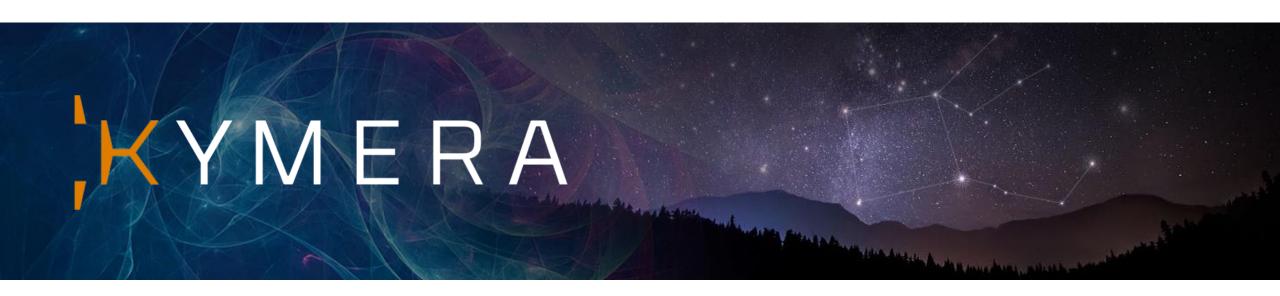


#### **INVENTING NEW MEDICINES**

WITH TARGETED PROTEIN DEGRADATION



#### **Forward-Looking Statements**

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 (PSLRA) and other federal securities laws. These statements include information about our current and future prospects and our operations and financial results, which are based on currently available information. All statements other than statements of historical facts contained in this presentation, including express or implied statements regarding our strategy, future financial condition, future operations, projected costs, prospects, plans, objectives of management and expected market growth, are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "aim," "anticipate," "assume," "believe," "contemplate," "continue," "could," "design," "due," "estimate," "expect," "goal," "intend," "may," "objective," "plan," "predict," "positioned," "potential," "seek," "should," "target," "will," "would" and other similar expressions that are predictions of or indicate future events and future trends, or the negative of these terms or other comparable terminology. These forward-looking statements include statements about the initiation, timing, progress and results of our future clinical trials and current and future preclinical studies of our product candidates and of our research and development programs; our plans to develop and commercialize our current product candidates and any future product candidates and the implementation of our business model and strategic plans for our business, current product candidates and any future product candidates. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. You should not rely upon forward-looking statements as predictions of future events.

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#### **Targeted Protein Degradation**

Next Potential Breakthrough Modality to Expand Drugged Proteome

**Human Proteome Targeted Protein Degradation Existing Modalities Undrugged Opportunity** Cell/Gene Drugged **Traditional Small Therapy** Molecule **Antibody Antisense RNAi Undruggable Targets** Scaffold, transcript factor, multiple functions **Efficient Development / Manufacturing Systemic** Exposure **Oral Bioavailability** 

