{90}Y	Beta emitter	64 hrs	2.27MeV	11.0 mm	Impact on cancer cells greater than Lu	Zevalin (2002)
^{177}Lu	Beta emitter	6.7 days	0.50MeV	2.2 mm	Few side effects. Therapeutic effect in wider area. Most advanced	Lutathera (2018) Pluvicto (2022)
^{225}Ac	Alpha emitter	10 days	5.83MeV	0.090 mm	High cell-killing nature in narrow area. Next generation RIT	Ac-PSMA617, etc. Under development



Side effects

Damages/Kills hematopoietic stem cells when passing through bone marrow

Efficacy

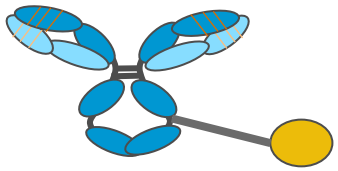
Ab accumulates on cancer cells, radiation from RI damages/kills cancer cells

Select the best RI after study of side effects and efficacy

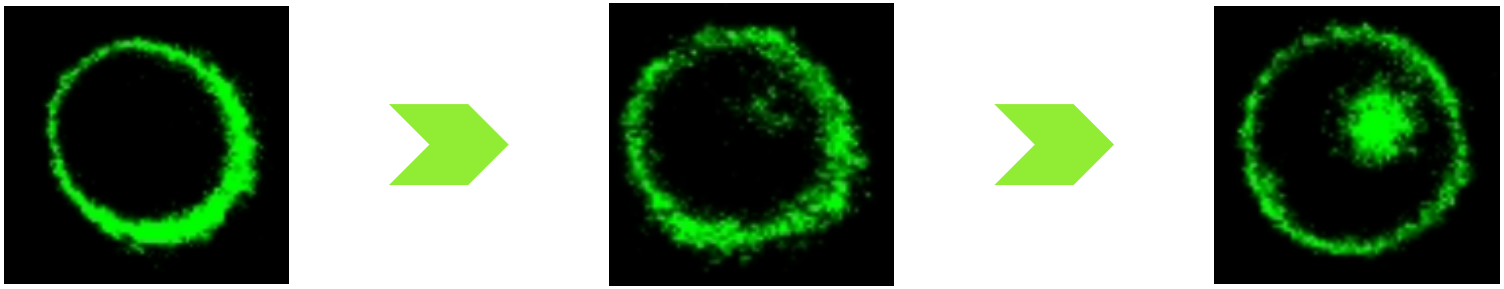
PPMX-T004:
Develop as new ADC (Ab drug conjugate)

Indication	Various solid tumors
Target	CDH3 (Cadherin 3)

[Development strategy]



Develop through change to small molecule cancer drug w/higher effectiveness.
Make cancer cells take Ab & drug inside so that the released drug may damage/kill cancer cells



PPMX-T004 Ab and drug taken into a human cancer cell.
Confirmed functionality of Ab

Utilize Ab as is. Change drug to that w/higher effectiveness

4 Joint research w/pharmaceutical companies and universities
Smooth progress in various themes

●Development of Quick Detection Kit of PTX3

Wakunaga Pharmaceutical
×
PPMX PERSEUS PROTEOMICS

Determine exacerbation of diseases associated with inflammation of blood vessels including sepsis
Utilize as blood vessels inflammation marker

●Designing/Establishment of BBB-Permeable molecule

University of Tokyo
×
PPMX PERSEUS PROTEOMICS

Design/Establish molecule that permeates blood-brain barrier (BBB) with high efficiency
Develop technology to deliver medical drug to cerebrospinal

● Practical use of PKCδ

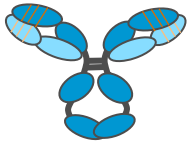
Jikei University School of Medicine
×
PPMX PERSEUS PROTEOMICS

New diagnosis w/high sensitivity for early-stage lever cancer
Practical use of PKCδ as biomarker

PPMX-T001:
Phase I clinical trial of GC33 combination therapy, ERY974 monotherapy and combination therapy ongoing by Chugai Pharmaceutical
➔Jun. 2022 related patent to be expired

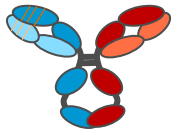
Code No.	PPMX-T001
Indication	Liver cancer, solid tumor
Stage	• GC33 in combination with immune checkpoint inhibitor (ICI): P1 ongoing (JP, TW) • ERY974 monotherapy: P1 finished (US, EU), P1 ongoing (JP) • ERY974 in combination with ICI and angiogenic inhibitor: P1 started (JP, TW)
Out-licensed	Chugai Pharmaceutical

Chugai Pharmaceutical development code: GC33, ERY974



GC33

● GPC3 Ab
Binds to cancer cell



● CD3 Ab
Binds to T cell

ERY974 (bispecific Ab)
2 arms respectively bind to different antigens.

