

**'565 (MALT1)**

CTA submission expected in 2024

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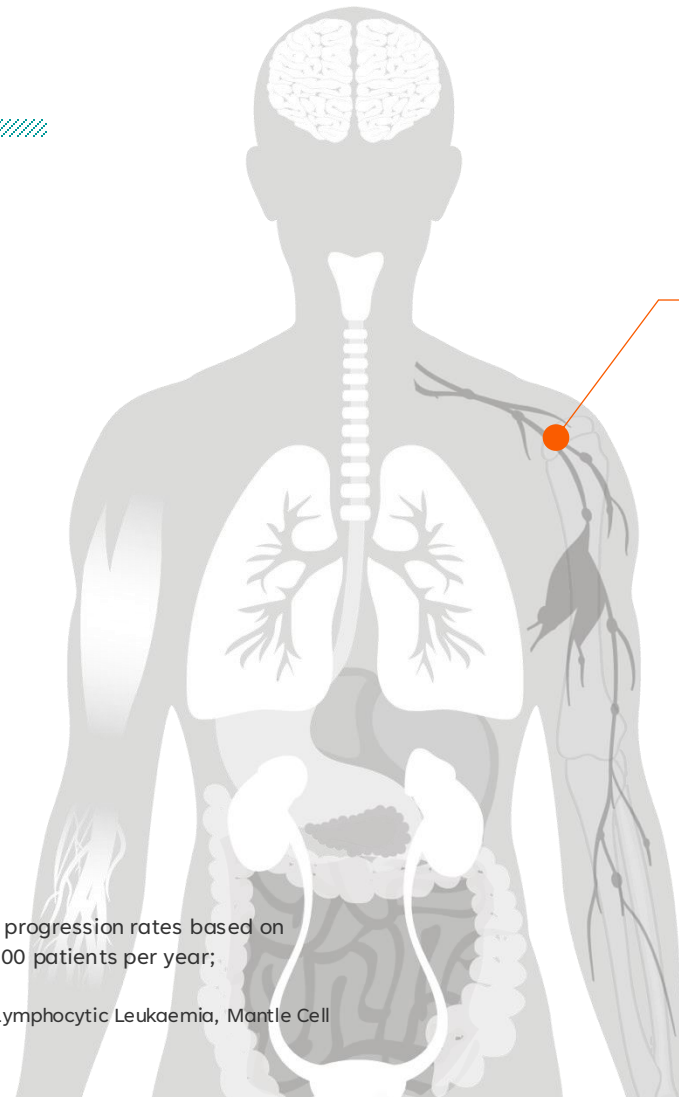


# MALT1: '565 focusing on B-cell malignancies (including CLL)

United States incidence for planned patient population

## Key Updates:

- CTA submission expected in 2H 2024
- Clinical development laying foundation for combination approaches in practice
  - Currently exploring current standard of care combination opportunities
- Expect to commence clinical study for B-cell malignancies in 2025
  - Will target CLL combination therapy as primary opportunity



**20K**

**R/R B-cell Malignancies**  
Including Chronic Lymphocytic Leukaemia (CLL)

Covers all indications currently being prioritised for IND/CTA-enabling studies. Treatment rate and progression rates based on Cerner Enviza Treatment Architecture Reports 2023; Numbers have been rounded to the nearest 1000 patients per year;

B-cell malignancies include but not limited to: Diffuse Large B-cell Lymphoma, Follicular Lymphoma, Chronic Lymphocytic Leukaemia, Mantle Cell Lymphoma, Marginal Zone Lymphoma, Burkitt Lymphoma



# MALT1 inhibitor designed to enable combination therapy

Precision design – developing a differentiated and selective inhibitor



## Made for combination therapy

Selectivity over UGT1A1 creates better combination profile with drugs that have known liver tox issues (BTK & BCL2)

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## Strong *in vivo* performance

Preclinical efficacy demonstrated as a monotherapy and in combination

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## Well balanced molecular properties

