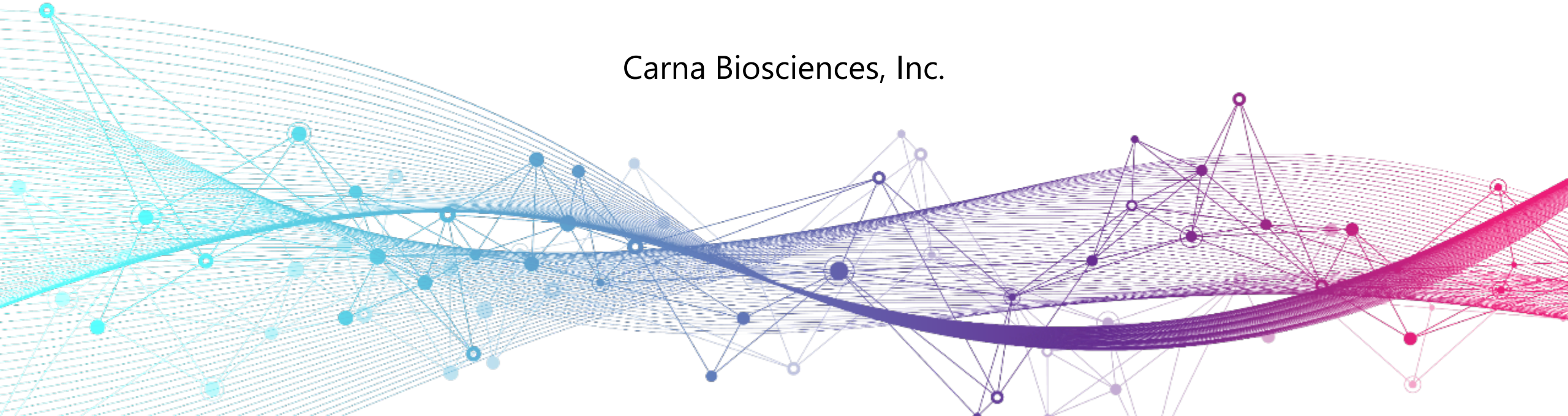
Financial Results
Q1 FY2025

（January to March 2025）

Carna Biosciences, Inc.



AGENDA

1. Updates on Pipelines in Clinical Development
2. Updates on Licensed Pipelines
3. FY2025 Q1 Results
4. Appendix

Updates on Pipelines in Clinical Development

1. **docirbrutinib (AS-1763)**
2. **sofnobrutinib (AS-0871)**
3. **monzosertib (AS-0141)**

International Nonproprietary Name (INN) : docirbrutinib, Code name : AS-1763
International Nonproprietary Name (INN) : sofnobrutinib, Code name : AS-0871
International Nonproprietary Name (INN) : monzosertib, Code name : AS-0141

Pipelines in Clinical Development

Compound	Target	Indication	Status
docirbrutinib (AS-1763)	BTK	Blood Cancer	**Phase 1b clinical trial in the U.S. Ongoing:** • Patient enrollment for Dose escalation part was completed in December 2024 • Now in the Dose expansion part • Encouraging preliminary data were presented at EHA2024 and ASH2024 Multi-center clinical study Study Lead ：Prof. Nitin Jain, MD, Department of Leukemia, University of Texas MD Anderson Cancer Center.
sofnobrutinib (AS-0871)	BTK	Immune-inflammatory diseases	**Phase 1 clinical trial in the Netherlands Completed:** • Favorable safety and tolerability profile • Promising PK/PD profile were confirmed • Negative in the EFD study • Seeking a strategic partner for further development
monzosertib (AS-0141)	CDC7/ ASK	Cancer	**Phase 1 clinical trial in Japan Ongoing:** For solid tumors • Dose escalation part was completed • Dose expansion part is underway For blood cancers • Dose escalation part is in progress Clinical trial sites - National Cancer Center Hospital and National Cancer Center Hospital East - The Cancer Institute Hospital of JFCR

EHA: European Hematology Association, ASH: American Society of Hematology Annual Meeting & Exposition, EFD study : Embryo-Fetal Development toxicity study

Docirbrutinib (AS-1763): Highlights

Key Highlights

Orally available small molecule inhibitor of Bruton's Tyrosine Kinase (BTK) targeting B-cell malignancies

- ✓ Indication : CLL/SLL and B-cell NHL
- ✓ Non-covalent BTK inhibitor
- ✓ Docirbrutinib has a potential to be effective for patients who have developed resistance to the existing BTK inhibitors.

BTK inhibitors market size exceeds $10 bn.

Refer to P.16 for more information

Ref. P.10- P.15

Docirbrutinib has the potential to become a blockbuster.

Preliminary results from clinical trials and preclinical findings suggest:

- **favorable safety profile and clinical responses in heavily pretreated patients with B-cell malignancies**
- **potential to be effective against patients who have developed resistance to the existing BTK inhibitors**

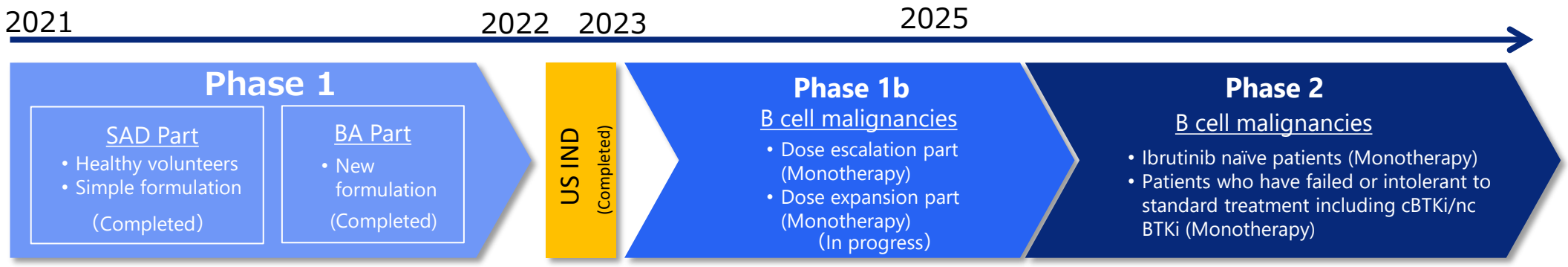
Docirbrutinib (AS-1763): Clinical trial status

Status

Phase 1b study is ongoing in the U.S.

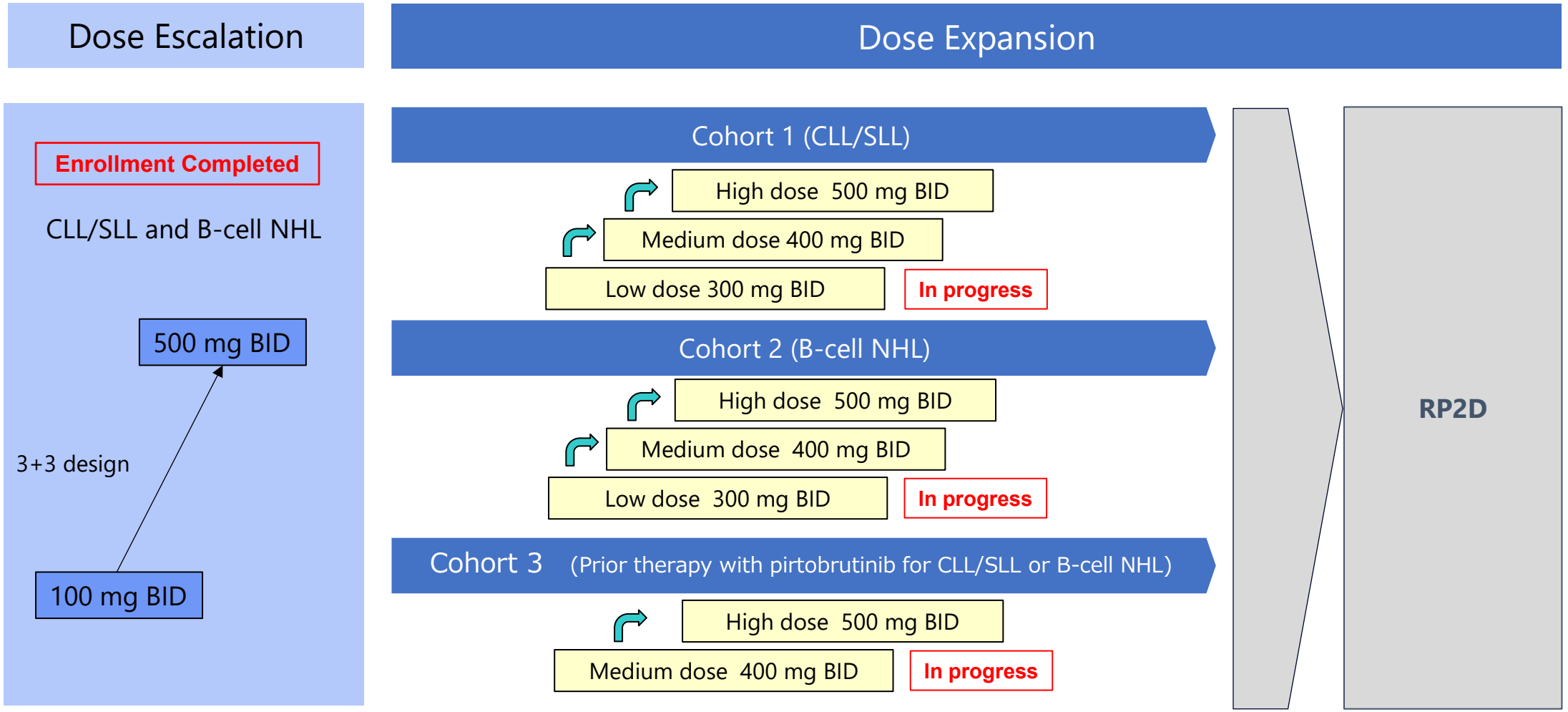
Multi-center clinical study
Study Lead：Prof. Nitin Jain, MD, Department of Leukemia, University of Texas MD Anderson Cancer Center

- ✓ Patient enrollment for Dose escalation part was completed in December 2024.
- ✓ Dose expansion part is currently in progress.



IND application : Investigational New Drug application SAD: Single Ascending Dose BA: Bioavailability
B-cell malignancies: Chronic Lymphocytic Leukemia (CLL), Small Lymphocytic Lymphoma (SLL), and B-cell non-Hodgkin Lymphoma (B-cell NHL), etc.
cBTKi: covalent BTK inhibitor ncBTKi: non-covalent BTK inhibitor

Docirbrutinib (AS-1763): Phase 1b Trial Design



RP2D: Recommended phase 2
BID: Twice a day
BTKi: BTK inhibitor

Patients with CLL/SLL or B-cell NHL who have failed or intolerant to at least two lines of systemic therapy. Prior therapy with a covalent BTKi is permitted.

Docirbrutinib Ph 1b study: Clinical sites

Clinical sites（As of April 30, 2025）

- UC Irvine Health
- Mount Sinai Comprehensive Cancer Center
- Moffitt Cancer Center
- Northwestern Memorial Hospital
- University of Maryland Medical Center-Greenebaum Comprehensive Cancer Center
- University of Massachusetts Memorial Medical Center
- Clinical Research Alliance, Inc.
- University of Texas MD Anderson Cancer Center
- The Medical College of Wisconsin
- Taylor Cancer Research Center (newly opened)

✓ **Phase 1b study is ongoing at ten clinical sites in the US.**
✓ **Planning to activate additional clinical sites to accelerate the development timeline.**

Docirbrutinib (AS-1763) : Sponsorship to CLL Society

https://cllsociety.org/

CLL Society

CLL Society is the world's leading authority for chronic lymphocytic leukemia and small lymphocytic lymphoma cancer patients.

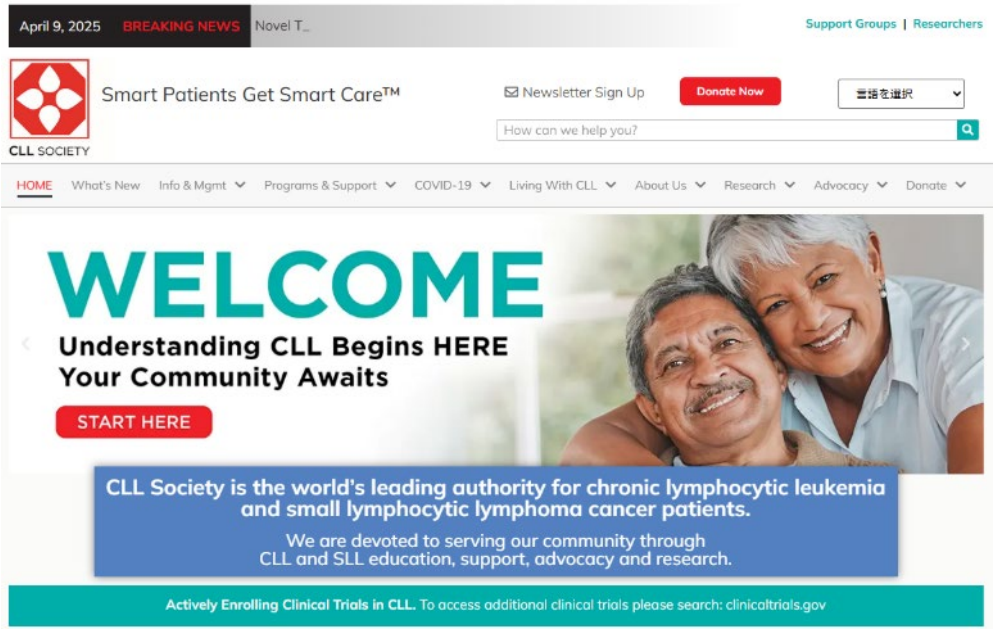
Mission

CLL Society is an inclusive, patient-centric, physician-curated nonprofit organization that addresses the unmet needs of the chronic lymphocytic leukemia and small lymphocytic lymphoma (CLL / SLL) community through patient education, advocacy, support, and research.

Vision

We envision a world in which the entire CLL / SLL community can equitably access quality education, support, and care, to lead healthier and richer lives.

－Cited from the website of CLL Society－



Carna offered sponsorship at the request of CLL Society.

On CLL Society's website:

- An article to introduce clinical trial of docirbrutinib

- Interview video of the lead investigator, Prof. Nitin Jain, MD, Department of Leukemia, University of Texas MD Anderson Cancer Center

https://cllsociety.org/2025/03/phase-1-study-of-noncovalent-btk-inhibitor-docirbrutinib/

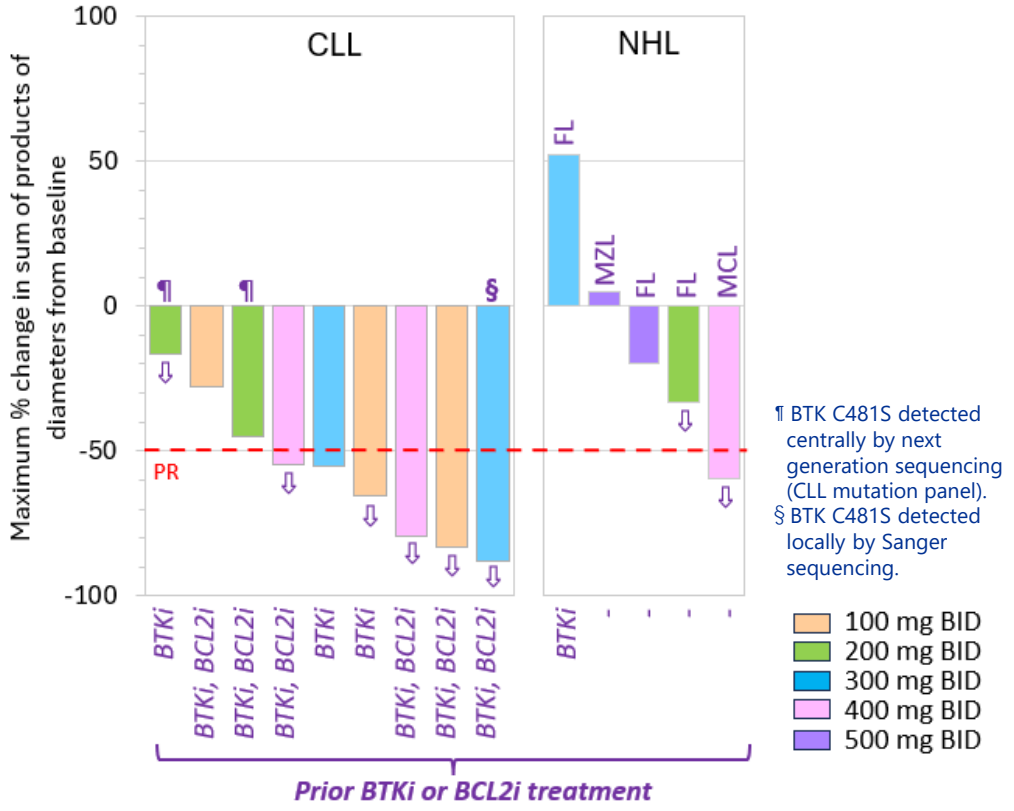
Supporting patient access to the clinical trial of docirbrutinib

Docirbrutinib Ph 1b study: Tumor response

Preliminary Phase 1b data (1)

Data from ASH2024 poster presentation
The 66th American Society of Hematology Annual Meeting & Exposition, December 7-10, 2024

Tumor response (lymph node size)



CLL: Chronic Lymphocytic Leukemia, NHL: non-Hodgkin Lymphoma, FL: Follicular Lymphoma, MCL: Mantle cell lymphoma, MZL: Marginal zone lymphoma, BTKi: BTK inhibitor, BCL2i: BCL2 inhibitor, BID: Twice a day

Efficacy of docirbrutinib

CLL: All patients experienced lymph node size reduction. 6 out of 9 evaluable patients (67%) with CLL achieved PR or PR-L with 50% reduction in lymph node size. The exposures at ≥300 mg BID exceeded the IC_{90} throughout the dosing interval, and all 4 CLL patients (100%) receiving ≥300 mg BID achieved PR or PR-L.