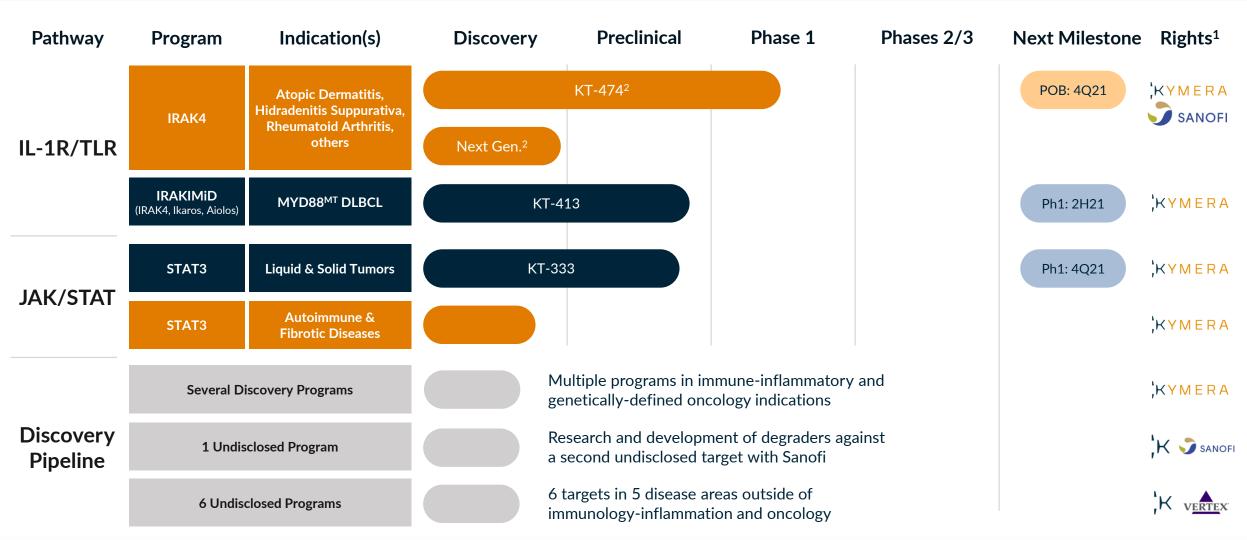
#### **Kymera: A Leading TPD Company**





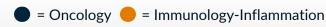
VISION	Fully integrated, disease agnostic protein degrader medicine company			
KEY PARTNERSHIPS	SANOFI VERTEX gsk			
INITIAL FOCUS	Immune inflammation (I/I) and oncology			
FIRST-IN-CLASS	First to show placebo-controlled degrader proof-of-mechanism			
CLINICAL PIPELINE	2 additional INDs and clinical initiations expected by end of 2021			
PROOF-OF-BIOLOGY	To be established in humans in 2021			
WELL-POSITIONED	\$647M cash balance*			