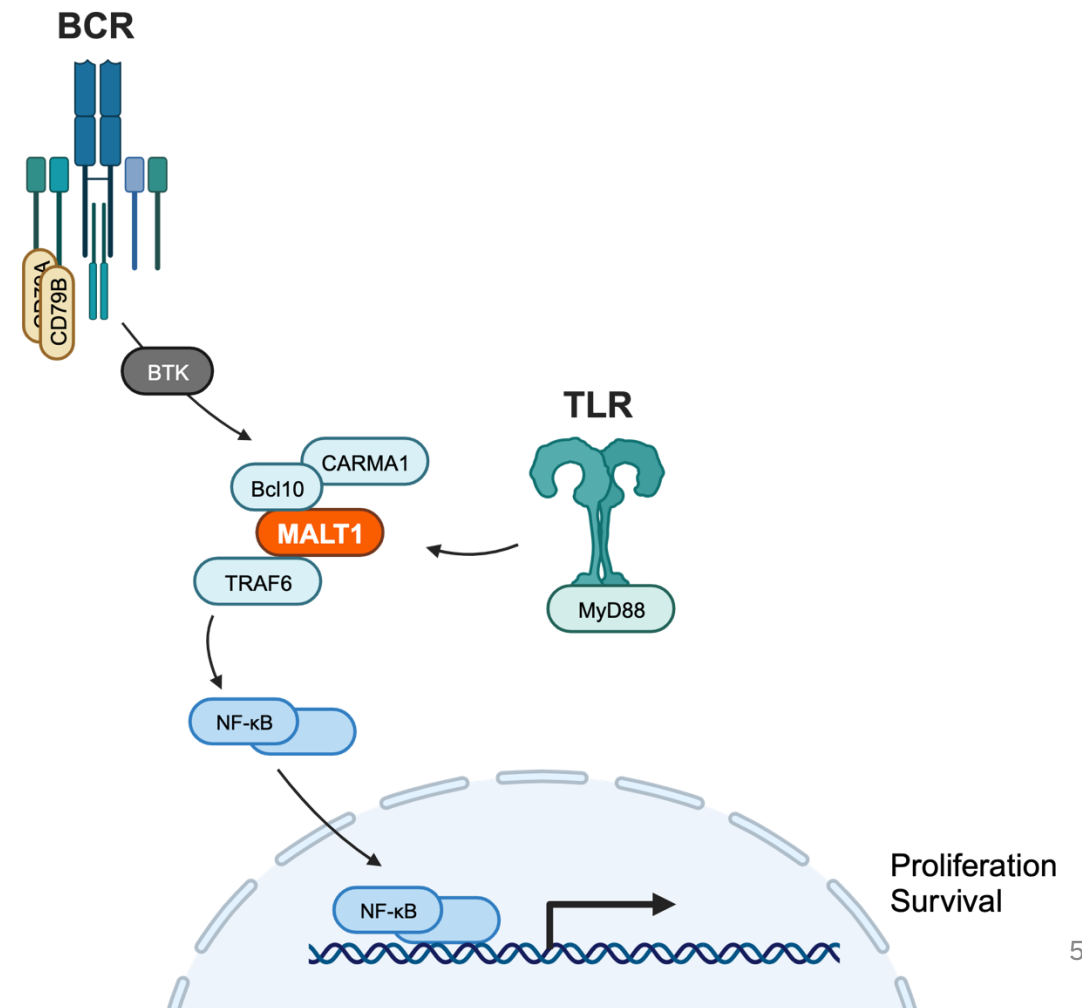
Potentially enabling daily dosing for orally administered drug