NHL: 3 out of 5 patients with NHL experienced lymph node size reduction. One MCL patient experienced PR with over 50% reduction in lymph node size.

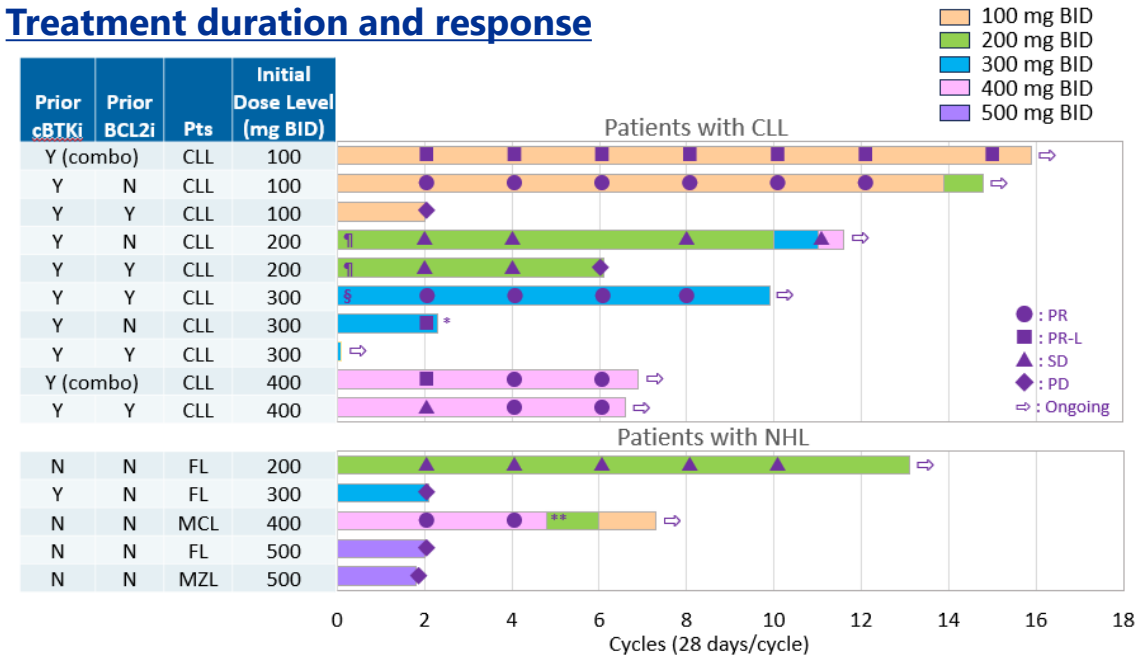
These preliminary data indicate clinical responses in patients with B-cell malignancies.

Docirbrutinib Ph 1b study: Efficacy and safety

Preliminary Phase 1b data (2)

Data from ASH2024 poster presentation

Treatment duration and response



Prior cBTKi	Prior BCL2i	Pts	Initial Dose Level (mg BID)
Y (combo)		CLL	100
Y	N	CLL	100
Y	Y	CLL	100
Y	N	CLL	200
Y	Y	CLL	200
Y	Y	CLL	300
Y	N	CLL	300
Y	Y	CLL	300
Y (combo)		CLL	400
Y	Y	CLL	400
N	N	FL	200
Y	N	FL	300
N	N	MCL	400
N	N	FL	500
N	N	MZL	500

¶ BTK C481S detected centrally by next generation sequencing (CLL mutation panel).
§ BTK C481S detected locally by Sanger sequencing.

*Discontinued due to consent withdrawal
**Dose reduction due to asymptomatic live enzyme elevations (G3)

- The bar charts indicate the duration of treatment.
- The color of the bar charts indicates does levels. The change in the color indicates that the dose level was changed during the treatment.
- Arrows indicate that the treatment is ongoing.
- PR (Partial Response) indicates that the size of lymph nodes has decreased ≥50% and other parameters for PR, e.g. reduction in the number of lymphocytes, have been met.
- PR-L (PR-Lymphocytosis) indicates that the size of lymph nodes has decreased ≥50% but the reduction in the number of lymphocytes has not met the criteria for PR.
- SD (Stable Disease) indicates that the disease remains stable.
- PD (Progression Disease) indicates that the diseases has progressed.

CLL: Chronic Lymphocytic Leukemia, NHL: non-Hodgkin Lymphoma, FL: Follicular Lymphoma
MCL: Mantle cell lymphoma, MZL: Marginal zone lymphoma, BTKi: BTK inhibitor, BCL2i: BCL2 inhibitor, BID: Twice a day

Safety profile of docirbrutinib

- No dose-limiting toxicities were observed. No treatment discontinuation due to AEs and no drug-related atrial fibrillation or hypertension were reported at doses of 100-500 mg BID.
- Asymptomatic ALT/AST elevations (G3) were reported in one patient (7%) as the only drug-related ≥G3 AEs other than neutrophil count decrease, indicating a favorable safety profile of docirbrutinib.

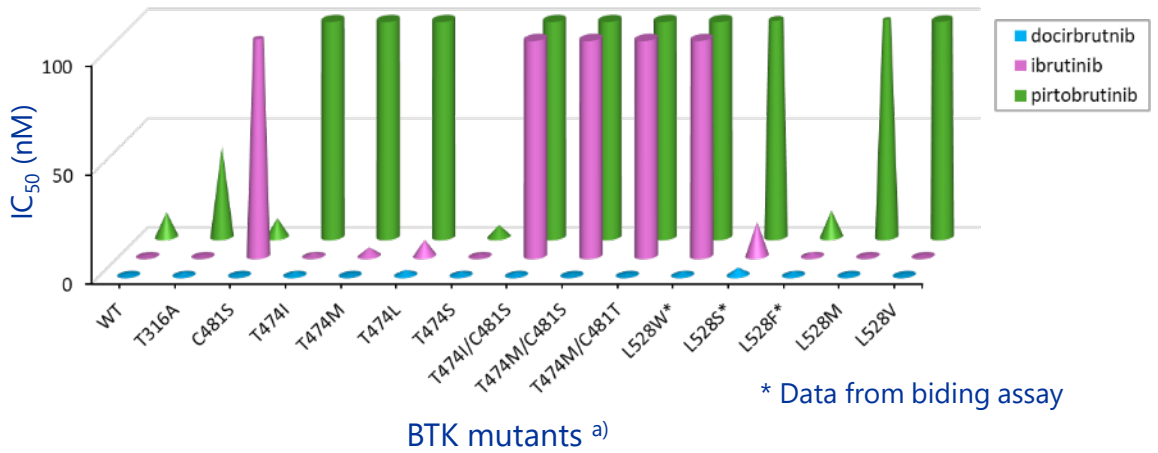
These preliminary data indicate a favorable safety profile and clinical responses in heavily pretreated patients with B-cell malignancies.

Docirbrutinib: Potential to address various BTK mutations

Data from ASH2024 poster presentation

Preclinical study

Inhibitory potency of BTK inhibitors against BTK mutants



* Data from biding assay

BTK mutants [a)]

[a)] Patients are reported to develop resistance during the treatment with covalent BTK inhibitors including ibrutinib due to substitution of cysteine residue at 481 position with serine (C481S mutation) in BTK, which reduces the efficacy of covalent BTK inhibitors. In addition, the emergence of other types of mutations, such as T474x and L528x, has been reported during the treatment with pirtobrutinib.

In vitro study using recombinant BTK mutant proteins

The bar charts show the comparison of the inhibitory potency of BTK inhibitors against various BTK mutants. A shorter bar indicates stronger potency.

- Ibrutinib and pirtobrutinib showed weak inhibitory potency against many resistant BTK mutants.
- Docirbrutinib showed strong inhibitory potency against all resistant BTK mutants.

Docirbrutinib is expected to be effective against patients who have developed resistance to the existing BTK inhibitors.

Drug resistance: the reduction in effectiveness of a drug during targeted therapies due to alterations of drug targets including the mutation of the target proteins.

Safety profile of docirbrutinib

Preliminary data from Phase 1b study

Data from ASH2024 poster presentation

Treatment-Emergent Adverse Event (TEAE)	All Doses and Pts (n=15)			
	Any		Treatment-related	
	Any Grades n (%)	Grade ≥3 n (%)	Any Grades n (%)	Grade ≥3 n (%)
≥15%				
Dizziness	9 (60%)	0	2 (13%)	0
Headache	6 (40%)	0	1 (7%)	0
Nausea	5 (33%)	0	2 (13%)	0
Neutrophil count decreased	5 (33%)	2 (13%)	4 (27%)	2 (13%)
Blood creatinine increased	4 (27%)	0	0	0
Fatigue	4 (27%)	0	1 (7%)	0
Abdominal pain	3 (20%)	0	0	0
Anemia	3 (20%)	0	1 (7%)	0
Constipation	3 (20%)	0	1 (7%)	0
Cough	3 (20%)	0	0	0
Fever	3 (20%)	0	0	0
Myalgia	3 (20%)	0	0	0
TEAEs of Special Interest				
Bruising[a]	2 (13%)	0	1 (7%)	0
Hemorrhage[b]	1 (7%)	0	1 (7%)	0

[a] Contusion (G1), [b] Epistaxis (G1).

The preliminary data from the Phase 1b study indicates impressive safety profile of docirbrutinib.

BTK Inhibitors in clinical development

Selected BTK inhibitors in clinical development

Compound	Type	Company (Originator)	Development Phase
pirtobrutinib (LOXO-305)	Non-covalent BTK inhibitor	Lilly (Loxo)	Approved/P3
nemtabrutinib (ARQ 531)	Non-covalent BTK inhibitor	Merck (ArQule)	P3
NX-5948	BTK degrader	Nurix	P1
BGB-16673	BTK degrader	BeiGene	P3
docirbrutinib (AS-1763)	Non-covalent BTK inhibitor	Carna	P1

Carna plans to accelerate the enrollment in the dose expansion part of the Phase 1b study and accumulate the clinical data to demonstrate:

Best-in-Class BTKi

- ✓ Safer profile compared with other BTK inhibitors
- ✓ Effective against resistant mutants

BTKi: BTK inhibitor

Adverse Events Were the Most Common Reason for Ibrutinib Discontinuation

Discontinuation of ibrutinib treatment is commonly due to intolerance

The discontinuation rate of ibrutinib treatment was 41% in the US, and the majority reasons of discontinuation was AEs.

Reasons for ibrutinib discontinuation	Ibrutinib in front-line	Ibrutinib in relapse
Toxicity	63.1%	50.2%
CLL Progression	15.8%	20.9%
Others	21.1%	28.9%

Data cited from Mato AR, et al., Haematologica. 2018;103(5):874-879

Docirbrutinib (AS-1763) in Phase 1b :

No discontinuation due to adverse events so far

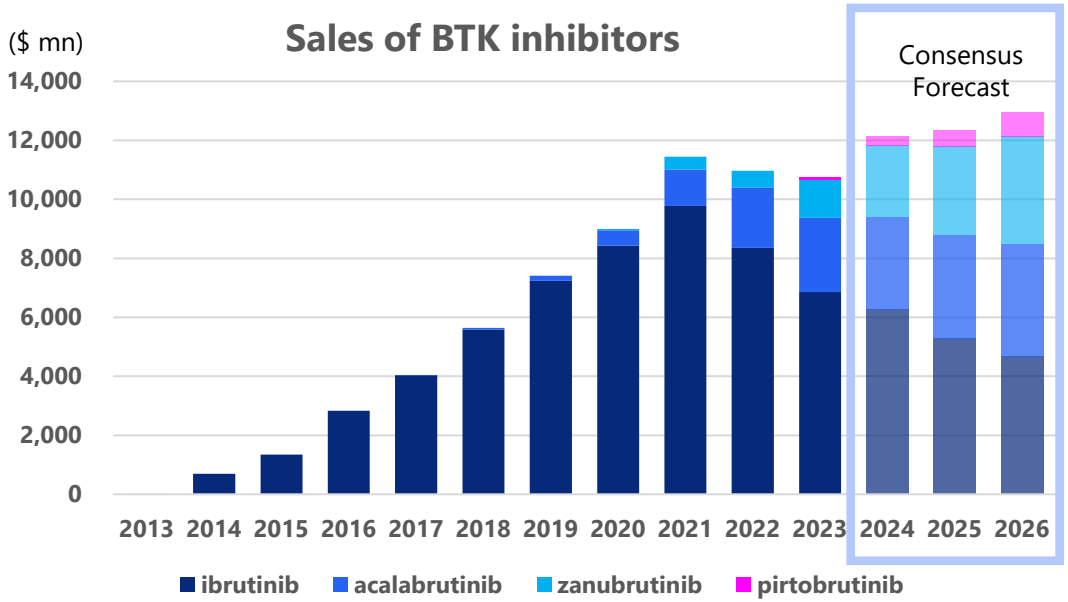
Docirbrutinib demonstrates safer profiles,

suggesting better option for effective therapy

BTK inhibitors form a large market

Sales of the currently approved BTK inhibitors, ibrutinib, acalabrutinib, zanubrutinib, and pirtobrutinib, exceed $10 bn.

- Acalabrutinib, zanubrutinib, and pirtobrutinib are taking a market share from ibrutinib as safer BTK inhibitors.
- Acquired resistance against ibrutinib, acalabrutinib, zanubrutinib, and pirtobrutinib present a need for new therapeutic options



Source: Clarivate

Product Positioning of docirbrutinib

Offer a new therapeutic option to:

- *patients who discontinued the existing BTK inhibitors due to adverse events as a safer BTK inhibitor*
- *patients who have developed resistance to the existing BTK inhibitors as a pan-mutant BTK inhibitor*

Sofnobrutinib (AS-0871) : Highlights

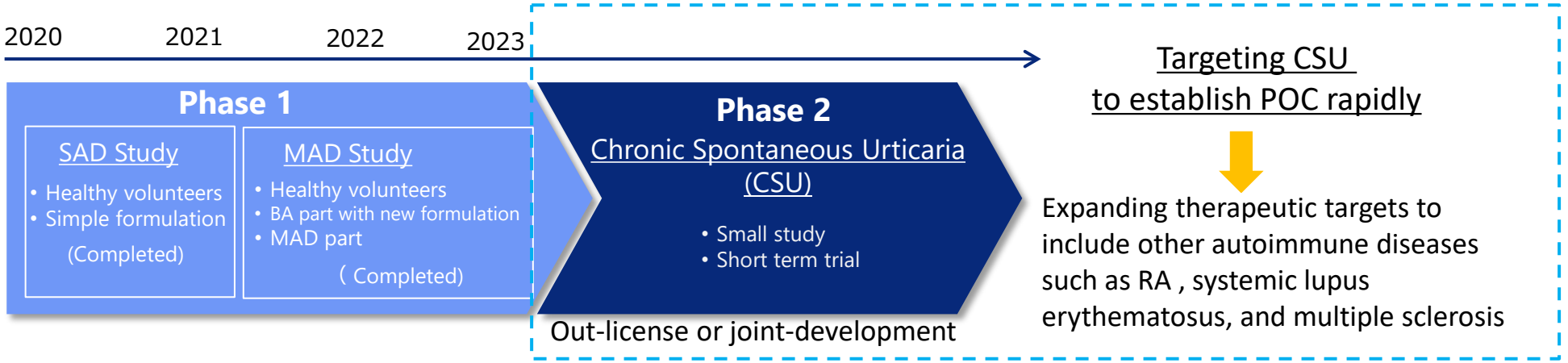
Mechanism/ Indication	Sofnobrutinib is an **orally available** Bruton's Tyrosine Kinase (BTK) inhibitor to treat autoimmune diseases by inhibiting activation of immune cells such as B cells, macrophages, and mast cells.
Clinical trials	Completed Phase 1 clinical trial in healthy volunteers in the Netherlands. A favorable safety and tolerability profile as well as a promising PK/PD profile were confirmed and these results support to advance sofnobrutinib into Phase 2 clinical development.
Status	✓ Performed a preclinical study to establish a best-in-class status; potential advantages of sofnobrutinib over other BTK inhibitors. ✓ Seeking a strategic partner for further development.