Contract will terminate in Jun. 2022. No impact on future income/profit

Pipeline progress

Code	Indication	Region	Drug discovery/ Research	Preclinical	P1	P2	P3	Out-licensed
PPMX-T002 ➔ New code	Solid tumor	USA Japan	RIT					FUJIFILM ➔ PPMX
PPMX-T004 ➔ New code	Solid tumor		ADC					FUJIFILM ➔ PPMX
PPMX-T003	Blood cancer	Japan						–
	ANKL	Japan						–
PPMX-T001	Liver cancer	Japan USA Europe	GC33 Monotherapy					Chugai Pharmaceutical
		Japan Taiwan			GC33 w/ICI			
	Solid tumor	USA Europe Japan	ERY974 monotherapy					
	Liver cancer	Japan Taiwan		ERY974 w/ICI, angiogenic inhibitor				

03 FY2021 Business Results

FY2021 business results

Profit & loss

(million yen)

*Increase/decrease rate

	FY2020	FY2021 Forecast	FY2021 Results	FY2021 Vs FY2020*	FY2021 Vs Forecast*
Sales	**67**	**70**	**71**	**5.9%**	**2.4%**
Gross profit	64	65	67	5.7%	3.1%
SG & A	475	630	539	13.5%	-14.3%
R&D cost	313	411	308	-1.6%	-25.0%
Other	162	219	231	42.5%	5.7%
Operating income	**-411**	**-564**	**-472**	-	-
Ordinary income	**-410**	**-583**	**-481**	-	-
Extraordinary income	1	-	2	100.0%	-
Extraordinary loss	-	40	117	9,860.1%	193.7%
Net income	**-413**	**-625**	**-599**	-	-

Ab/reagent sales, research support

PPMX-T003 Recruit delay

Patent fee, etc.

Impairment loss due to capex increase

- Sales/Profit: almost as planned
- SG&A: patents fee, etc. increased while P1 among PV patients delayed

FY2021 financial status

Balance sheet

(million yen)

Assets		
	2021/3/31	2022/3/31
Cash & deposits	1,069	3,214
Accounts receivable - trade	8	10
Other	30	65
Total current assets	**1,108**	**3,290**
Non-current assets	**9**	**9**
Total assets	**1,118**	**3,300**

Liabilities		
	2021/3/31	2022/3/31
Current liabilities	34	148
Total liabilities	**34**	**148**
Share capital	604	1,939
Capital surplus	889	2,225
Retained earnings	-413	-1,012
Total shareholders' equity	**1,080**	**3,152**
Total net assets	**1,083**	**3,152**
Total liabilities and net assets	**1,118**	**3,300**

- Cash & deposits, share capital, capital surplus: increased due to IPO
- Capital ratio: 95.5％

04 FY2022 Business Plans / Forecast

FY2022 Plans

1. **PPMX-T003:**
   Start and finish administration in P1 among PV patients

2. **PPMX-T003:**
   Develop medical drug for ANKL – finish preparation for investigator-led clinical trial