# MALT1: Inhibiting malignant cell signaling in B-cell lymphomas

## Important mechanism in haematologic malignancies

- Chronic activation of the B-cell receptor (BCR) in malignant B-cells can lead to inappropriate NF- $\kappa$ B signalling, driving uncontrolled tumour cell proliferation and survival
- MALT1 functions downstream of the BCR and also the therapeutic target, BTK, and is a critical component of tumorigenic signalling pathways in these tumour cells
- Inhibition of MALT1 protease activity blocks the pathogenic signals from the BCR and, in a subset of NF- $\kappa$ B-addicted tumours, inhibits tumour cell proliferation
- Combining MALT1 and BTK inhibitors could provide additional efficacy in these lymphomas by stronger inhibition of the pathway and by maintaining activity in tumours with target-mediated BTK inhibitor resistance



# Avoiding uridine glucuronyl transferase (UGT1A1)

## '565 offers potential competitive differentiation

- Bilirubin is made during the natural degradation of red blood cells. It is rapidly cleared from the body, mainly through liver metabolism and subsequent biliary elimination
  - Uptake of unconjugated bilirubin into the liver occurs in part *via* OATP transport
  - Once in the liver, bilirubin is exclusively glucuronidated by UGT1A1, and then effluxed into the bile by MRP2
- UGT1A1 inhibition can cause elevated bilirubin (hyperbilirubinaemia) and can lead to metabolic disorder
  - Jaundice, nausea, vomiting and potentially encephalopathy can occur
- UGT1A1 pathway has an active role in triggering potential drug-drug interactions in the clinic
  - This is particularly relevant to BTKi given the many reports of drug-induced liver injury with these agents



# MALT1 allosteric competitor profiles

Most competitor compounds have a high UGT1A1 inhibition risk

Parameter	Phase 1/2 (Large pharma)	Phase 1 (Large pharma, patent examples)	Phase 1 (Mid-size pharma, patent examples)	Phase 1 (Biotech)	Exscientia Candidate '565
Biochemical pIC <sub>50</sub> >7	Minor deviation	Meets or exceeds criteria	Meets or exceeds criteria	Meets or exceeds criteria	Meets or exceeds criteria
OCI-Ly3 IL-10 pIC <sub>50</sub> >7	Meets or exceeds criteria	Meets or exceeds criteria	Not tested	Not tested	Meets or exceeds criteria
OCI-Ly3 proliferation IC <sub>50</sub> (<400 nM)	Minor deviation	Meets or exceeds criteria	Meets or exceeds criteria	Meets or exceeds criteria	Meets or exceeds criteria
TMD8 IL-10 IC <sub>50</sub> (<200 nM)	Minor deviation	Meets or exceeds criteria	Meets or exceeds criteria	Not tested	Meets or exceeds criteria
TMD8 proliferation IC <sub>50</sub> (<300 nM)	Minor deviation	Meets or exceeds criteria	Not tested	Not tested	Meets or exceeds criteria
<b>UGT1A1 IC<sub>50</sub> (&gt;10 μM)</b>	Major deviation	Minor deviation	Major deviation	Major deviation	Meets or exceeds criteria
Hu heps Clu calc (ml/min/kg) <20	Meets or exceeds criteria	Not tested	Meets or exceeds criteria	Meets or exceeds criteria	Meets or exceeds criteria
Caco-2 A-B (ER) 10 <sup>-6</sup> cm/s [>5(<3)]	Meets or exceeds criteria	Major deviation	Major deviation	Minor deviation	Meets or exceeds criteria
Solubility pH 7.4 (>250 μg/mL)	Minor deviation	Major deviation	Major deviation	Major deviation	Minor deviation
Cerep / full kinase panel	Meets or exceeds criteria	Meets or exceeds criteria	Not tested	Not tested	Meets or exceeds criteria