Sofnobrutinib (AS-0871) : Non-covalent BTK Inhibitor

Sofnobrutinib : Targeting Immune-inflammatory diseases

- Small molecule BTK inhibitor
- Non-covalent/reversible
- High kinase selectivity
- Orally available

- Demonstrated significant efficacies in arthritis models
- Showed efficacy in systemic lupus erythematosus model
- Phase 1 Clinical Trial was completed
- Find a partner to conduct further development
- Performed a preclinical study to establish a best-in-class status



SAD: Single Ascending Dose
MAD: Multiple Ascending Dose
BA: Bioavailability
POC: Proof of Concept

Sofnobrutinib (AS-0871) : Potential best-in-class

Embryo-Fetal Development (EFD) toxicity study was performed to prove potential advantages of sofnobrutinib over other BTK inhibitors.

Sofnobrutinib showed "No Teratogenic Effect“ in the EFD study, suggesting it is suitable for the treatment of dermatologic diseases including CSU.

As most BTK inhibitors approved are teratogenic, their use should be limited especially for women.
Sofnobrutinib is confirmed to be non-teratogenic in the EFD toxicity study, providing a treatment option for a wider range of patients.

Sofnobrutinib is the only BTK inhibitor having a non-covalent inhibitory mechanism of action with no teratogenic effect.

Sofnobrutinib (AS-0871) : CSU is a skin disease with unmet medical needs

Chronic Spontaneous Urticaria (CSU) is a distressing skin disorder that is characterized by itching and hives lasting for more than 4 weeks with unknown causes. The symptoms can last months or years, affecting QoL of patients.

Challenges of CSU

- A significant number of patients having uncontrolled CSU by existing drugs.
- High socio-economic costs for patients with high disease activity*
- Large number of patients; approximately 1% of the global population is affected*

High unmet medical needs with potential large market

＊Br J Dermatol 2021;184:226-36.

Competitors

Compound	Company	Development Phase
Remibrutinib (LOU064)	Novartis	P3

The Phase III trials met the primary endpoints and showed rapid symptom control in CSU, supporting the potential of BTK inhibitors as a new treatment option for those uncontrolled by first-line H1-antihistamines.*

＊https://www.novartis.com/news

Opportunity

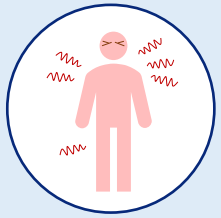
- Approval of new treatment options may trigger the expansion of CSU market.
- We plan to pursue the clinical implications of sofnobrutinib (non-covalent BTK inhibitor) to provide clinical benefits by minimizing potential adverse events associated with covalent BTK inhibitors including remibrutinib.

Chronic Spontaneous Urticaria (CSU)

CSU is a debilitating disease of chronic itch, hives and angioedema, lasting six weeks or more.

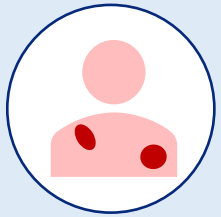
Symptoms

There is no specific external trigger for CSU, but the autoimmune system may play a role

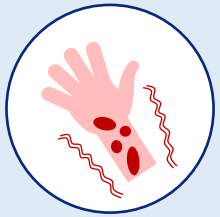


Spontaneously present & re-occur

Lack of Energy
Depression/Anxiety
Chronic (Lasting for at least six weeks)



Red swollen hives



Itch

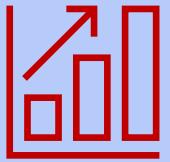
Number of Patients

2.8 million

diagnosed prevalent cases in major seven markets

- ✓ Approximately 1% of the population worldwide is affected.
- ✓ Approximately 50% of CSU patients don't respond to H1-antihistamine.
- ✓ Curative treatment is not available.
- ✓ High socio-economic costs for patients with high disease activity.

Market Size



$2,844 million

in 2020 in seven major markets

- ✓ The market size of CSU in major seven countries is expected to reach $8,043 mn by 2030.

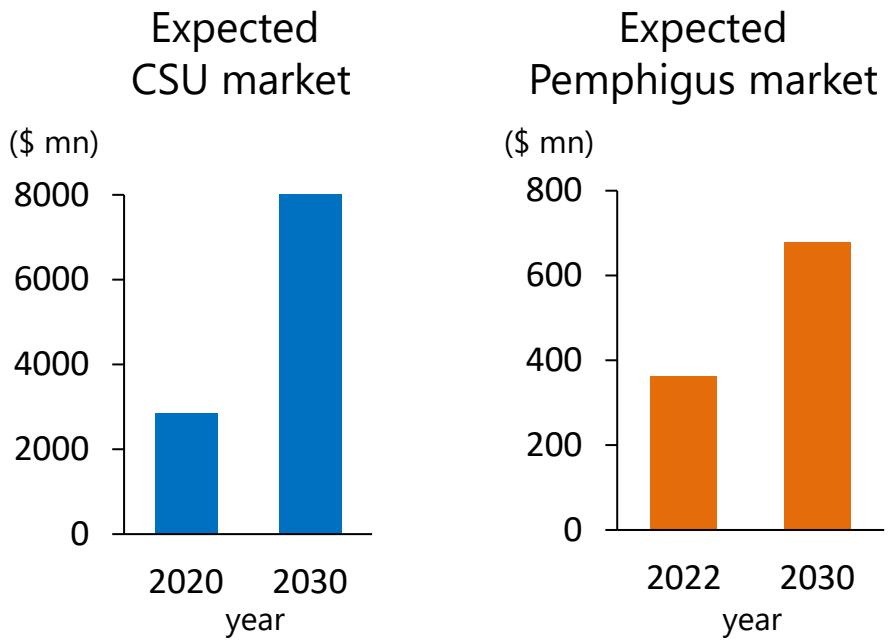
https://www.delveinsight.com/
Source : Clarivate

Potential Market Size for Sofnobrutinib (AS-0871)

Initial focus

Diseases	Number of patients
CSU	• Diagnosed prevalent cases : 2.8 mn* • WW population affected: 76 mn
Pemphigus	• Diagnosed prevalent cases : 40,000*

*in major 7 markets



Other potential therapeutic area

Diseases	Number of patients	Market size in value
Systemic lupus erythematosus (SLE)	Global SLE prevalence is estimated to be 15.87 to 108.92 per 100,000 people	expected to reach $3,517 mn by 2030
Multiple sclerosis (MS)	In 2016, an estimated 2.2 million people worldwide had MS, corresponding to a prevalence of 30.1 cases per 100,000 population	expected to reach $34 bn by 2031
Rheumatoid arthritis (RA)	18 million people worldwide were living with RA	expected to reach $70 bn by 2030

https://www.delveinsight.com/
https://www.databridgemarketresearch.com/
https://ard.bmj.com/
https://straitsresearch.com/
https://www.skyquestt.com/
https://www.who.int/
Ann Rheum Dis 2023;82:351–356
Lancet Neurol 2019 ; 18: 269–85
Source : Clarivate

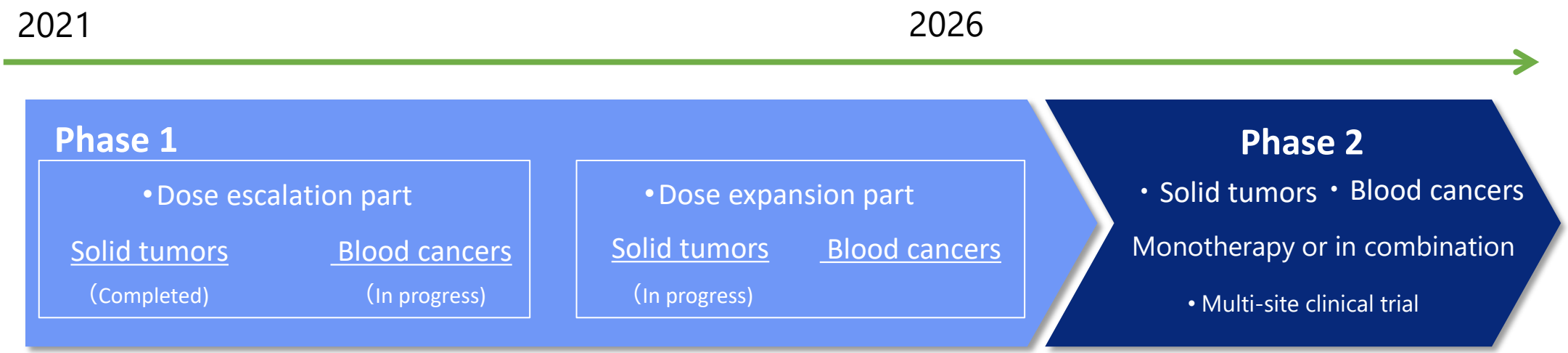
Monzosertib (AS-0141) : CDC7 Inhibitor

CARNA BIOSCIENCES

Highlights	Monzosertib is an orally available CDC7 kinase inhibitor targeting cancer
Clinical trials in progress	Conducting Phase 1 study in Japan targeting solid tumors and blood cancers ✓ Solid tumor : Completed dose escalation part. Dose expansion part is currently in progress. ✓ Blood cancer : Dose escalation part is ongoing. Clinical trial sites - National Cancer Center Hospital and National Cancer Center Hospital East - The Cancer Institute Hospital of JFCR

Monzosertib (AS-0141) : CDC7 Inhibitor

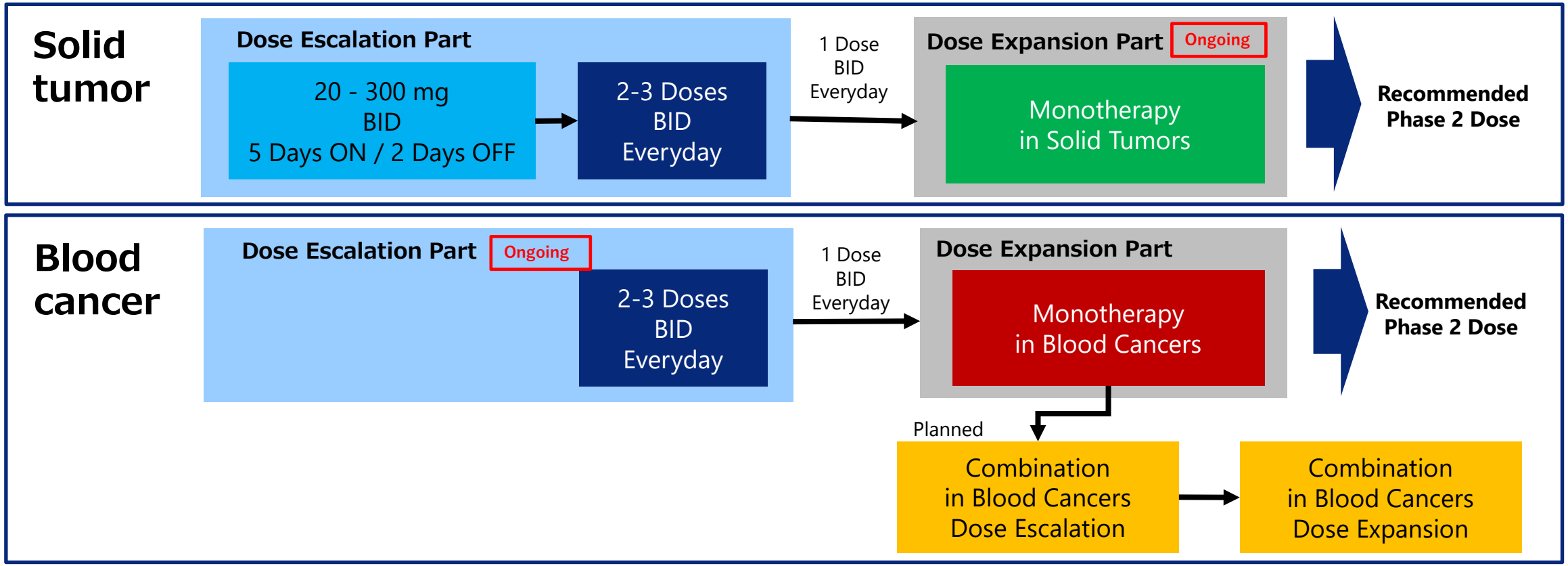
Monzosertib：Targeting Cancer	
● Small molecule CDC7 inhibitor ● High kinase selectivity ● Potential First-in-class drug ● Orally available	● Potent anti-proliferative activity against various cancer cell lines ● Demonstrated strong anti-tumor activity in several human tumor xenograft models ● Conducting Phase 1 study in Japan targeting solid tumors and blood cancers Solid tumor : Dose expansion part is underway. Blood cancer : Dose escalation part is ongoing.



Monzosertib (AS-0141) : Phase 1 Clinical Trial

Phase 1 study targeting cancer patients

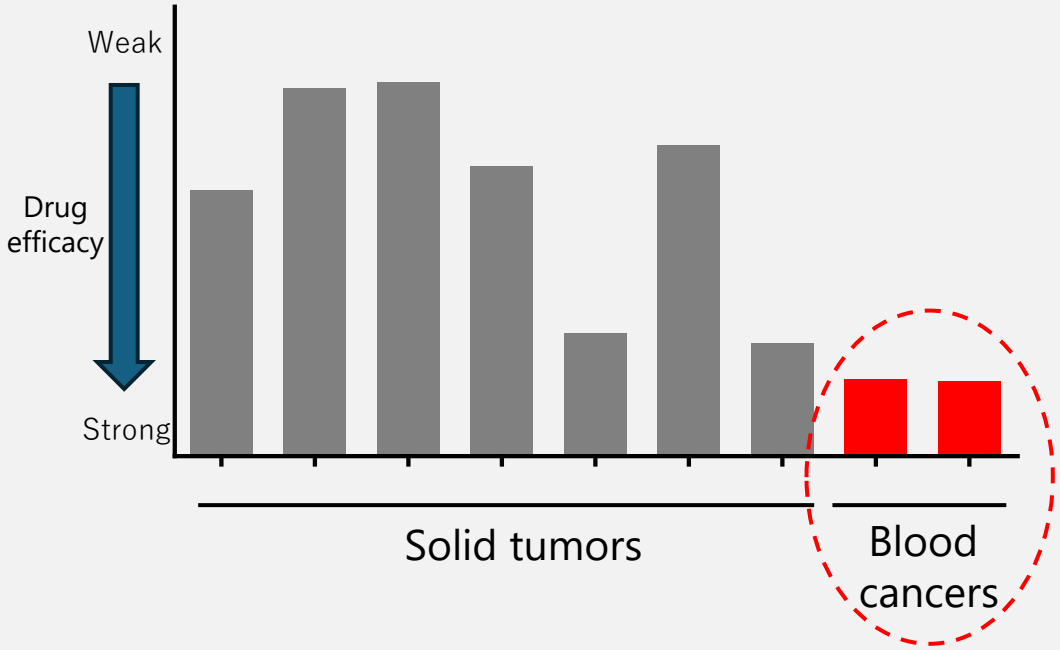
- The Phase 1 study in patients with advanced, metastatic, relapsed or refractory malignancies. The protocol has been changed to include patients with blood cancers.
- The study consists of two parts, a dose escalation and an expansion.
- The primary objective is to assess safety, tolerability, maximum tolerated dose (MTD), preliminary anti-tumor activity, and PK / PD as well as to determine RP2D.
- Pharmacodynamic effect of monzosertib was confirmed at 40 mg BID and above.



Monzosertib (AS-0141): Dose escalation part targeting blood cancer is ongoing

Non-clinical study

Antiproliferative effects of monzosertib on 35 human cancer cell lines
(Each bar are presented as mean of different cell lines (N = 1 – 7)



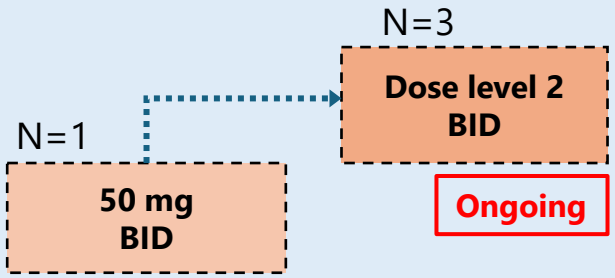
✓ Monzosertib demonstrated robust tumor growth inhibition in a human AML xenograft mouse model.

Phase 1 study

Patient Population: advanced, relapsed, refractory or distant metastasis malignant tumors

Initiated dose escalation part targeting blood cancer patients in 2024.

- Safety and tolerability were confirmed in a patient dosed 50 mg BID.
- Dose level 2 is currently ongoing.
- Two patients are enrolled in the dose escalation part as of April 30, 2025.



Phase 1 study targeting solid tumors

Dose escalation part

- ✓ Switched to a continuous dosing schedule (without drug holiday) to maximize efficacy.
- ✓ Confirmed safety and tolerability at all planned dose levels.
- ✓ Determined MTD and the dose level for dose expansion part in January 2025.
- ✓ 6 of 10 efficacy-evaluable patients achieved SD.
- ✓ One patient achieved long SD (＞6 months).