#### **Kymera's Pipeline of Novel Protein Degraders**

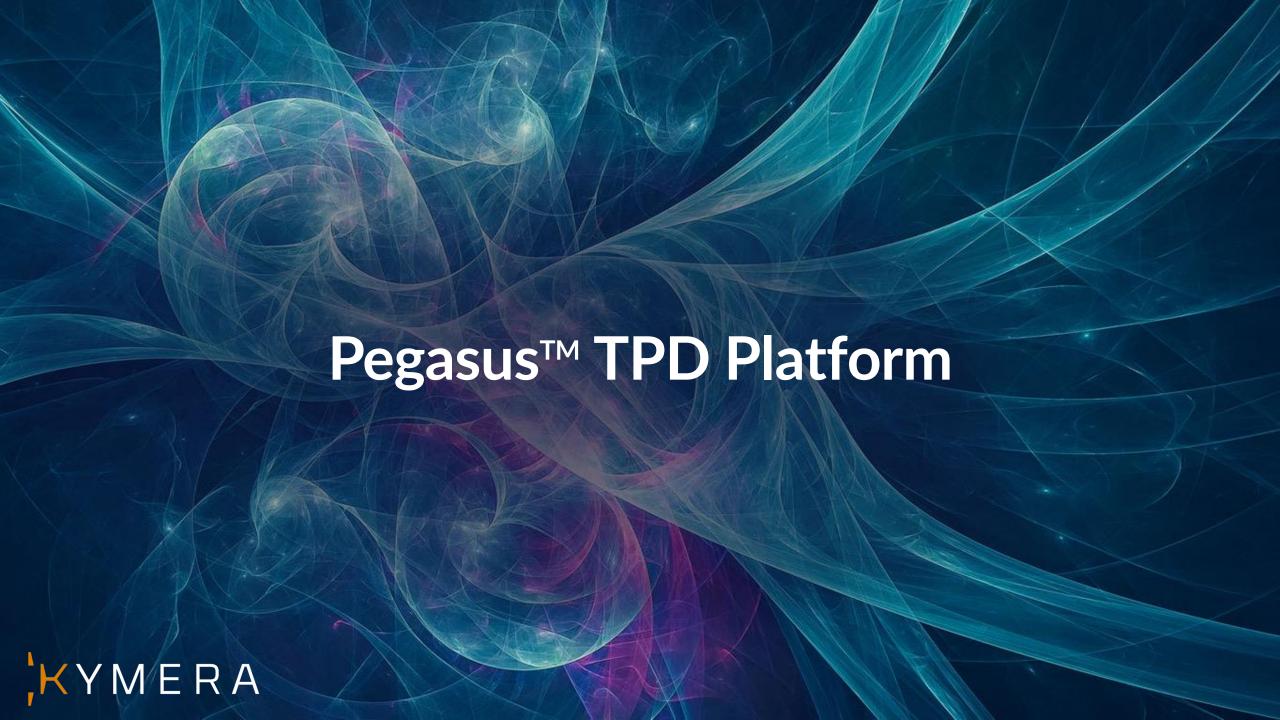


<sup>1.</sup> Option to participate equally in the development and commercialization of Sanofi-partnered programs in the US.

<sup>2.</sup> Sanofi collaboration to develop IRAK4 degrader candidates, including KT-474 (SAR444656), outside of oncology and immuno-oncology fields.







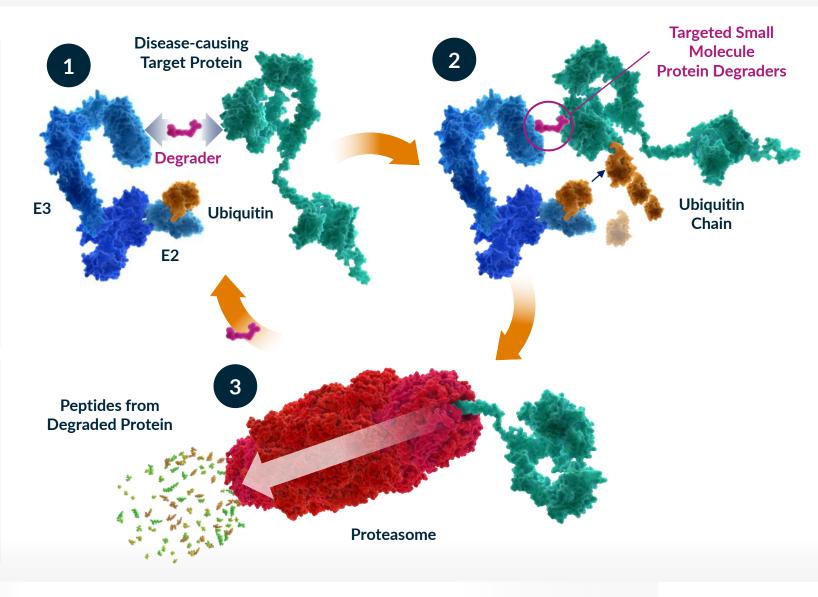
#### **Targeted Protein Degradation**

Biology

#### Co-opting a Naturally Occurring Process to Regulate Protein Levels

- 1 E3 ligase recognizes protein
- 2 Ubiquitin chain transferred
- 3 Protein is marked for elimination

# Broad Opportunity Only Binding Site Required Likymer A Efficient Catalytic Prolonged Impact Targeted Protein Degradation



#### **Proprietary Pegasus™ TPD Platform**

#### Key capabilities



**Expanded E3** ligase toolbox

- E3 ligase Whole-Body Atlas: Identification of the expression profiles of ~600 unique E3 ligases
- Match target protein with appropriate E3 ligase based on expression, distribution, intracellular localization, and biology
- **Toolbox of proprietary ligands** leverages the E3 Ligase Whole-Body Atlas



- **Ternary complex modeling tool optimizes the development** of highly efficient and selective degrader therapeutics
- Quantitative System Pharmacology Model measures and predicts diverse sets of parameters that impact protein levels
- Based on understanding of PK/PD, both in vitro and in vivo, and across different tissues and cell types



**Proprietary** Chemistry

- Comprehensive hit finding technologies toolbox: chemoproteomics, DEL, fragment screens, in silico
- **Proprietary chemistry expertise** enables the design and optimization of both E3 ligases and target protein binders
- Ability to convert into degraders with optimal pharmaceutical properties tailored to specific patient populations