3. **PPMX-T002：**
   Determine new partner

4. **PPMX-T004:**
   Plan re-development

FY2022 business results forecast

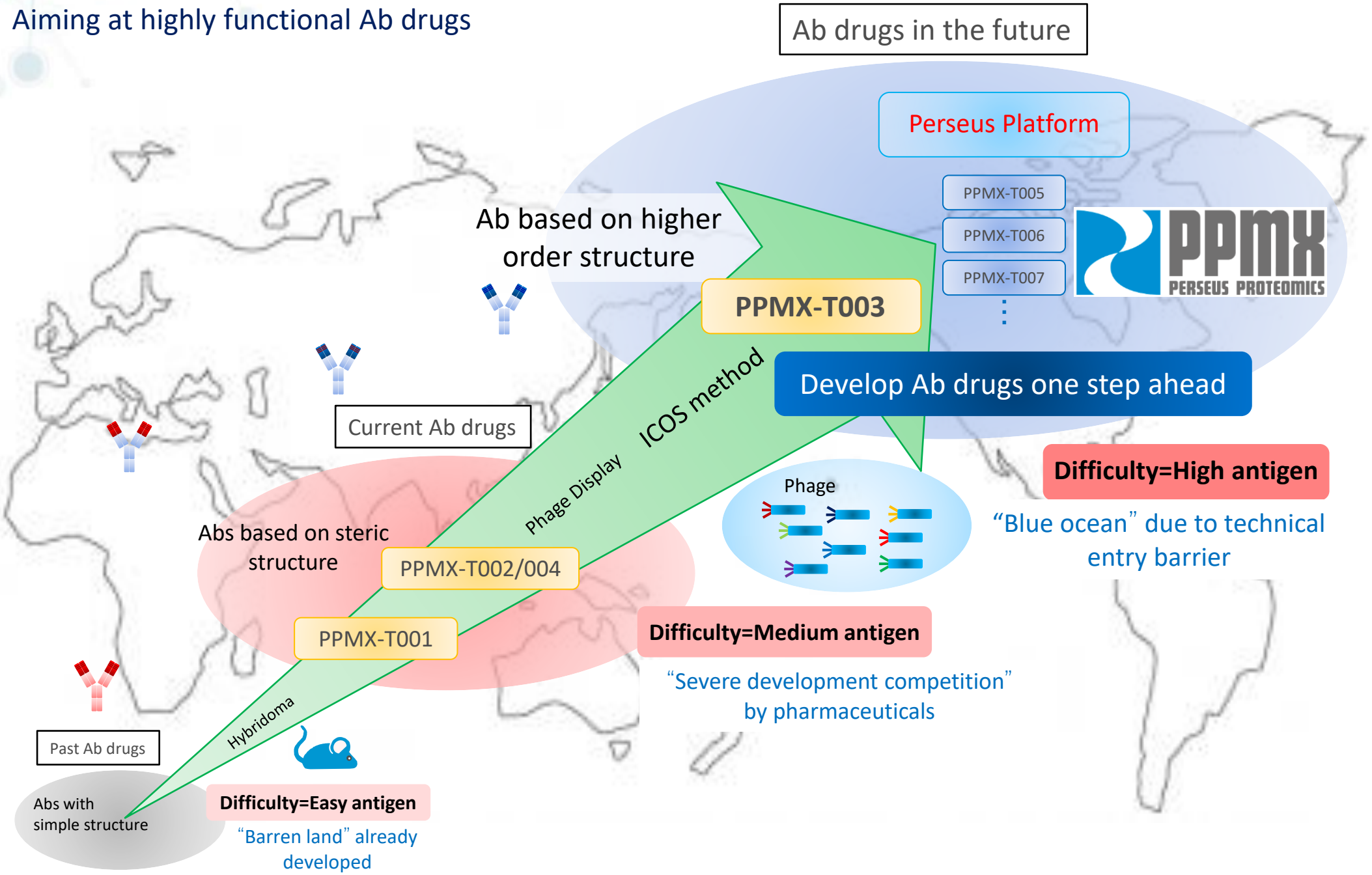
(million yen)

	FY2021 results	FY2022 (forecast)	Vs. FY2021 Incr/decr rate
Sales	**71**	**77**	7.4%
Gross profit	67	72	7.1%
SG & A	539	776	43.8%
R&D cost	308	522	69.5%
Other	231	253	9.5%
Operating income	**-472**	**-703**	-
Ordinary income	**-481**	**-736**	-
Extraordinary income	2	-	-
Extraordinary loss	117	116	-1.5%
Net income	**-599**	**-854**	-

- Sales: slight increase from FY2021
- R&D cost: P1 among PV patients cost included

Bring more Ab drugs to patients

Aiming at highly functional Ab drugs



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This presentation material includes forecast or estimates for the future. The Company has created these forward-looking statements based on the information currently available. Please note that they will change depending on the economic and/or medical business industry trends, etc.

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