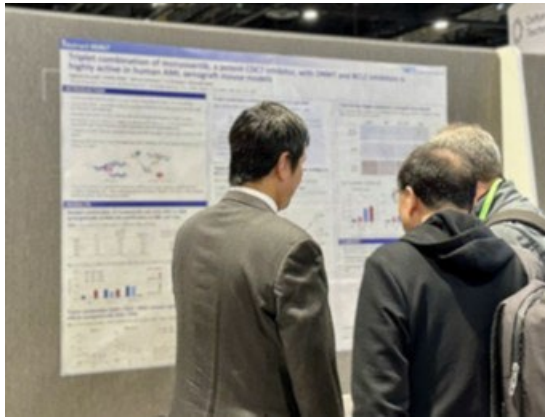
Dose expansion part

- ✓ Initiated dosing in nine patients as of April 30, 2025.

Monzosertib (AS-0141) : AACR2025 Poster presentation

Poster title : Triplet combination of monzosertib, a potent CDC7 inhibitor, with DNMT and BCL-2 inhibitors is highly active in human AML xenograft mouse models

Presented new preclinical data on monzosertib at the American Association for Cancer Research (AACR) Annual Meeting 2025 held in Chicago, April 25-30, 2025.

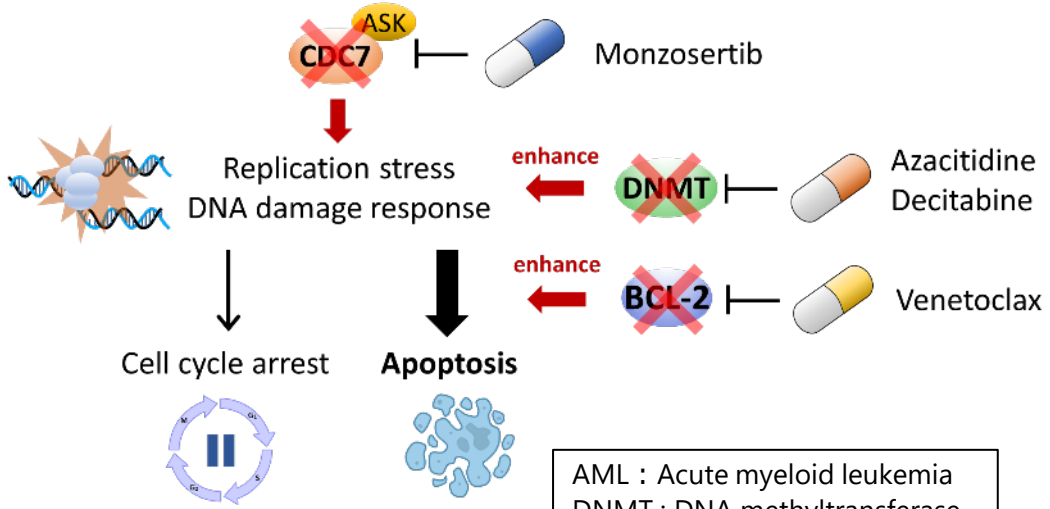


＜Key presentation highlights＞

- DNMT inhibitor + BCL-2 inhibitor is a standard treatment for AML patients who are unfit for intensive chemotherapy. However, resistance to DNMT inhibitor + BCL-2 inhibitor combination therapy has become a major concern.
- This study aimed to evaluate the antitumor efficacy of a triplet therapy combining CDC7 inhibitor (monzosertib) + DNMT inhibitor (azacitidine/decitabine) + BCL-2 inhibitor (venetoclax) in human AML xenograft models.

The triplet combination enhanced apoptosis through the DNA damage response. Monzosertib demonstrated significant antitumor effects in triplet combinations in human AML xenograft models.

Triplet therapy may provide enhanced efficacy for patients with AML.



AML：Acute myeloid leukemia
DNMT：DNA methyltransferase
BCL-2：B-cell/CLL lymphoma 2

Updates on Licensed Pipelines

1 **DGKα Inhibitor** (Gilead Sciences, Inc.)

2 **Joint Research with Sumitomo Pharma**

Out-licensed Programs

Program/ Partner	Compound (Target)	Status	Upfront payment	Total milestone payments expected	Royalty	Region	Contract date	Milestones received
DGKα inhibitor Gilead Sciences (Out-license)	GS-9911 (Immuno-oncology)	Phase 1	$20M	$450M	Undisclosed	Worldwide	Jun. 2019	Received milestones twice, totaling $15M
Joint Research with Sumitomo Pharma	Kinase inhibitor (Psychiatric and neurological disorders)	Late discovery	JPY80M (including research milestone)	JPY10.6B	Undisclosed	Worldwide	Mar. 2018	

DGKα Inhibitor

Partner

Gilead Sciences, Inc.
Out-licensed in June 2019 (worldwide rights)

Deal size	• Upfront payment $20 million • Maximum of $450 million potential milestone payments upon achievement of certain development and commercial milestones
Royalties	• Royalties on future net sales

1. **Investigational DGKα inhibitor: GS-9911**
2. **Indication: Cancer (immunotherapy)**
   - At JP Morgan Annual Healthcare Conference held in January 2024, Gilead introduced DGKα as next generation target in oncology and presented GS-9911 as the DGKα inhibitor in Phase 1 trials.
3. **The Phase 1 study in patients with solid tumors is ongoing.**

   In December 2024, Carna received a progress report on the development of GS-9911 from Gilead and confirmed the progress is on track.

   Refer Gilead's website for details of the study.
   https://www.gileadclinicaltrials.com/study?nctid=NCT06082960

Joint Research with Sumitomo Pharma

Partner	Sumitomo Pharma Co., Ltd. Joint Research Agreement in March 2018 (worldwide rights)
Deal size	• Upfront payment + Research milestone JPY80 million • Maximum of JPY10.6 billion potential milestone payments upon achievement of certain development and commercial milestones
Royalties	• Royalties on future net sales

1. **Joint research to discover novel kinase inhibitors to treat psychiatric and neurological disorders.**
2. **The term of the joint research was extended in December 2021.**
3. **The joint-research term was extended further in March 2025 to evaluate a potential drug candidate.**
4. **Joint research is ongoing to identify preclinical candidates.**

FY2025 Q1 Results

FY2025 Q1 Results by Business Segment

(JPY million)	Q1FY2024 Actual	**Q1FY2025 Actual**	YoY Change	FY2025 Plan	
Total Sales	180	**143**	-37 -20.7%	722	
ddSP business	180	**143**	-37 -20.7%	722	・Sales of proteins in the U.S. and China remained solid. ・Sales in Japan declined due to the budget consumption conditions of our major customers in the first quarter.
ddRD business	—	**—**	—	—	
Total Operating Loss	(416)	**(497)**	-81	(2,133)	
ddSP business	1	**(12)**	-13	83	
ddRD business	(417)	**(485)**	-67	(2,216)	• Continued investment in the clinical-stage programs.
Ordinary Loss	(394)	**(498)**	-104	(2,137)	
Net Loss	(398)	**(499)**	-100	(2,147)	
R&D cost	377	**432**	54	2,059	• Phase 1b study of docirbrutinib (AS-1763) is on track. • Continued investment in the clinical-stage programs including costs related to clinical studies and manufacturing of investigational new drugs for docirbrutinib (AS-1763) and monzosertib (AS-0141).

Business plan for FY2025 dose not include potential milestone payments or upfront payments as the timing or the amounts are difficult to predict.

ddRD: Drug Discovery R&D business　ddSP: Drug Discovery Support business

Note : Rounded down to the nearest million yen

Consolidated Balance Sheet

(JPN million)	As of Dec. 31,2024	As of Mar. 31,2025	Change	Reason for changes
Current assets	2,737	2,126	-611	• Cash and deposits -579
Cash and deposits	2,108	1,529	-579	
Non-current Assets	34	46	11	
Total assets	2,772	2,172	-599	
Current liabilities	222	150	-72	• Accounts payable -42
Non-current liabilities	73	65	-8	
Total liabilities	296	216	-80	
Total net assets	2,475	1,955	-519	• Retained earnings -499
Total liabilities and net assets	2,772	2,172	-599	

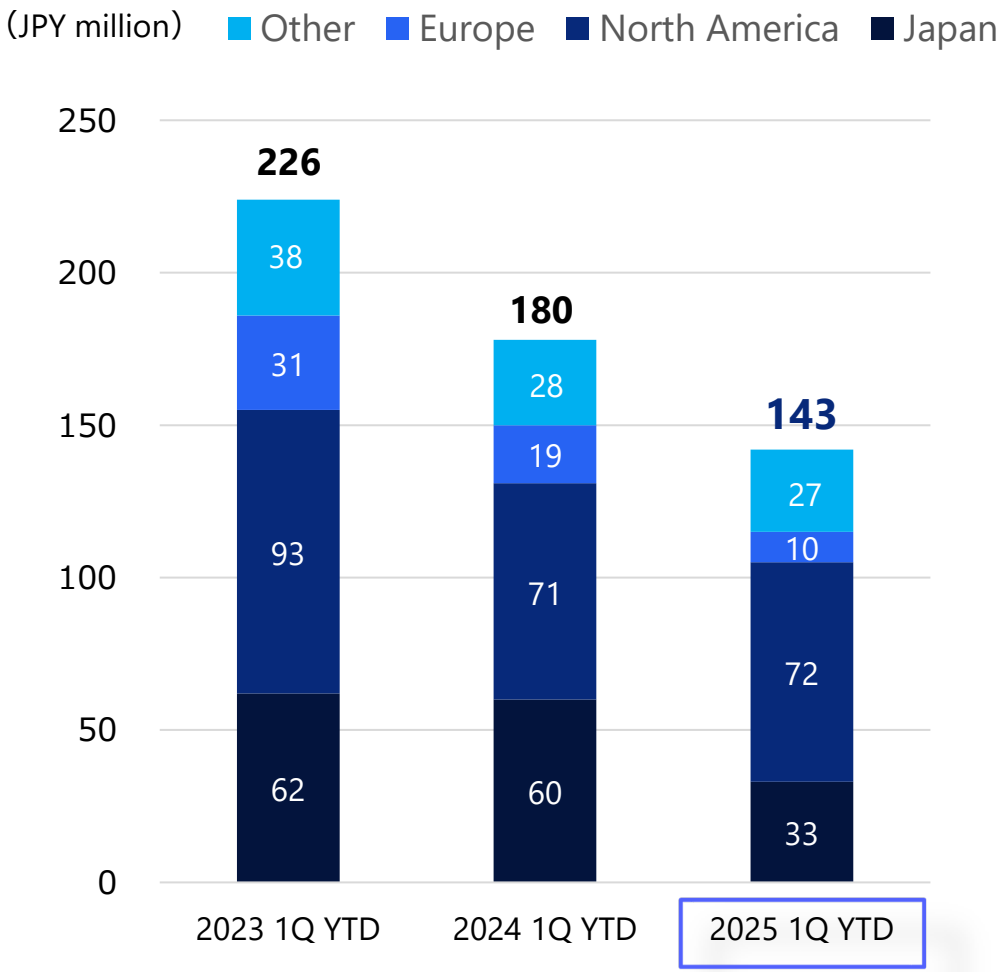
Shareholders' equity ratio	89.3%	90.0%
BPS	129.62yen	102.43yen
PBR	2.3x	2.8x
Share price of Carna	300yen	290yen

Financing
Additional financing may be considered as necessary in order to accelerate the clinical trials of docirbrutinib (AS-1763), our most important asset.

Note: Share price is the closing price of the term end.

FY2025 Q1 YTD Drug Discovery Support Business Sales Trend

Drug Discovery Support Business Sales Trend by Region (Consolidated)



Japan

Decreased 45.7% YoY

- Sales of proteins and profiling services to pharmaceutical companies declined due to their budget consumption conditions in the first quarter.

North America

Increased 0.1% YoY

- Thanks to large orders including custom-made proteins, sales of proteins were strong.
- Sales of profiling services to AI-driven drug discovery companies remained strong.

Europe

Decreased 47.9% YoY

- Overall sales remained weak YoY. Accompanied with our major customers' projects progress in the previous year, the needs of kinase protein declined.

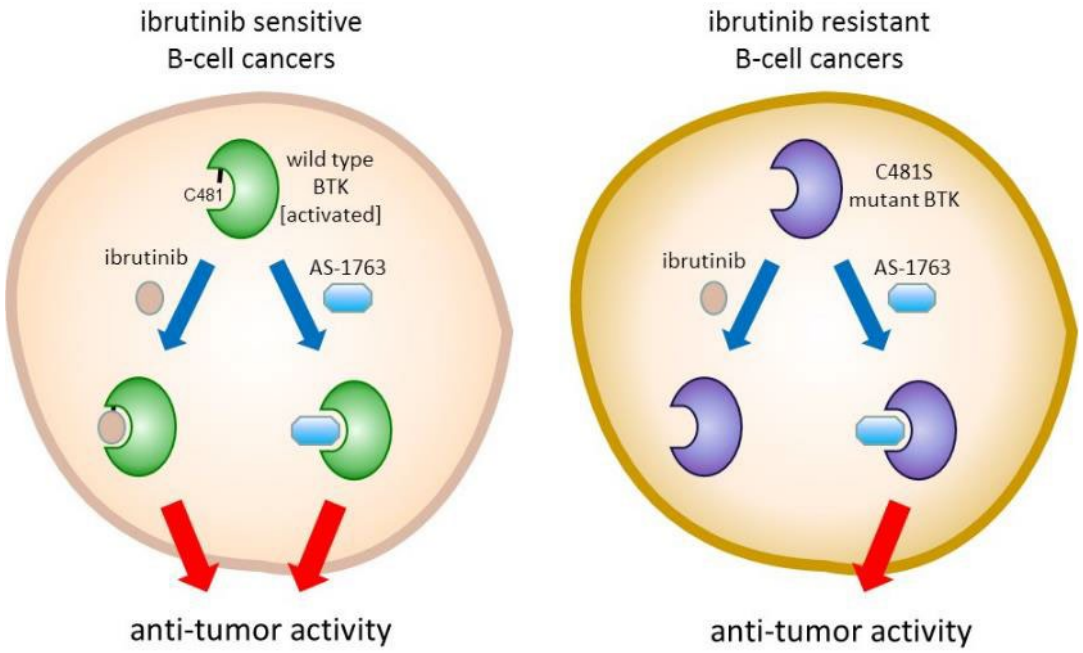
Other

Decreased 0.9% YoY

- Sales of proteins to Chinese CROs, our major customers, remained stable.

Appendix

Docirbrutinib (AS-1763): Potent Inhibitor of C481S mutant BTK



Journal of Medicinal Chemistry
pubs.acs.org/jmc
Drug Annotation

Discovery of AS-1763: A Potent, Selective, Noncovalent, and Orally Available Inhibitor of Bruton's Tyrosine Kinase

Wataru Kawahata,* Tokiko Asami, Takao Kiyoi, Takayuki Irie, Shigeki Kashimoto, Hatsuo Furuichi, and Masaaki Sawa

Cite This: *J. Med. Chem.* 2021, 64, 14129–14141 Read Online

- **IC_{50} values of docirbrutinib against wild-type and C481S-mutant BTK**

	IC_{50} (nM)	
	BTK[A]	BTK^{C481S}
docirbrutinib	0.85	0.99

J Med Chem. 2021 Oct 14;64(19):14129-14141.

Docirbrutinib (AS-1763): Strong Cellular Activity and High Kinase Selectivity

ARNA BIOSCIENCES

◆ In vitro pharmacological activities of docirbrutinib

	IC_{50} (nM)	
	docirbrutinib	Ibrutinib
Autophosphorylation BTK (Ramos)	1.4	1.1
CD69 activation (Human whole blood)	11	8.1
Cancer cell growth OCI-Ly10 cells	1.8	0.75
Cancer cell growth OCI-Ly10 [BTK C481S] cells	20	1030
Normal cell growth HEL299 cells	6370	6870

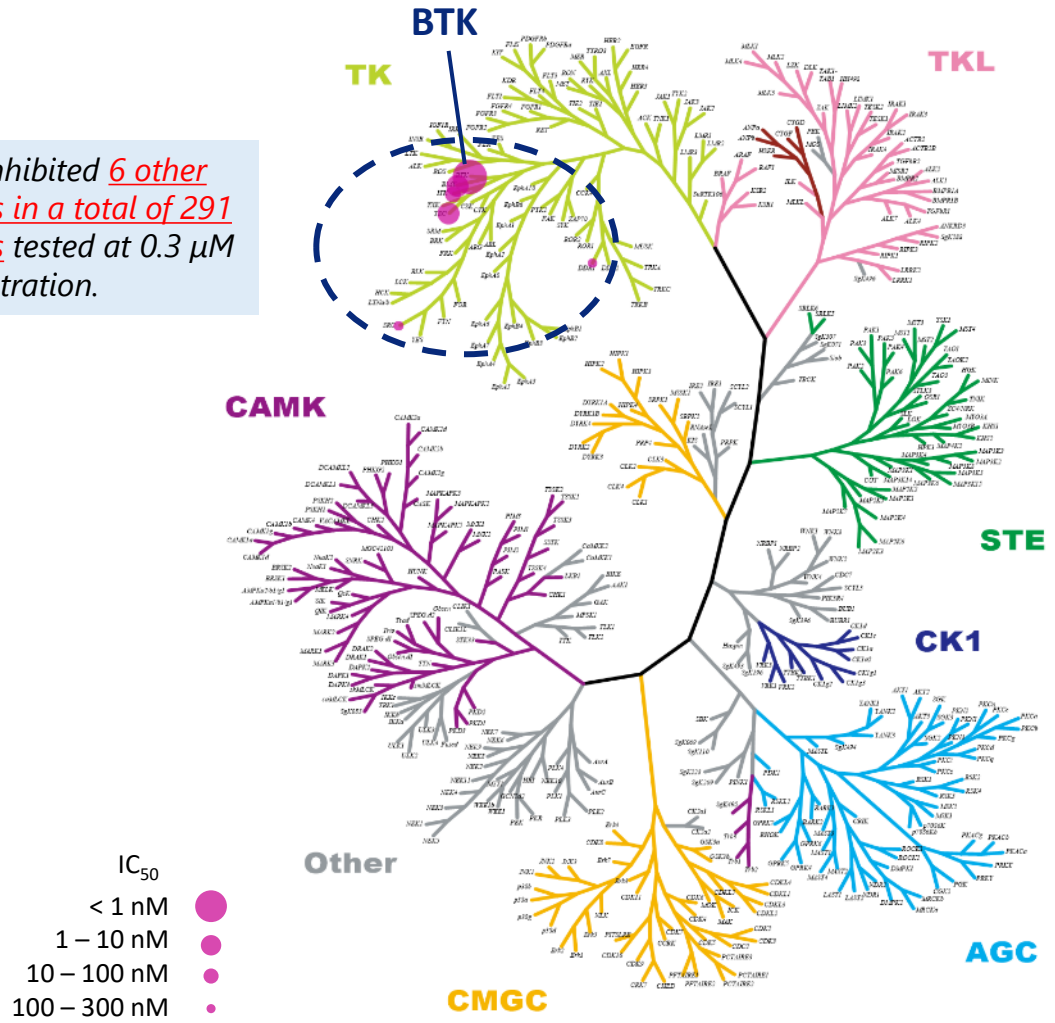
50-fold Stronger activity

Ramos: human Burkitt lymphoma cell line
OCI-Ly10: human B-cell non-Hodgkin lymphoma cell line
OCI-Ly10 [BTK C481S]: BTK[C481S] knock-in OCI-Ly10 cells
HEL299: human embryo lung cell line

J Med Chem. 2021 Oct 14;64(19):14129-14141.