#### ✓ Pegasus: E3 Ligase Whole-Body Atlas

#### Different expression profiles of E3's provide opportunity for tissue selective/restricted degradation



**Expanded E3 ligase toolbox** 

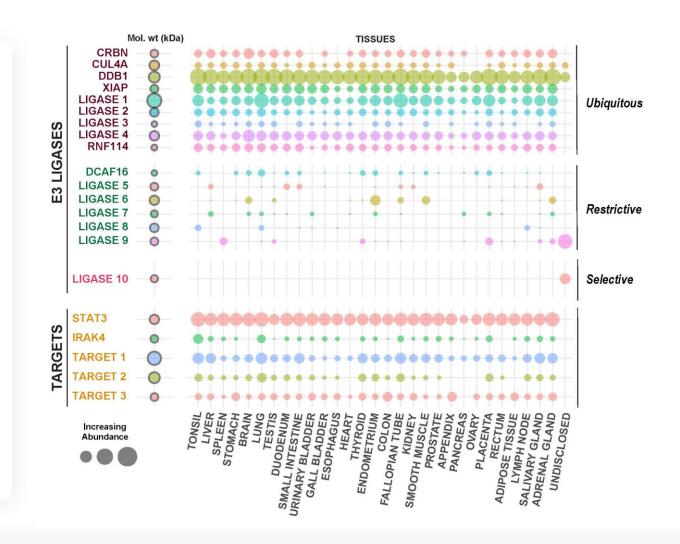


Understanding degradation (PK/PD) across tissue types



Proprietary Chemistry

- Focused on determining the expression profiles of ~600 unique E3 ligases
- Patterns mapped in both disease and healthy contexts
- Ability to match a target protein with appropriate E3 ligase based on expression and biology
- Vision to develop tissueselective or tissuerestricted degraders to enable novel therapeutic opportunities





## IRAK4 Targeting: Clinical Validation, Human Genetics De-risking and Degrader Advantage



Unmet Medical Need



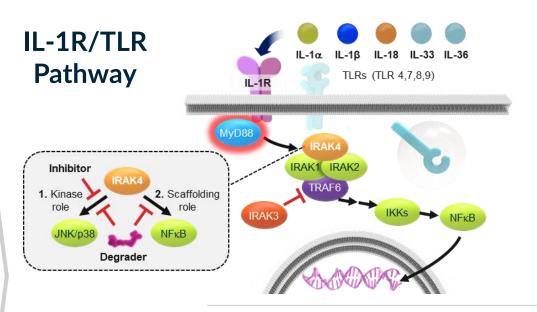
Validated Biology



Undrugged Node



Precision Medicine Approach



#### **Clinical Pathway Validation**

**IL1-R** $\alpha$ /**IL-1\beta**: Rheumatologic Diseases

**IL-1α:** Atopic Dermatitis

IL-1β: CANTOS Data, Atherosclerosis, Lung Cancer

**IL-18:** Macrophage Activation Syndrome

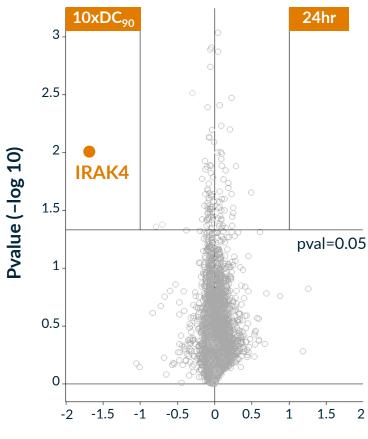
IL-36: Generalized Pustular Psoriasis

**IRAK4 SMI**: Rheumatoid Arthritis

- IRAK4 is a key component of the myddosome protein complex involved in innate immunity that mediates signals through IL-1R and TLRs
- Several commercial and clinical stage drugs have validated this pathway in multiple diseases
- Degrading IRAK4, and fully blocking IL-1R/TLR signaling, is expected to be superior to antibodybased therapies that block only single cytokines, with convenience of a daily oral therapy
- IRAK4 degradation can block pathway fully vs kinase inhibitors that partially block signaling
- Human genetics de-risk safety: adults that lack IRAK4 are healthy