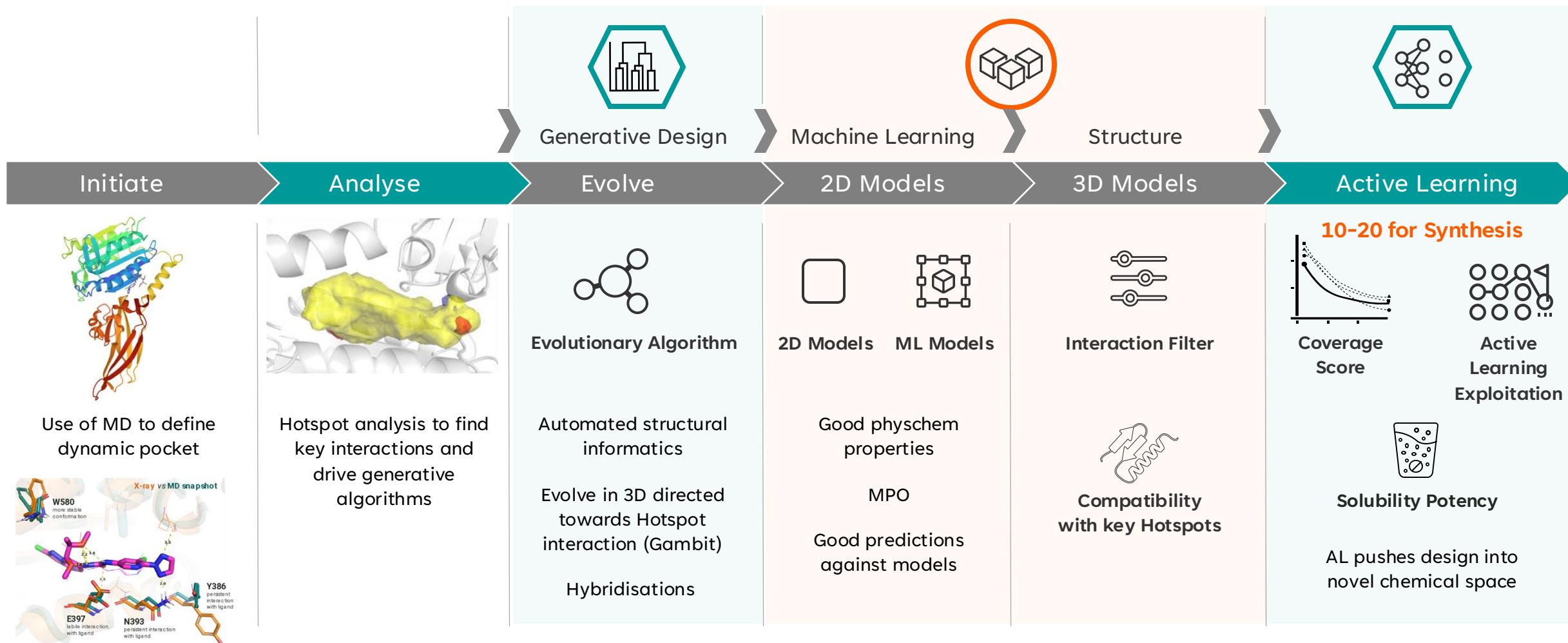
■ Meets or exceeds criteria    
 ■ Minor deviation    
 ■ Major deviation    
 ■ Not tested