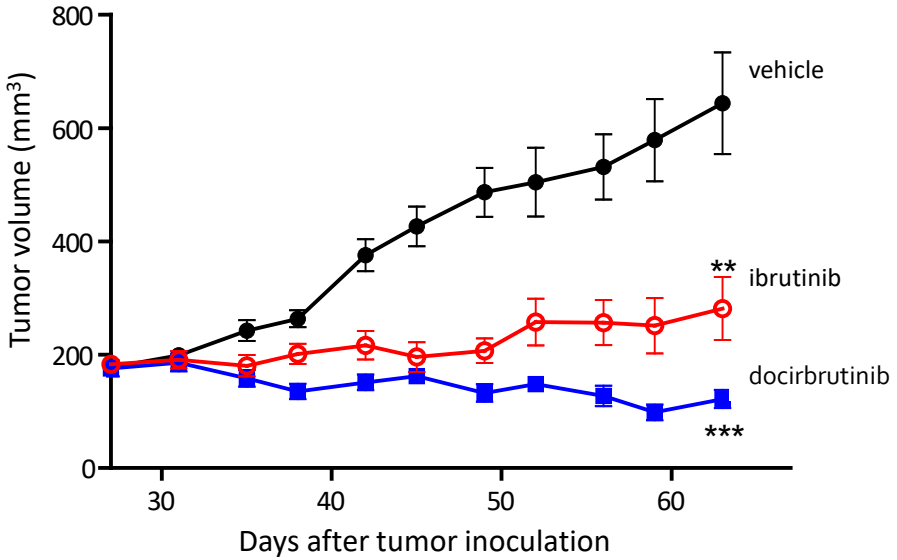
◆ Kinase selectivity profiling

Only inhibited 6 other kinases in a total of 291 kinases tested at 0.3 μM concentration.



Docirbrutinib (AS-1763) : In Vivo Antitumor Effect against BTK^{C481S} Mutant

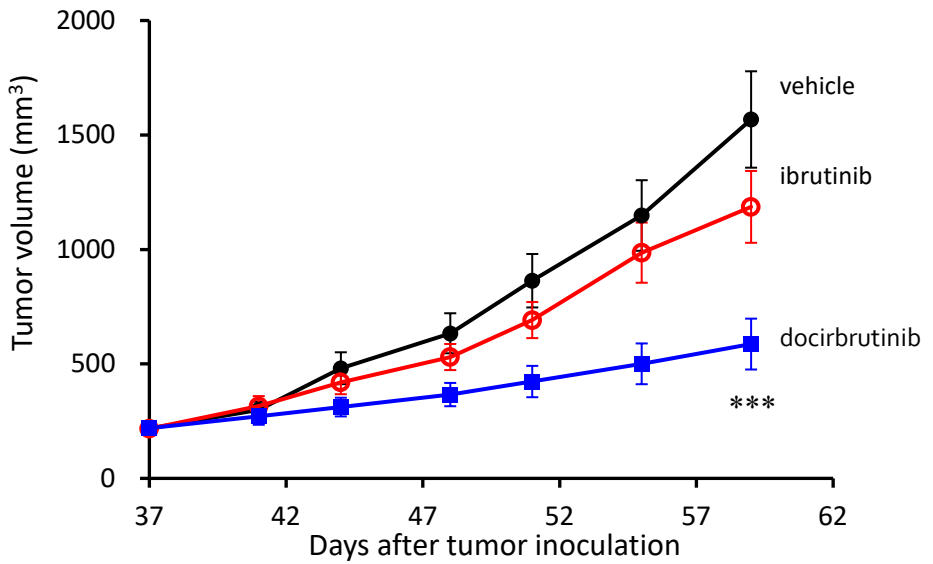
- **In vivo antitumor effects of docirbrutinib on human B-cell non-Hodgkin lymphoma cell line, OCI-LY10 tumor xenograft mouse model (n=8-10)**



Ibrutinib: 25 mg/kg QD
Docirbrutinib : 60 mg/kg BID

**: p<0.01
***: p<0.001

- **In vivo antitumor effects of docirbrutinib on ibrutinib-resistant BTKC481S knock-in OCI-LY10 tumor xenograft mouse model (n=11)**



Ibrutinib: 25 mg/kg QD
Docirbrutinib : 60 mg/kg BID

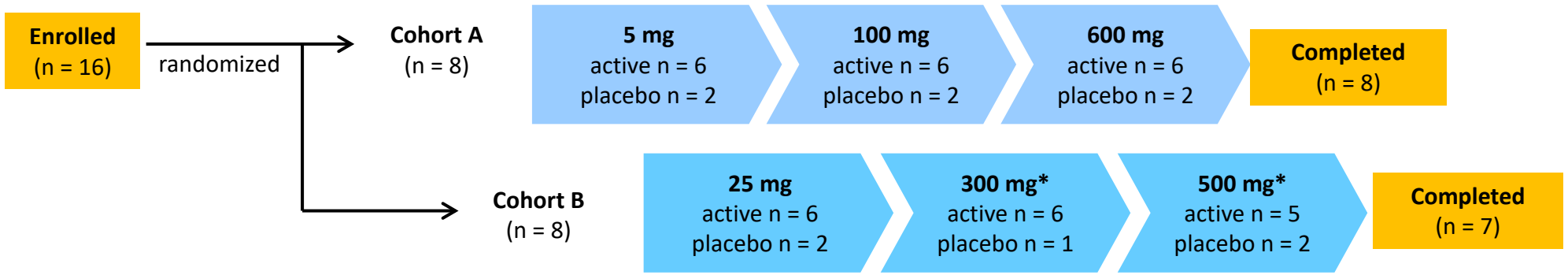
***: p<0.001

J Med Chem. 2021 Oct 14;64(19):14129-14141.

Docirbrutinib (AS-1763): FIH Phase 1 Clinical Trial in Healthy Volunteers

Study Design

Step 1 Single Ascending Dose (SAD) Part	Step 2 Relative Bioavailability (BA) Part
• Double-blind, placebo-controlled, randomized FIH study • Simple formulation (solution) • 6 dose levels (8 subjects/cohort A, 8 subjects/cohort B) • 6 active / 2 placebo for each dose level • Safety and tolerability • Pharmacokinetics and pharmacodynamics (PD; CD69 upregulation on naïve B cells)	• Open label study • Another cohort of 8 subjects • The subjects were dosed with a single dose of docirbrutinib 100-mg tablet, and relative bioavailability with simple formulation was evaluated



*One subject was withdrawn from the study on Day 1 of 300-mg period before the intake of treatment medication (placebo) by physician's decision. This subject showed AEs (Grade 2 lymphocytosis and Grade 2 neutropenia) which were considered treatment-emergent but not trial medication-related. No replacement was done at 300-mg and the following 500-mg periods.

Docirbrutinib (AS-1763): SAD Part

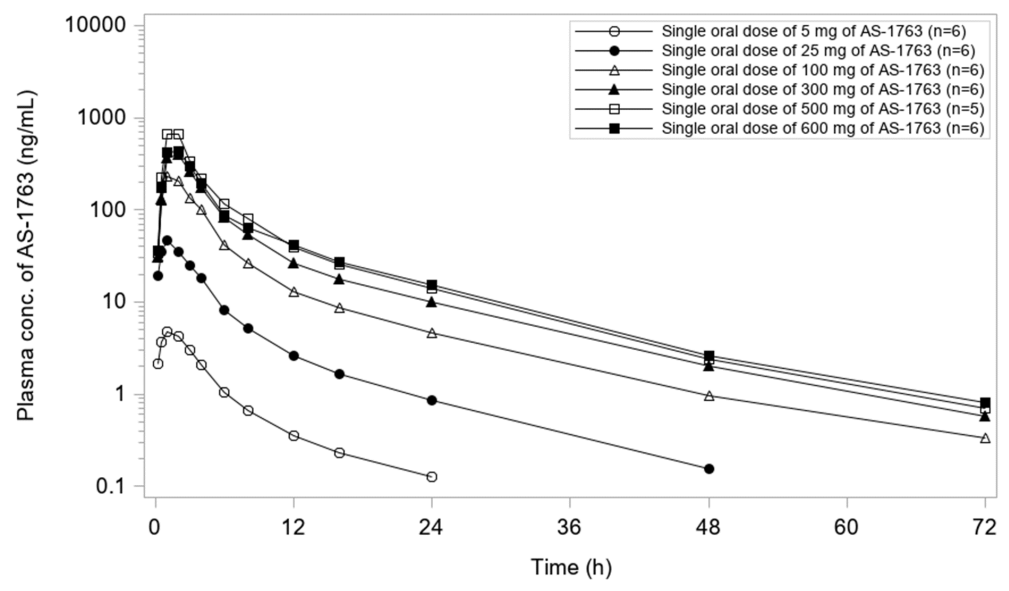
Safety and tolerability

- Docirbrutinib was well-tolerated after single dose administration up to the maximum dose level (600 mg).
- No serious adverse events (AEs) were reported during the trial.
- Two Grade 2 AEs were reported in one subject, which were considered not related to trial medication.
- Other AEs reported were of mild intensity and showed no apparent dose-relationship in frequency.
- No clinically relevant changes from baseline were observed in all other safety parameters assessed (clinical laboratory, 12-lead safety ECGs, vital signs, or physical examinations).

Pharmacokinetics

- After a single-dose oral administration, plasma concentration of docirbrutinib rapidly reached the maximum and then declined in a biphasic manner across the dose range (median tmax between 0.5 and 1.5 hours; mean t1/2 between 8.4 and 12.1 hours).
- Mean docirbrutinib exposures generally increased with dose up to 500 mg.

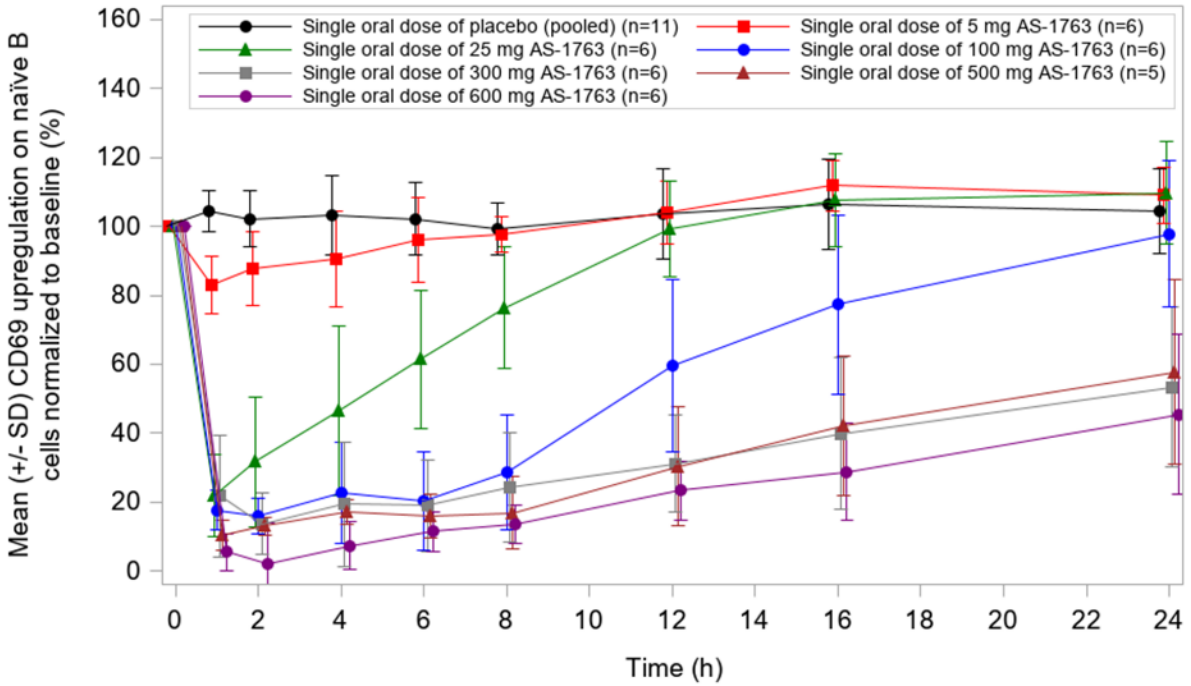
< Plasma concentration of a single oral dose of docirbrutinib >



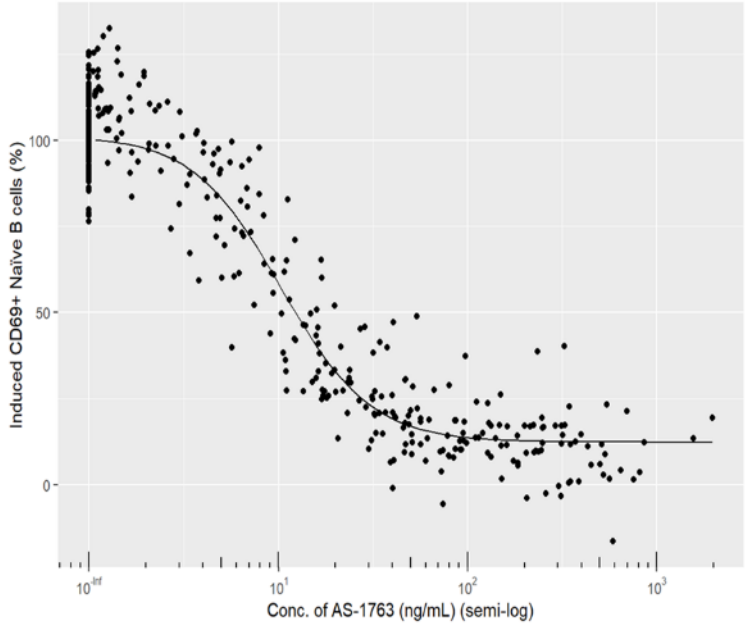
Pharmacodynamics of docirbrutinib (AS-1763)

- Inhibition of B cell CD69 upregulation was observed for 5 mg onwards.
- Maximum inhibition (arbitrarily defined as ≥80%) was observed at 1-2 hours post-dose from 100 mg to 600 mg, and the duration of inhibition was dose-dependent with values of 2, 6, 8 and 8 hours for 100, 300, 500, and 600 mg, respectively.
- Based on a PK/PD correlation analysis, the IC50 value of docirbrutinib on CD69 upregulation was calculated to be 10.5 ng/mL.