## KT-474: Potent and Specific IRAK4 Degradation Superior to Kinase Inhibition

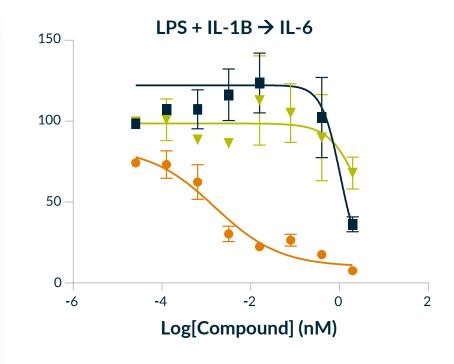
#### **Degradation and Selectivity**



**Protein Level Fold Change (log2)** 

- KT-474 DC<sub>50</sub> = 2.1 nM in human immune cells
- KT-474 only degraded IRAK4 in human immune cells at concentration 10fold above the DC<sub>90</sub>
- KT-474 better able to inhibit IL-6 under both LPS and LPS + IL-1B than clinically active IRAK4 SM kinase inhibitor PF-06550833

#### **Superiority over SM kinase Inhibitor**



Legend	Compound	IL-6 IC <sub>50</sub> (nM)
-	IRAK4 Degrader	0.8
-	Negative control	450
	IRAK4 SMI (PF-06550833)	N/A
	IRAK4 SMI (PF-06550833)	N/A

#### **KT-474 Opportunity**

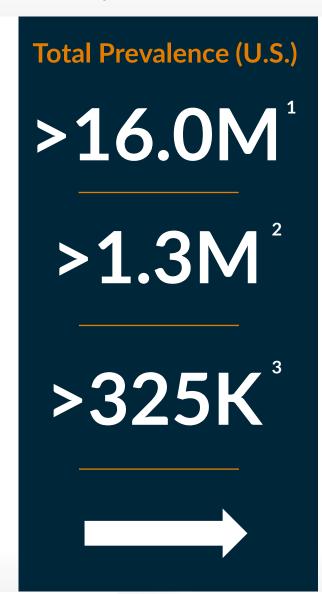
Immune-inflammatory disorders collectively impacting millions of patients in the U.S.

Atopic Dermatitis (AD)

Rheumatoid Arthritis (RA)

Hidradenitis Suppurativa (HS)

Additional Opportunities



- Chronic, pruritic inflammatory skin disease
- Large unmet need for safe and effective oral agents for patients with AD
- Chronic, systemic **autoimmune disease** that can cause irreversible joint damage
- Multiple therapies targeting the IL-1R/TLR pathway are approved
- Chronic and debilitating inflammatory skin disease
- ~25% of patients with moderate-to-severe disease<sup>4</sup>
- Adalimumab is approved, which provides some benefit to ~50% of patients with moderate-to-severe disease<sup>5</sup>
- Immune-inflammatory diseases impacted by IL-1R/TLR pathway

#### **KT-474 Phase 1 Trial Design**

Double-blind, Placebo-controlled, Single Ascending Dose (SAD) and Multiple Ascending Dose (MAD) trial

#### **Three-part Phase 1 Design**

1 2 3
SAD Portion
Healthy Volunteers Healthy Volunteers Patient Cohort

- 7 cohorts

   (up to 56 adult healthy subjects)
- 8 per cohort 12 pe
- Single dosing (starting dose 25 mg)

(6:2 randomization)

- 5 cohorts

   (up to 60 adult healthy subjects)
- 12 per cohort (9:3 randomization)
- 14x daily doses (starting dose 25 mg)

- 1 cohort (up to 20 AD and HS patients)
- Open-label
- 14x daily doses

#### **Endpoints**

#### **Primary**

Safety & tolerability

#### Secondary/ Exploratory



- Pharmacokinetic measures (half-life, bioavailability)
- IRAK4 knockdown in PBMC

#### **Exploratory**

MAD only

- IRAK4 knockdown in skin biopsies
- Proinflammatory cytokine and chemokine levels in skin biopsies
- C-reactive protein and cytokine levels in plasma
- Ex vivo response of whole blood to TLR agonists and IL-1β