# Technology in action: Precision design of '565

Designing and selecting the right molecules to synthesise



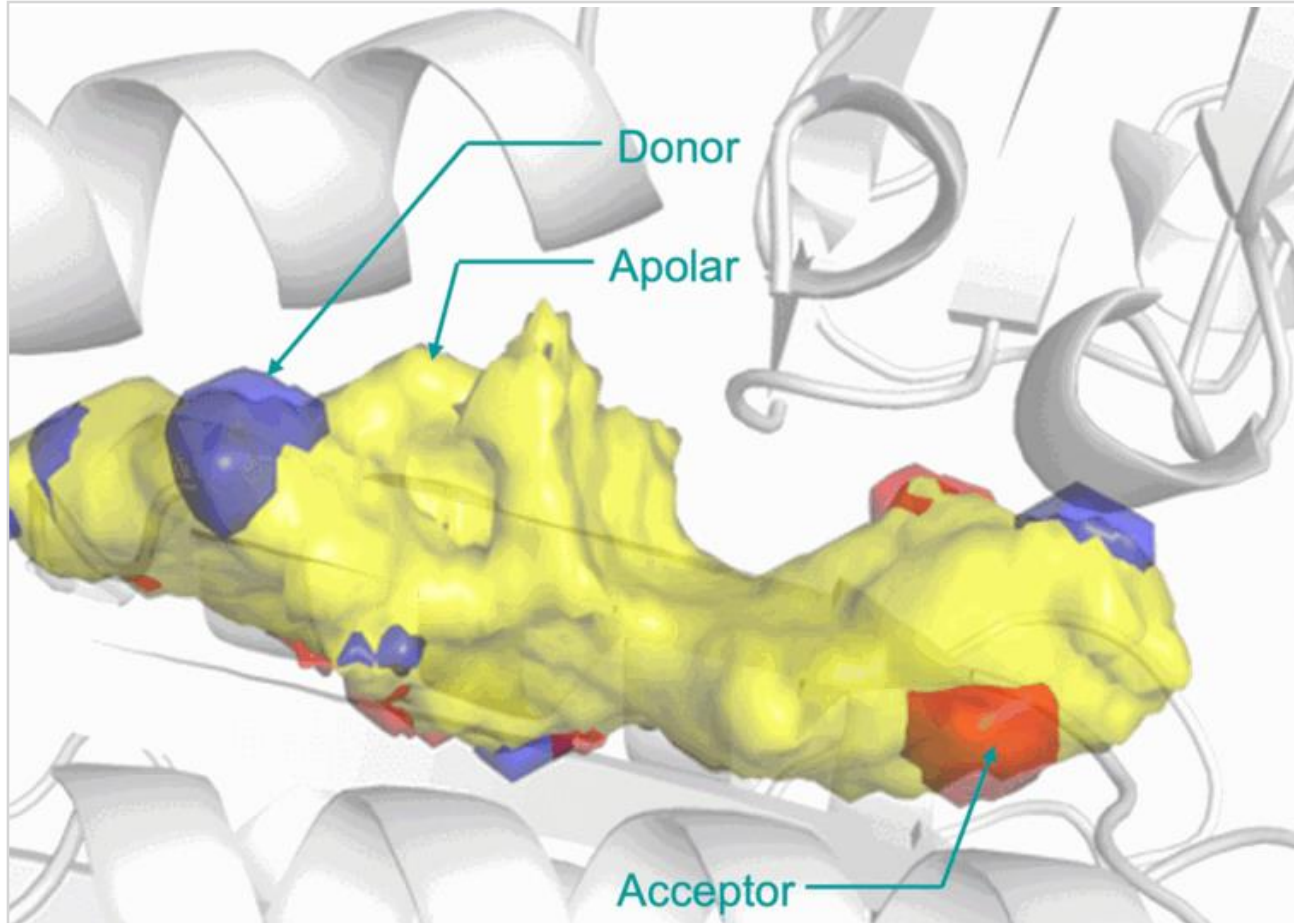
Proof of concept to use MD with our end-to-end AI-driven platform