< B cell CD69 upregulation after a single oral dose of docirbrutinib >



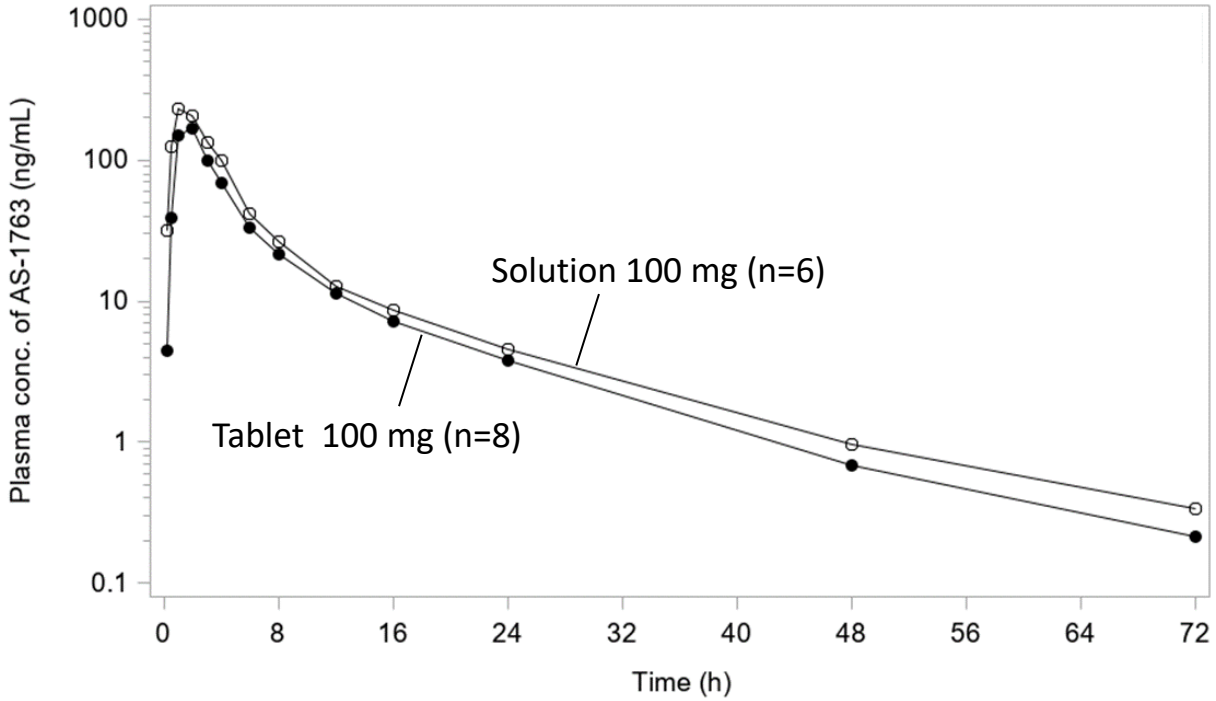
< PK/PD correlation analysis >



Docirbrutinib (AS-1763): BA Part

- In the BA part, 100 mg tablet and the solution showed almost similar PK profile while the exposure of 100 mg tablet was slightly lower than the that of the solution.
- The PK/PD data and favorable safety profile in healthy volunteers support a planned Phase 1b clinical study with docirbrutinib tablet twice daily dosing in relapsed/refractory CLL and B-cell NHL.

<PK of Tablet vs Solution after a Single oral dose docirbrutinib>



Docirbrutinib (AS-1763) : Ph I Clinical Trial in Healthy Volunteers

Objectives of the study

A single dose of docirbrutinib was administered orally to healthy volunteers to evaluate:

- plasma concentration of docirbrutinib
- safety assessments (clinical laboratory, ECGs, or vital signs, etc.)
- inhibitory potency on B cell activation

Result of the study

After a single-dose administration of 5 mg, 25 mg, 100 mg, 300 mg, 500 mg, and 600 mg of docirbrutinib :

- plasma concentrations of docirbrutinib were increased in a dose dependent manner.
- no clinically meaningful issues were reported in all safety assessments.
- dose-dependent inhibition in B-cell activation was observed.

New tablet formulation for Phase 1b study

Relative oral bioavailability was evaluated after administering newly developed tablet formulation containing 100 mg of docirbrutinib to healthy volunteers.

- the new tablet formulation demonstrated good oral bioavailability, supporting that the tablet formulation can be used for Phase 1b study.

Sofnobrutinib (AS-0871) : Excellent Kinase Selectivity

◆ Targeting Inactive Conformation of BTK


Bioorganic & Medicinal Chemistry Letters

journal homepage: www.elsevier.com/locate/bmcl

TR-FRET binding assay targeting unactivated form of Bruton's tyrosine kinase

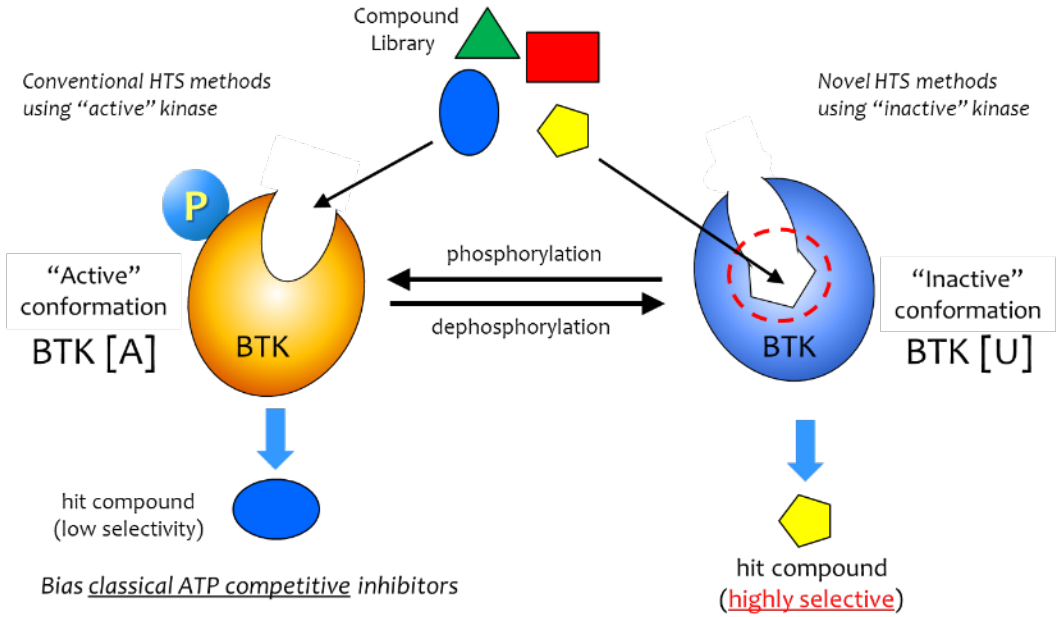
Tokiko Asami*, Wataru Kawahata, Masaaki Sawa

Journal of Medicinal Chemistry

Design and Synthesis of Novel Amino-triazine Analogues as Selective Bruton's Tyrosine Kinase Inhibitors for Treatment of Rheumatoid Arthritis

Wataru Kawahata,* Tokiko Asami, Takao Kiyoi, Takayuki Irie, Haruka Taniguchi, Yuko Asamitsu, Tomoko Inoue, Takahiro Miyake, and Masaaki Sawa

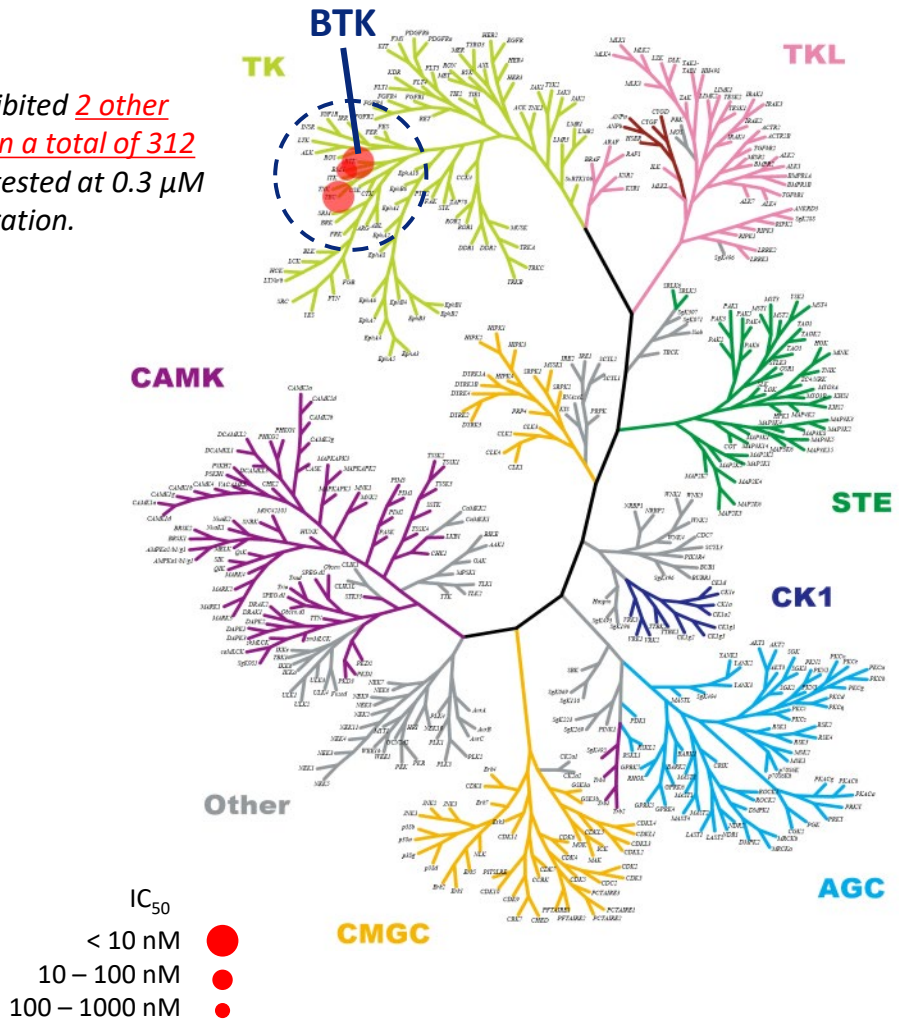
Research and Development, Carna Biosciences, Inc., 3rd Floor, BMA, 1-5-5 Minatojima-Minamimachi, Chuo-ku, Kobe 650-0047, Japan



	BTK IC_{50} (nM)	
	BTK[A]	BTK[U]
sofnobrutinib	3.4	0.3

◆ Kinase Selectivity Profiling

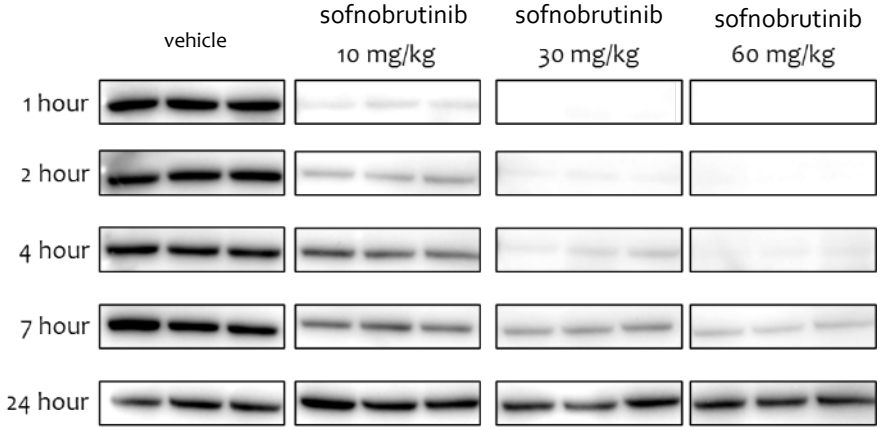
Only inhibited 2 other kinases in a total of 312 kinases tested at 0.3 μM concentration.

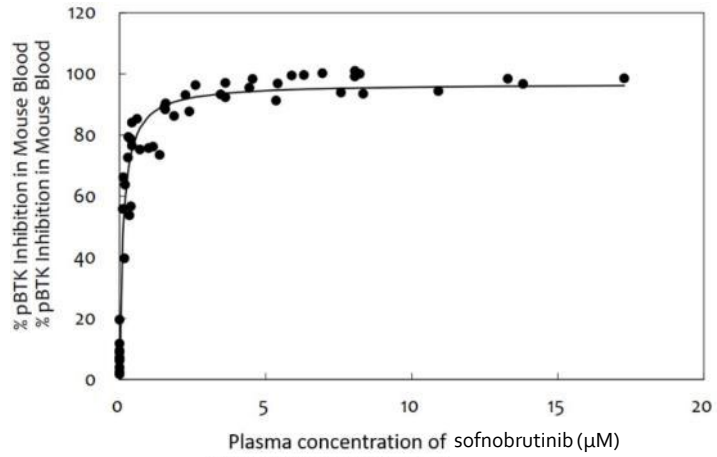


Sofnobrutinib (AS-0871) : In Vivo Therapeutic Efficacy

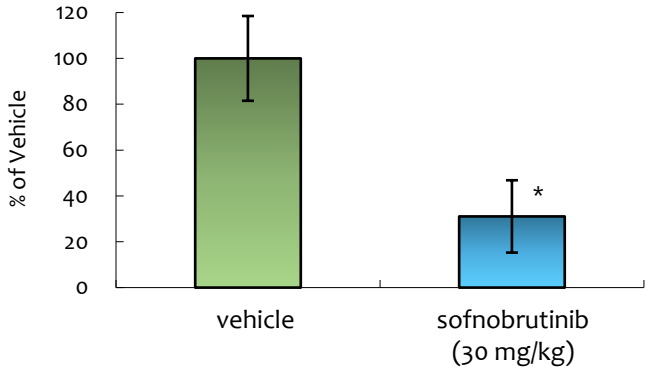
◆ PK/PD Study

Auto-phosphorylation status of BTK was measured following oral single administration of sofnobrutinib.

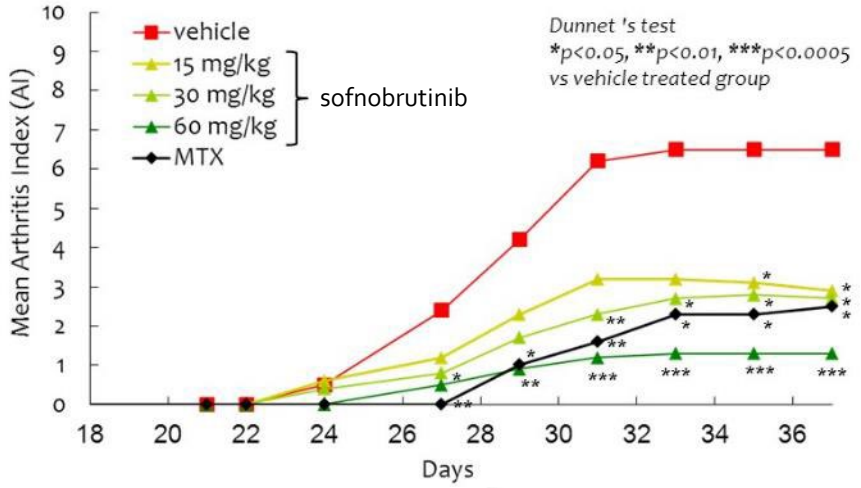




◆ Passive cutaneous anaphylaxis (PCA) mouse model (n=5)



◆ Collagen-induced arthritis (CIA) mouse model (n=10)



Sofnobrutinib (AS-0871): Phase 1 Clinical Trial in Progress

CARNA BIOSCIENCES

Phase 1 in the Netherlands SAD study (Healthy volunteers)

Completed

- Safe and well-tolerated at all dose levels
- Favorable Pharmacokinetic (PK) Profile
- Promising Pharmacodynamic(PD) effects
- Conducted using simple formulation

Developed multiple new formulations

Phase 1 in the Netherlands MAD study (Healthy volunteers)

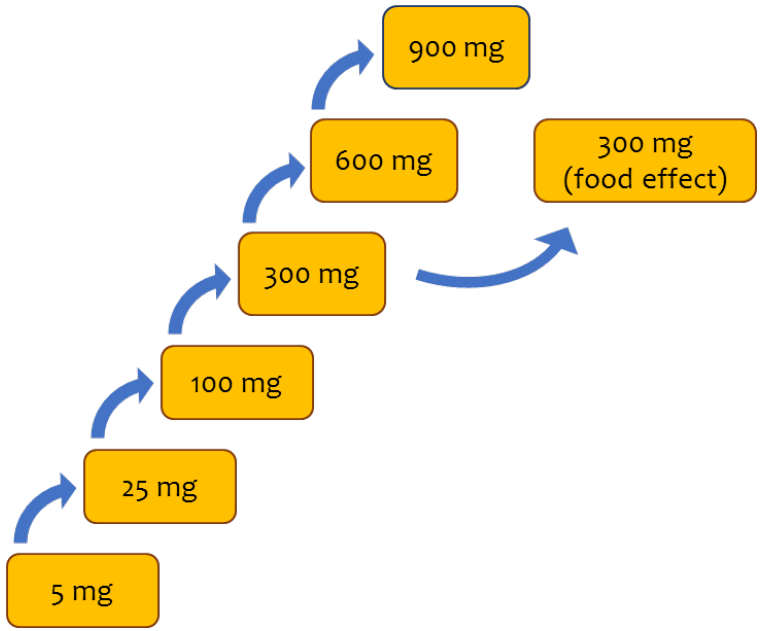
BA Part Evaluate the relative bioavailability of multiple new formulations to select the best formulation — Completed

MAD Part Evaluate the safety, tolerability, PK and PD in the 2-week multiple ascending dose of sofnobrutinib. — Completed

Sofnobrutinib (AS-0871) : FIH Study

SAD Part (Completed)