#### **KT-474 Phase 1 Trial Goals**

Establishing proof-of-mechanism and proof-of-biology

## De-risking Milestones

**MAD Portion** 

**Healthy Volunteers** 

#### Oral Bioavailability and Proof-of-Mechanism

**SAD Portion** 

**Healthy Volunteers** 

- Efficacious plasma exposures that are safe and well-tolerated
- Proof-of-mechanism with IRAK4 knockdown following single KT-474 dose
- Predictable PK/PD supporting oral daily dosing regimen

### Optimal IRAK4 Reduction and Proof-of-Biology

- ≥85% IRAK4 knockdown in skin and blood with daily dosing x 14 days that is safe and well-tolerated
- Proof-of-biology with systemic antiinflammatory effect: reduction in plasma hsCRP and inhibition of whole blood ex vivo response to TLR agonists and IL-1β
- Establishment of maximum effective dose

## 3 MAD Portion Patient Cohort

#### Establish Proof-of-Biology in Patients

- ≥85% IRAK4 degradation in diseased skin and blood
- Anti-inflammatory effect in diseased skin and reduction of plasma cytokines and hsCRP
- Confirmation of dose for subsequent Phase 2 studies

#### KT-474 Interim Phase 1 Healthy Volunteer SAD Overview

#### Interim Results (Cohorts 1-4)

- **32** subjects randomized
- 24 subjects administered KT-474
- 8 subjects administered placebo

#### **Dosing**

- Single dose administration of oral KT-474 tablet
- Dose levels (mg):

25

**75** 

150

300

## Pharmacokinetic (PK) Features

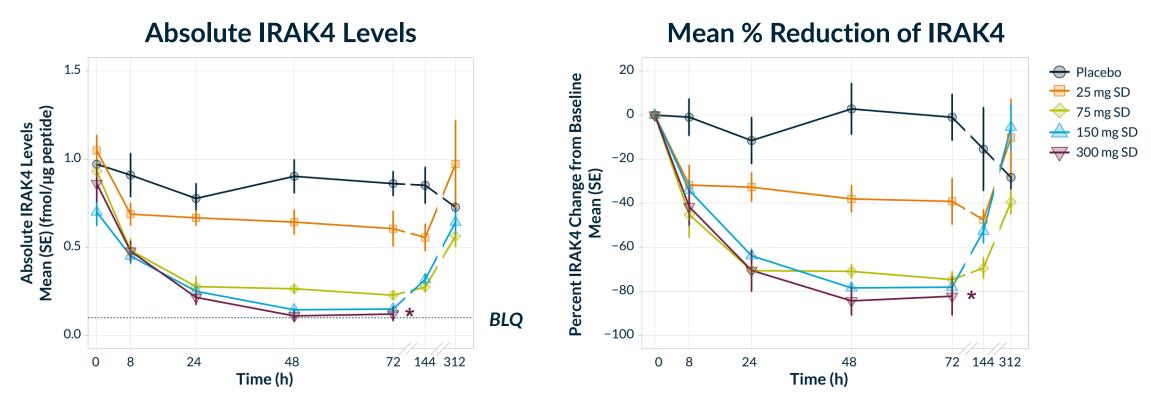
- PK profile consistent with oral daily dosing
- Predictable, dosedependent plasma exposures after single oral dose of KT-474
- Half-life:

**25-32** hours

## Safety & Tolerability

- No treatment-related adverse events
- No Serious Adverse Events

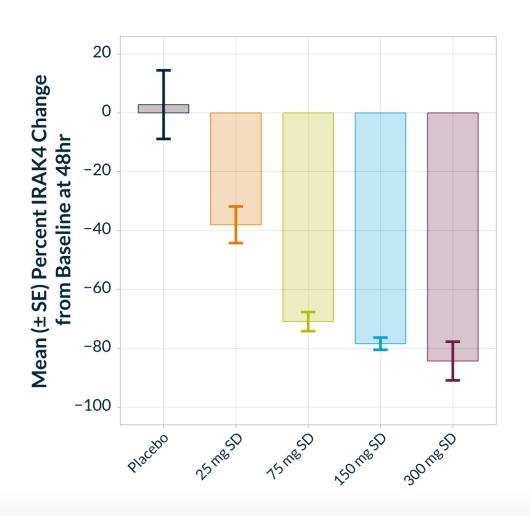
## KT-474 Achieved Profound IRAK4 Degradation after Single Oral Dose that Lasted for at Least 6 Days