# '565 leveraged physics-based predictive modelling

## Understanding protein flexibility using molecular dynamics

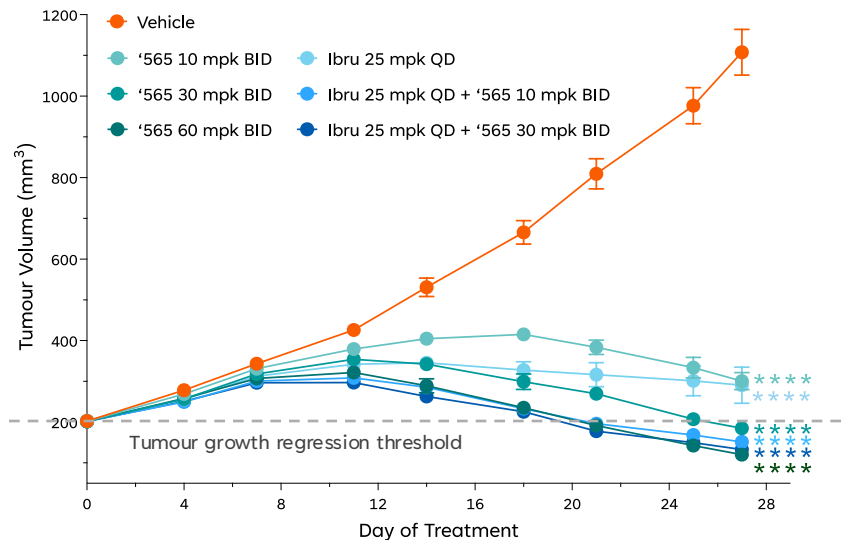


- Simulated binding site movements and integrated with Hotspots for automated definition
- Design of '565 expanded our approach onto complex dynamic targets and into novel chemical space
- Drove our generate constraints towards delivering improvement in permeability
- '565 candidate delivered using physics-based constraints in allosteric site

# '565 inhibits DLBCL tumour model growth *in vivo*

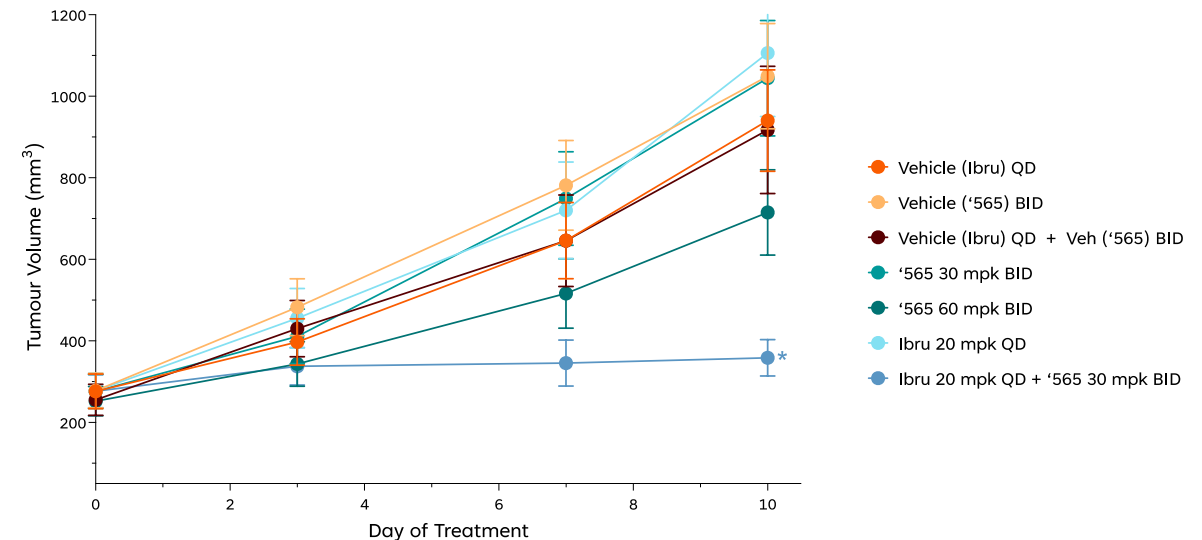
## Single agent and synergistic effects seen in DLBCL xenograft models

### '565 ± Ibrutinib in OCI-Ly10 Xenograft Model



- OCI-Ly10 cells are sensitive to both MALT1i and ibrutinib *in vitro*
- Administration of '565 as a single agent showed tumour growth regression
- Synergistic tumour growth regression observed when 10 mpk '565 was combined with ibrutinib