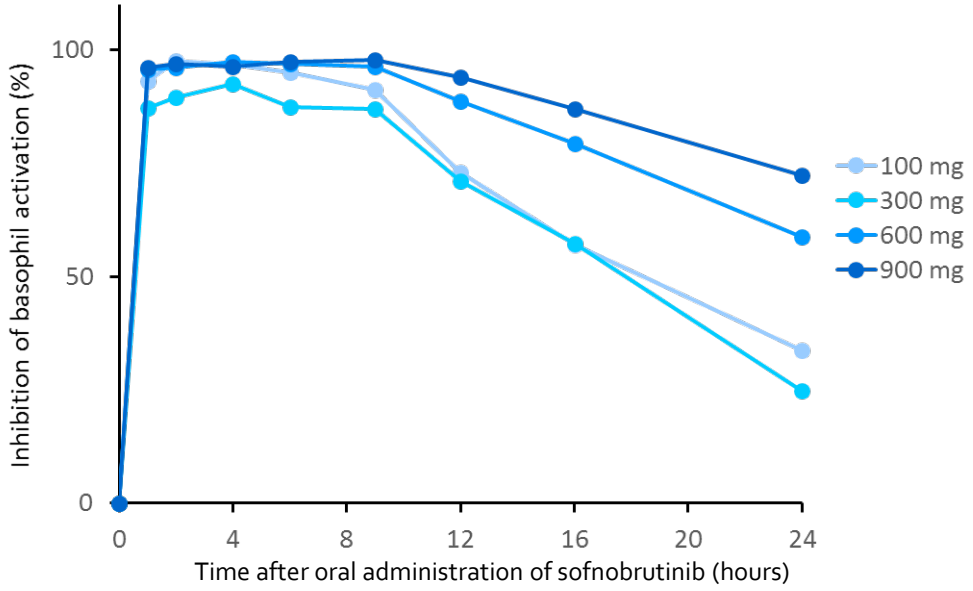
Step 1 Single Ascending Dose (SAD)	Step 2
• 6 dose levels (8 subjects/cohort) • Placebo controlled (6 active / 2 placebo) • Safety and tolerability • Pharmacokinetics and pharmacodynamics	• Food effect

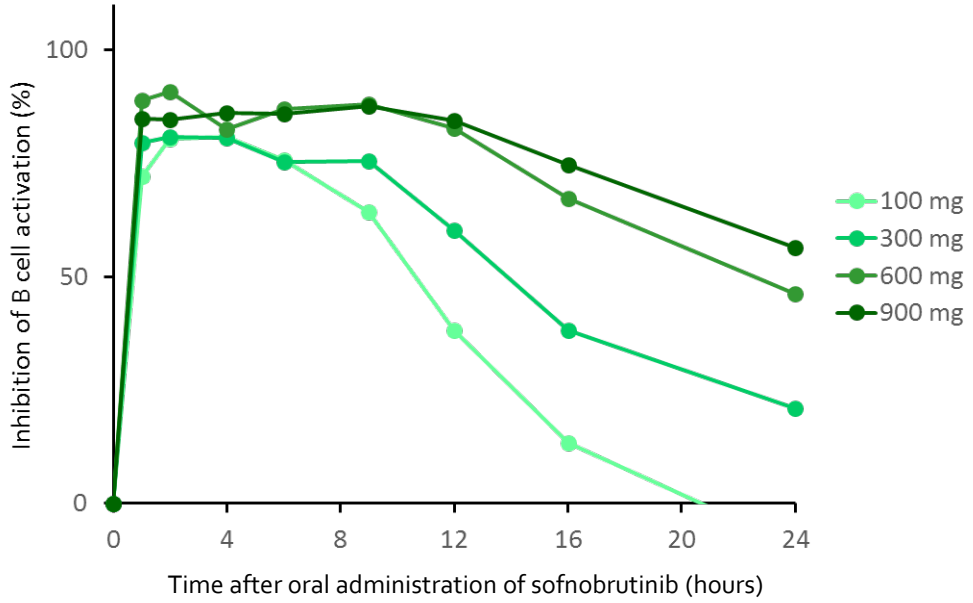


- Sofnobrutinib is well-tolerated without any safety concerns.
- Favorable pharmacokinetic profile.
- Blood samples to assess PD effects were analyzed for evaluation of the B-cell and basophil responses. Administration of sofnobrutinib at 100mg or above resulted in strong inhibition of B-cell and basophil activation.
- Switching to a new formulation in the MAD study.

Pharmacodynamics of sofnobrutinib (AS-0871)

- Pharmacodynamic study demonstrated that subjects who received sofnobrutinib showed dose proportional inhibitions in basophil and B-cell activations, and significant and sustained inhibitory effects were observed at 100 mg and above.
- Oral administration of sofnobrutinib achieved therapeutic plasma levels needed to inhibit B cells and basophils activation, suggesting that sofnobrutinib has a potential to become a new treatment option for inflammatory diseases.

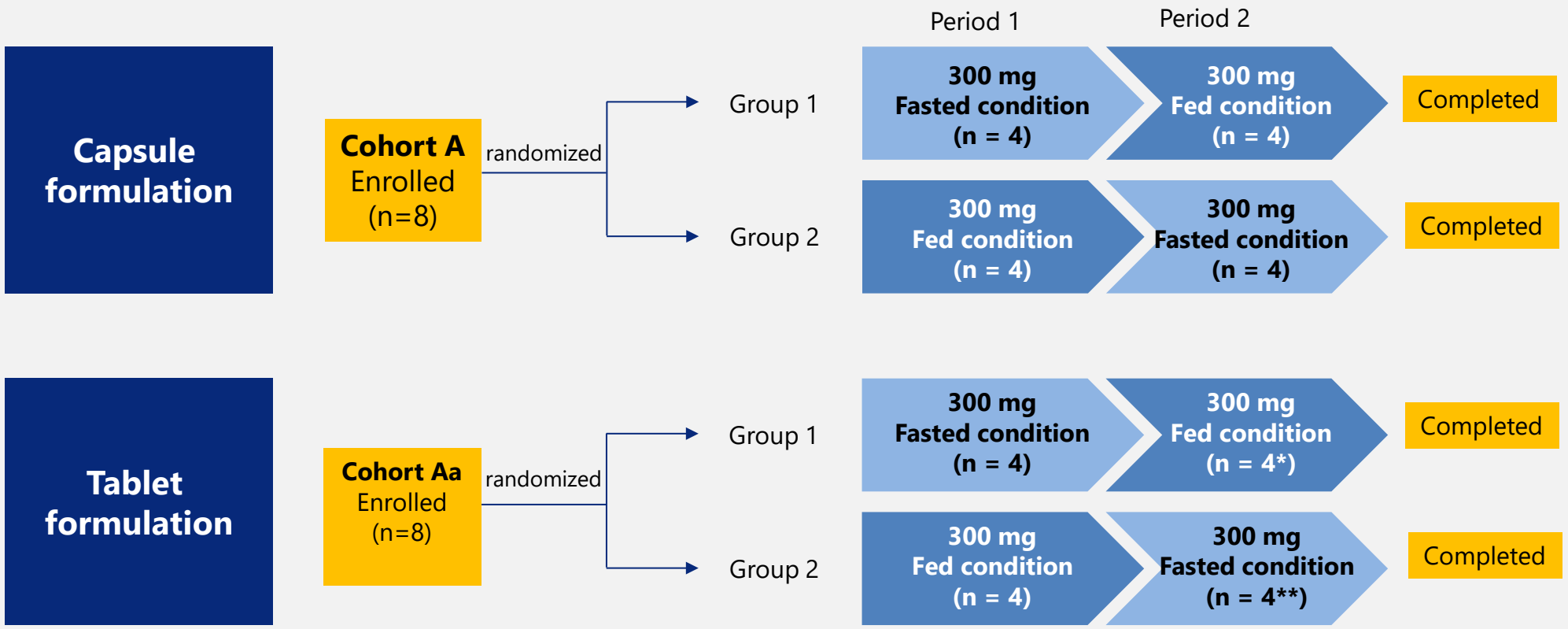




Sofnobrutinib (AS-0871) : Phase 1 MAD Study BA part

Study Design of rBA/FE part

PK, safety, and tolerability after single-dose oral administration of sofnobrutinib, formulated as capsules or tablets, were evaluated under fasted and fed conditions in an open-label, randomized, 2-period crossover design. Eight healthy subjects (Cohort A or Cohort Aa) were randomized to either Group 1 or Group 2 (4 subjects per group).

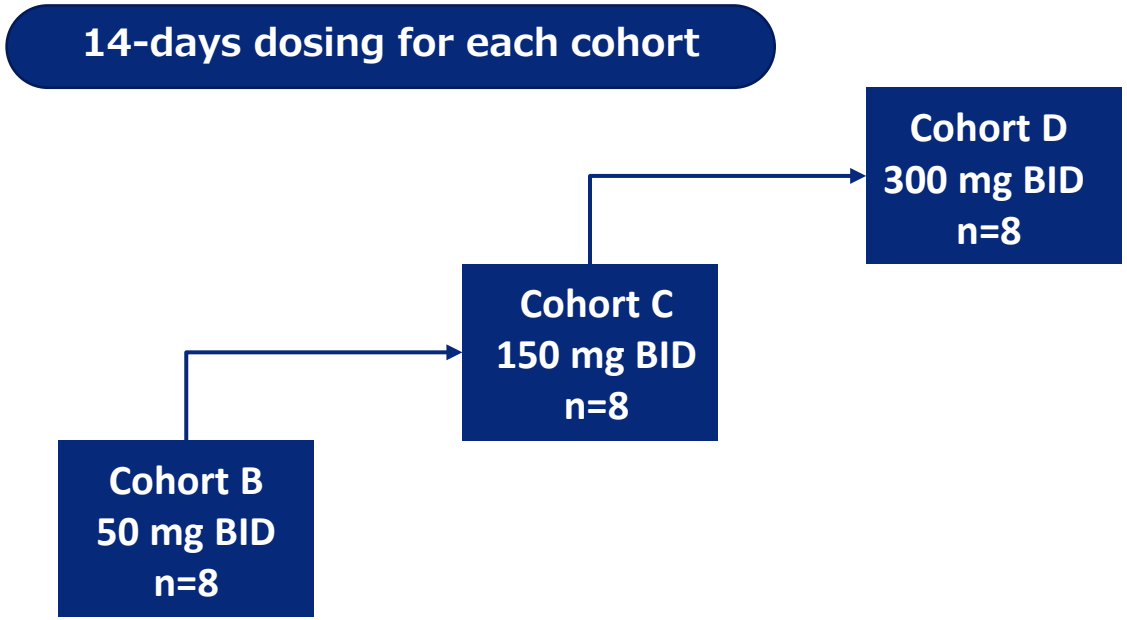


*One subject vomited after dosing (considered not related to study drug), excluded from the PK analysis.
**One subject withdrew from the study due to personal reasons before dosing.

Sofnobrutinib (AS-0871) : Phase 1 MAD Study MAD part

Study Design of MAD part

- In the MAD part, safety, tolerability, PK, and PD of 3 multiple ascending doses of sofnobrutinib, following 14-day multiple dose oral administration of sofnobrutinib, will be investigated using a double blind, placebo-controlled, randomized design in 3 cohorts of 8 healthy subjects each.
- Dosing was completed as planned.
- The final Clinical Study Report (CSR) for the Phase 1 MAD study has been finalized in November 2023.



- Well tolerated with no dose-limiting AEs.
- Favorable safety profile up to 300 mg BID.
- The exposure levels increased dose-dependently, and favorable PK profile with tablet formulation was confirmed.
- Achieved almost complete inhibition of basophil activation (PD marker) at 150 mg and 300 mg BID at a steady state

Sofnobrutinib (AS-0871) : Results from the Phase I Clinical Trial (1)

Objectives of Single Ascending Dose (SAD) study

A single dose of Sofnobrutinib was administered orally to healthy volunteers to evaluate:

- plasma concentration of sofnobrutinib
- safety assessments (clinical laboratory, ECGs, or vital signs, etc.)
- inhibitory potency on B cell and basophil activation

Result of SAD study

After a single-dose administration of 5 mg, 25 mg, 100 mg, 300 mg, 600 mg, and 900 mg of sofnobrutinib:

- plasma concentration of sofnobrutinib were increased in a dose dependent manner.
- no clinically meaningful issues were reported in all safety assessments.
- sufficient inhibition of B cell and basophil activations was observed at 100 mg or above.

New formulations for Multiple Ascending Dose (MAD) study

Plasma concentration was evaluated after administering newly developed capsule formulation and tablet formulation containing 50 mg of sofnobrutinib to healthy volunteers:

- the new tablet formulation was shown to be safe and demonstrated good oral bioavailability, and the tablet formulation was selected for the MAD part.

Sofnobrutinib (AS-0871): Results from the Phase I Clinical Trial (2)

Multiple Ascending Dose (MAD) study MAD part design

- Double blinded, placebo-controlled, randomized multiple ascending dose study in healthy volunteers
- 14-day multiple oral doses of sofnobrutinib tablets in 3 cohorts (50, 150 or 300 mg twice daily)
- The safety, tolerability, PK and PD were evaluated.

Result of MAD study MAD part

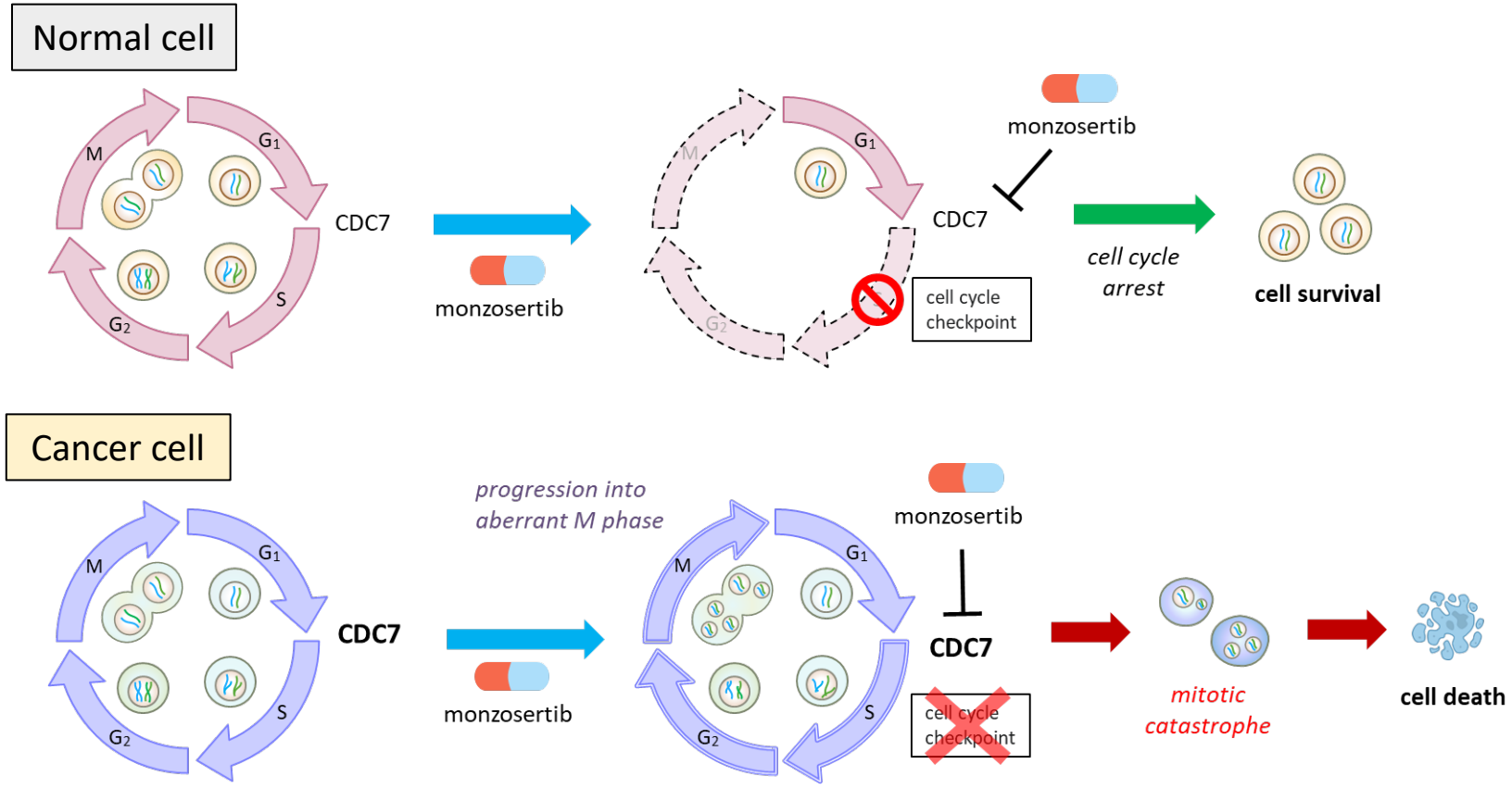
- Well tolerated with no dose-limiting adverse events (AEs): AEs were mostly mild.
- Favorable safety profile up to 300 mg twice daily
- Favorable PK profile: approximately dose proportional with increasing doses
- Robust PD effect was observed: over 90% inhibition for basophils activation on Day 14 at 150 and 300 mg BID doses.