### '565 ± Ibrutinib in TMD8 Xenograft Model

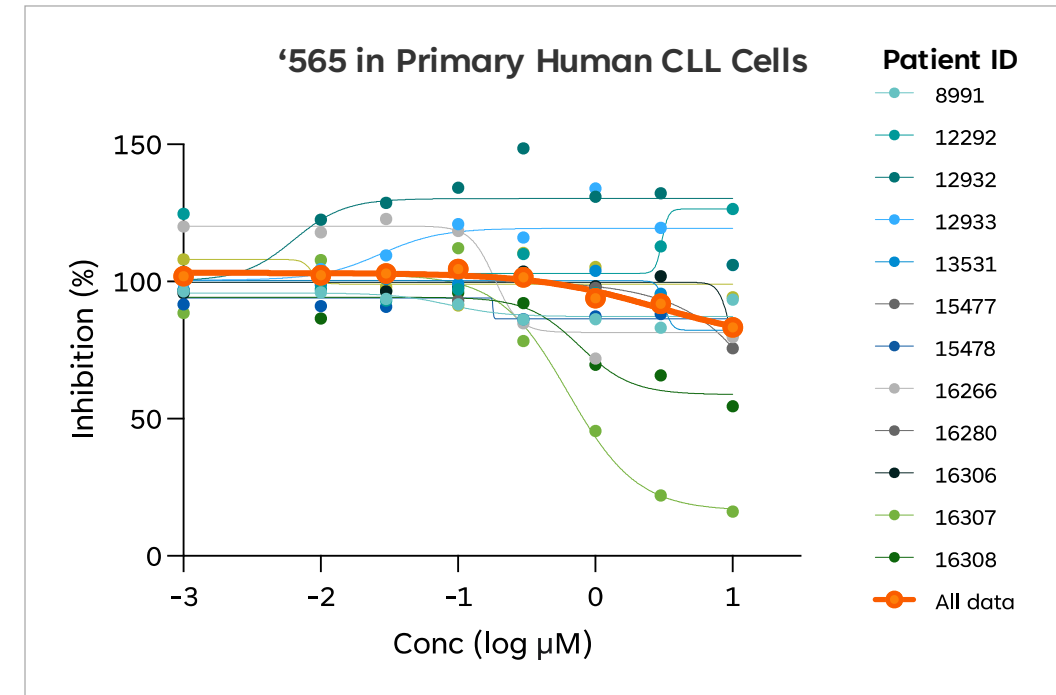
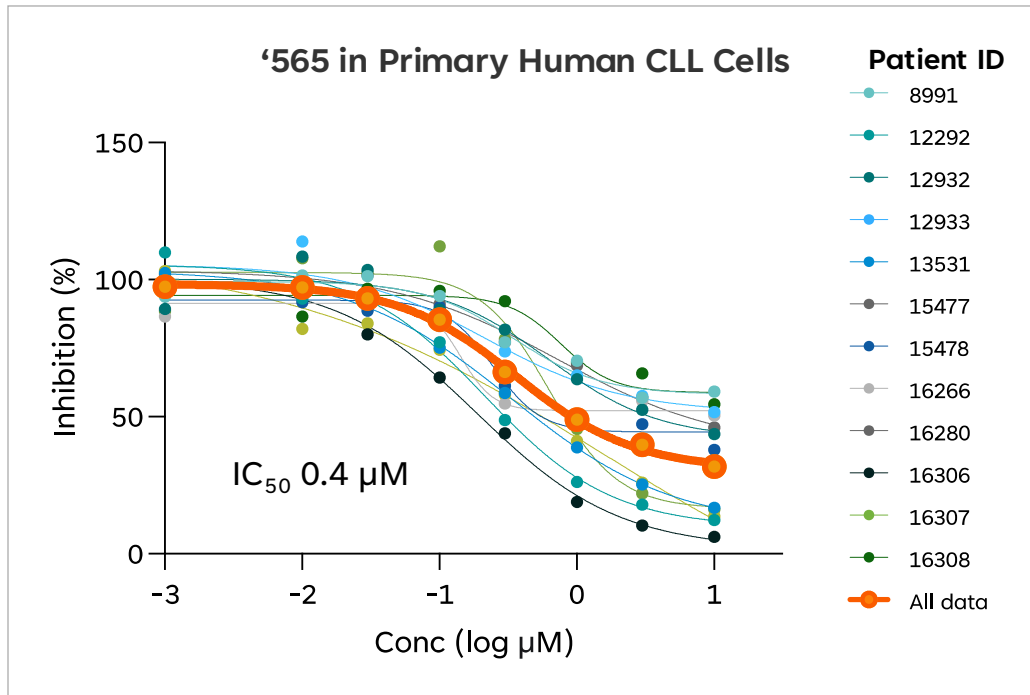