These results from the Phase 1 studies of sofnobrutinib support to advance sofnobrutinib into Phase 2 clinical development for further investigations.

Monzosertib (AS-0141)

CDC7 Kinase Inhibitor: MoA of monzosertib

- CDC7 (cell division cycle 7) is a serine/threonine kinase that facilitates DNA replication during DNA synthesis
- Over expression of CDC7 has been reported to cause uncontrolled proliferation of many cancer types



Inhibition of CDC7 in normal cells does not cause cell death, only leads to cell cycle arrest at the DNA replication checkpoint

Inhibition of CDC7 in cancer cells causes lethal S phase or M phase progression when the cancer cells have a defective cell cycle checkpoint

Monzosertib (AS-0141) : Time-Dependent Inhibitor of CDC7

◆ Monzosertib has a unique inhibitory mechanism for CDC7 kinase (time-dependent inhibition)

European Journal of Medicinal Chemistry

Research paper

Discovery of novel furanone derivatives as potent Cdc7 kinase inhibitors

Takayuki Irie, Tokiko Asami, Ayako Sawa, Yuko Uno, Mitsuharu Hanada, Chika Taniyama, Yoko Funakoshi, Hisao Masai, Masaaki Sawa

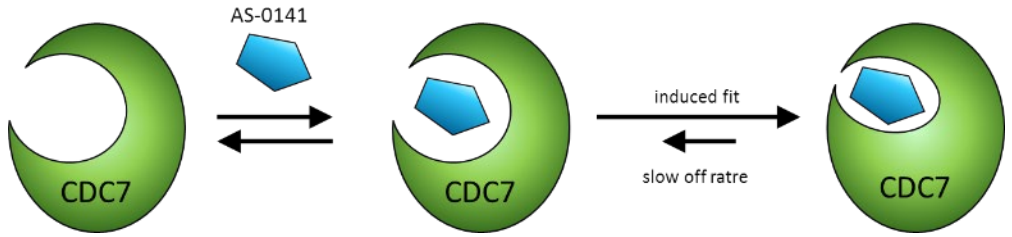
Journal of Medicinal Chemistry

Drug Annotation

Discovery of AS-0141, a Potent and Selective Inhibitor of CDC7 Kinase for the Treatment of Solid Cancers

Takayuki Irie,* Tokiko Asami, Ayako Sawa, Yuko Uno, Chika Taniyama, Yoko Funakoshi, Hisao Masai, and Masaaki Sawa

Cite This: J. Med. Chem. 2021, 64, 14153−14164 Read Online

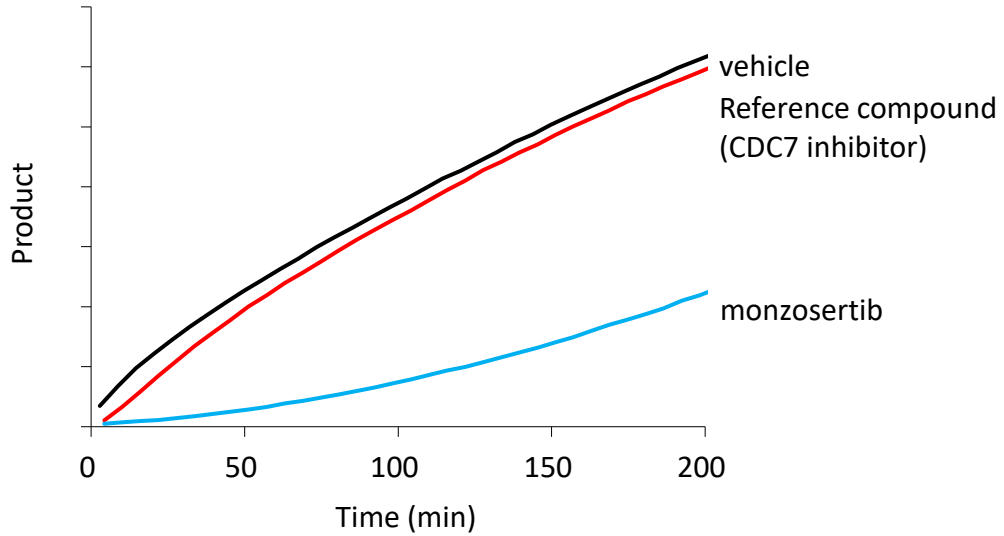


Inhibitory potency (IC50) for CDC7 in the presence of 1 mM ATP	
Without Preincubation	With Preincubation
503 nM	2.4 nM

J Med Chem. 2021 Oct 14;64(19):14153-14164.

◆ Monzosertib inhibits CDC7 in a reversible fashion but has a very slow off-rate

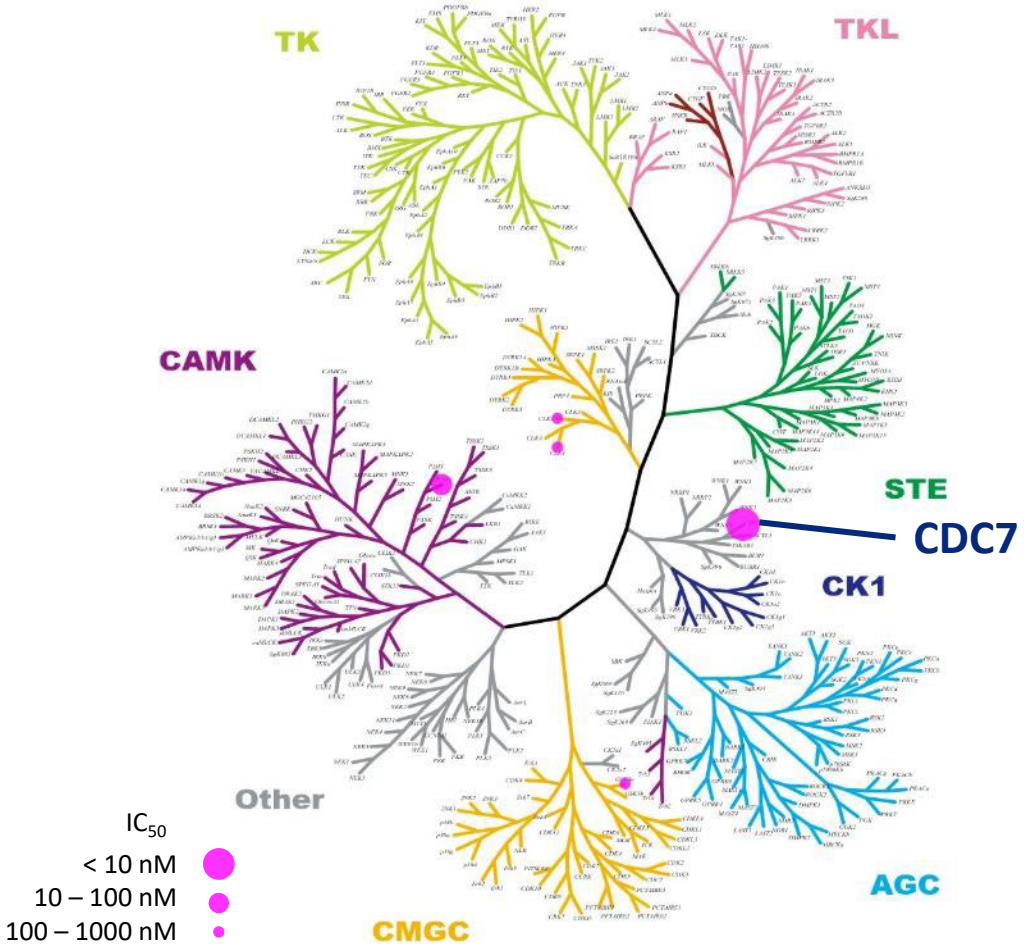
Rapid dilution assay for Cdc7 inhibitors. Recovery of enzymatic activity was monitored by formation of the phosphorylated product.



Monzosertib (AS-0141) : High Kinase Selectivity

◆ Kinase Selectivity Profiling

In the presence of 1 mM ATP with preincubation



◆ IC50 values of hit kinases（at 1 mM ATP）

	IC_{50} (nM)	
	Preincubation	
	-	+
CDC7	503 (210-fold)	2.4
PIM1	30	34
CLK1	212	206
CLK2	270	227
GSK3α	189	251

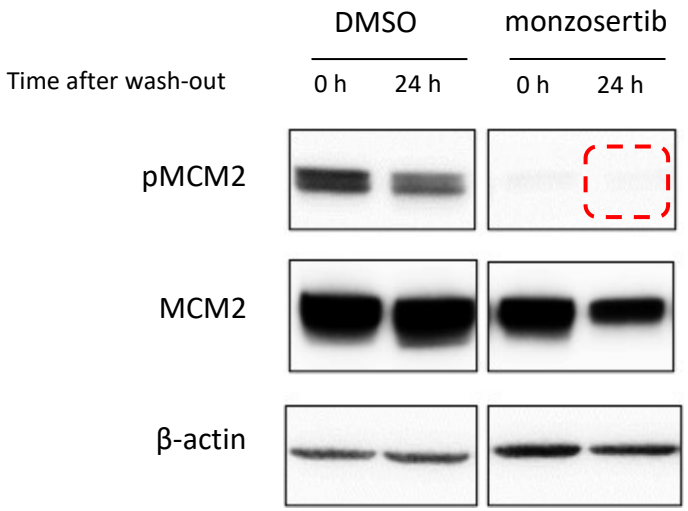
CDC7 is the only kinase that shows preincubation effect

J Med Chem. 2021 Oct 14;64(19):14153-14164.

Monzosertib (AS-0141) : Strong Cellular Activity

◆ Prolonged inhibition in cells

Human colon cancer cell line, Colo-205 cells were treated with DMSO control or monzosertib. After washout of the inhibitor, the cells were further incubated in the same media for 0 or 24 h and subjected to western blot analysis.



the inhibitory effect of monzosertib on the phosphorylation of MCM2 in cells continued up to 24 h after washing out

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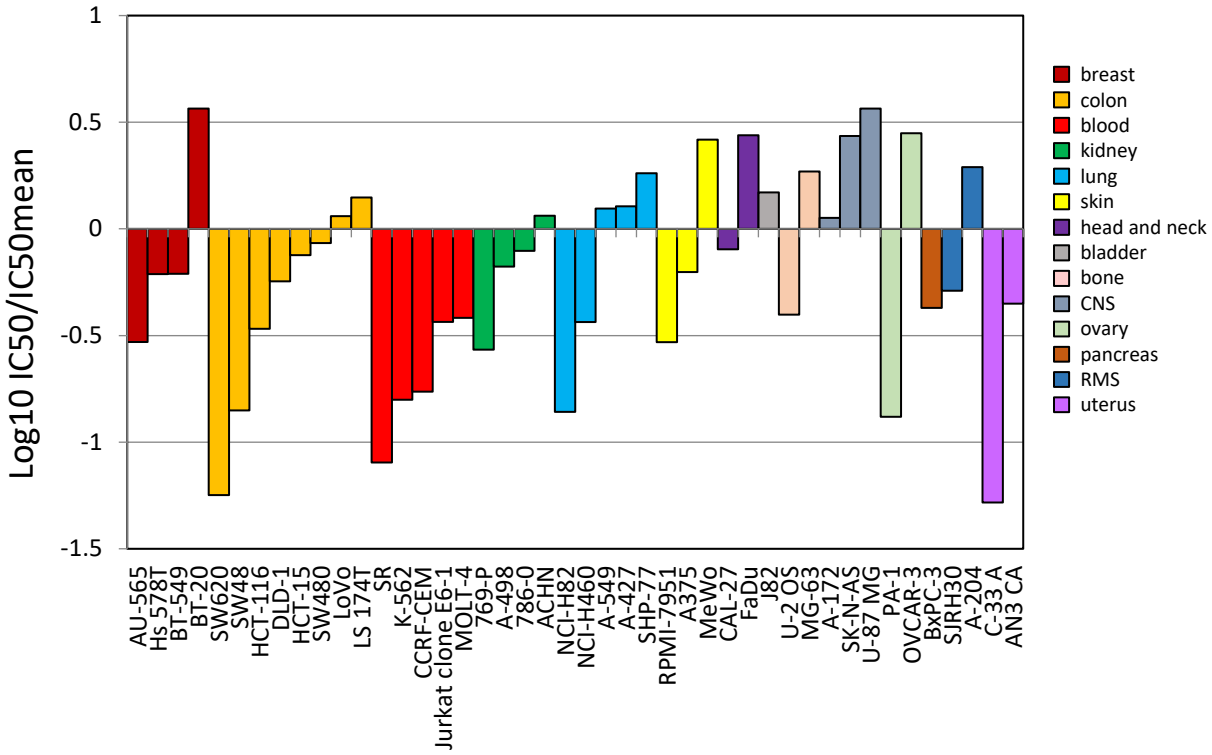
◆ Monzosertib potently inhibited growth in a wide range of tumor cell lines, including solid and hematological tumors

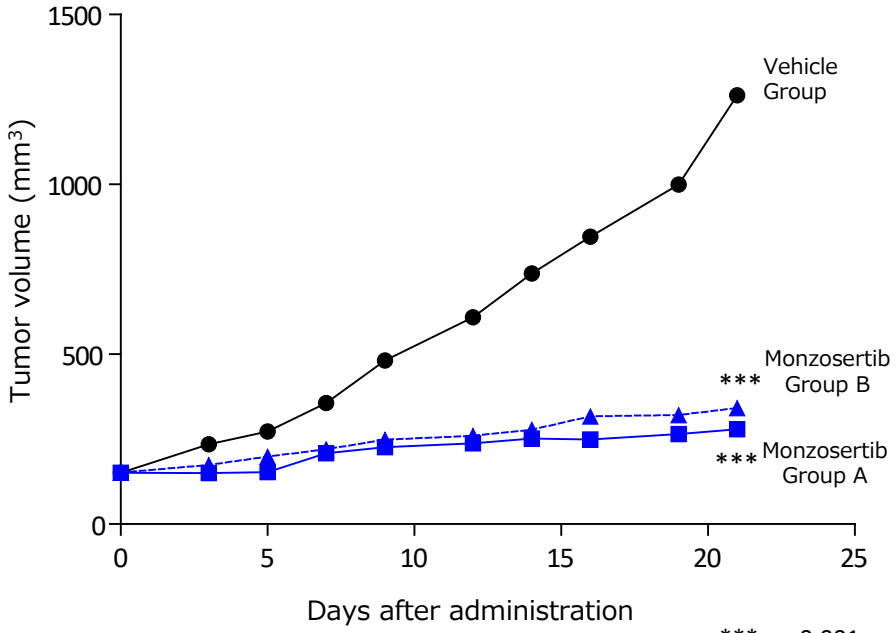


44 Cancer cell lines (Oncolines at NTRC)

Monzosertib (AS-0141): Robust In Vivo Antitumor

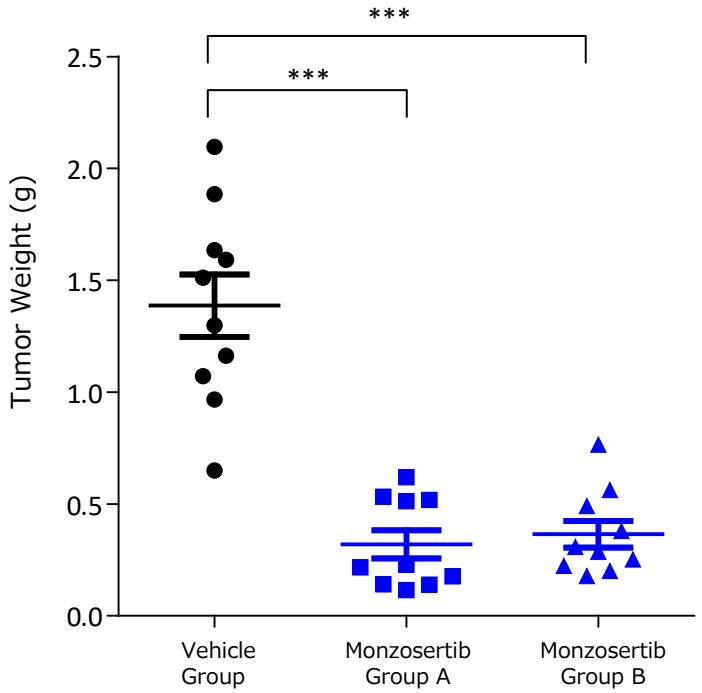
In vivo antitumor efficacy of monzosertib in a SW620 (human colon cancer) xenograft mouse model

Tumor Growth Curve (Mean, n = 10)



***: p<0.001

Final Tumor Weight of Each Mouse



***: p<0.001

Monzosertib group A: 60 mg/kg TID, 4d ON/2d OFF
Monzosertib group B: 120 mg/kg QD

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"Carna" is a goddess of Roman mythology who takes care of human health, protecting the human heart and other organs as well as everyday life, and is said to be the root for the word "cardiac."

The word "biosciences" is derived from the words 'biology' and 'life sciences.'

Carna Biosciences has created contemporary Carna goddess with protein kinase.

Carna Biosciences, Inc.

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