- TMD8 DLBCL cells are sensitive to both MALT1i and ibrutinib *in vitro*, however, standalone administration of ibrutinib showed no activity *in vivo*
- Significant synergistic efficacy was observed when '565 was combined with ibrutinib in the study
- '565 was well tolerated with body weight maintained in both monotherapy and combination groups



# '565 inhibits primary human CLL cell proliferation

Efficacy in primary human tissues without impacting T-cell viability



- CLL samples from both treatment naïve patients and patients exposed to previous lines of therapy
- '565 selectively inhibited the proliferation of primary human CLL cells
- Limited impact of '565 observed on T-cell viability



# '565 has a low predicted risk of hyperbilirubinaemia

## Potential safety benefit compared with clinical MALT1i in development

- We predict that selectivity over UGT1A1 could be an issue for some clinical stage MALT1 inhibitors
- Inhibition of UGT1A1 mediates bilirubin glucuronidation, potentially leading to hyperbilirubinaemia
- '565 has a low risk of potential DDI/ hyperbilirubinaemia at predicted human efficacious doses
- Potential for safer dose escalation for '565 to reach the level of target engagement necessary to achieve clinical efficacy

Compound	Best-estimate Scenario	$C_{max,u}$ ( $I_{max,u,inlet}$ )	UGT1A1					Prediction
			$IC_{50}$ ( $\mu M$ )	$IC_{50}/I_{max,u,inlet}$	$R_{free}$	$R_{in,free}$	$F_i$	
Pharma Phase 1b <sup>1</sup>	$t_{1/2}$ : 127 hr (230 mg QD)	0.28 (0.32) $\mu M$	0.76	2.4	1.37	1.42	0.27	Hyperbilirubinaemia Risk
'565	$t_{1/2}$ : 39 hr	0.30 (0.42) $\mu M$	>10	34	1.02	1.03	0.02	Low Risk



# MALT1: '565 preclinical profile

Favourable PK, toxicology & safety pharm in preclinical species

## Pharmacokinetics (PK)

- Excellent PK across preclinical species
- Low predicted human clearance and high oral bioavailability
- Human clearance data suggests a half-life consistent with QD dosing
- Low UGT1A1-mediated DDI risk (differentiated vs other compounds) leading to potentially better safety (hyperbilirubinaemia) profile

## Toxicology & Safety Pharmacology

- No unexpected *in vitro* or *in vivo* safety concerns identified for a patient trial
- Well tolerated in rat/dog dose range finding (DRF) studies
- GLP toxicology studies completed and identified a suitable NOAEL enabling clinical trials



# '565: Summary

- GLP-tox studies completed
- CMC work continuing
- CTA submission expected in 2024



## Programme Highlights:

- Potent and highly selective MALT1 allosteric inhibitor with low UGT1A1 inhibition risk
- Suitable therapeutic index established
- Potential in broad range of haematologic malignancies
- Potential in combination with BTKi for the prevention and treatment of BTKi-resistant disease
- Potent activity on primary human B-cell lymphoma patient cells; ongoing studies in other indications



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