**BLQ** = Below Limit of Quantitation

- \* SAD4 144/312 h PD timepoints pending
- Measured by mass spectrometry in circulating PBMC
- IRAK4 levels nadired at 48-72 hours
- IRAK4 reduction lasted for at least 144h (6 days post-dose) in all dose groups

#### IRAK4 Degradation >85% Achieved Following Single KT-474 Dose



#### Percent IRAK4 Reduction in PBMC at 48 Hours Post-Dose using Mass Spectrometry

	Placebo (n=8)	Cohort 1 (n=6)	Cohort 2 (n=6)	Cohort 3 (n=6)	Cohort 4 (n=6)
KT-474 dose	-	25 mg	75 mg	150 mg	300 mg
Mean IRAK4 Change	+3%	-38%	-71%	-78%	-84%
Median IRAK4 Change	+16%	-41%	-71%	-78%	-90%
p value*		0.0057	<0.0001	<0.0001	<0.0001

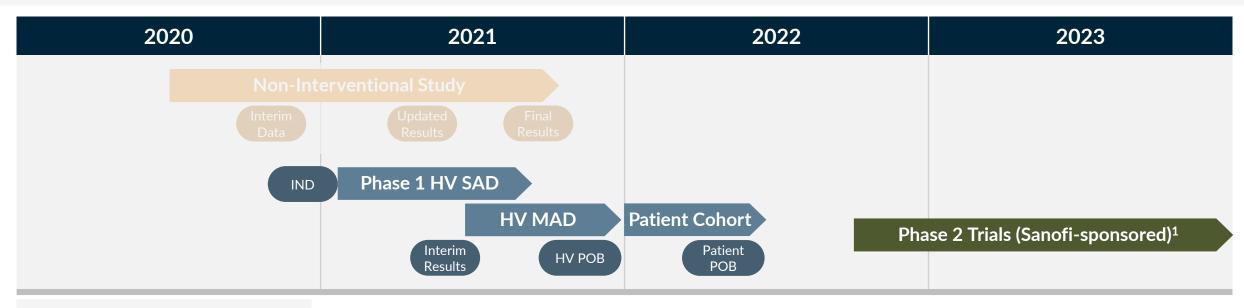
\* p-values relative to placebo

#### Interim Results from Phase 1 Healthy Volunteer SAD

**Summary and Next Steps** 

- KT-474 interim Phase 1 results demonstrate degrader proof-of-mechanism, first time for TPD in a placebo-controlled study
  - Median IRAK4 reduction of 90% (p<0.0001 vs placebo) and maximum reduction of 94% at 48 hours following single dose of 300 mg, with sustained degradation that lasted for at least 6 days at all dose levels
  - Based on potency, PK and PD profiles with deep and sustained multiday degradation, expect to achieve biologically relevant (85%) level
    of degradation with repeat dosing at lower doses; selected MAD starting dose of 25 mg
  - Demonstrated predictable, dose-dependent and biologically active plasma exposures, and half-life that supports oral daily dosing
  - No treatment-related adverse events or serious adverse events observed to date
  - Demonstrating Phase 1 target degradation of >85% de-risks KT-474 ability to reach clinically relevant biological effects in future development as a potential best-in-class anti-inflammatory oral drug
- FDA lifted partial clinical hold following review of interim healthy volunteer SAD results
  - Dose escalation in SAD portion of Phase 1 to continue, including assessment of food-effect
  - In July, initiated MAD portion of Phase 1 in healthy volunteers assessing daily dosing of KT-474 for 14 days
- Expect to present updated results from healthy volunteer SAD/MAD portions in Q4'21
  - Data to include IRAK4 degradation in skin and PBMC and effects on inflammatory biomarkers after repeat dosing
  - Optimal dose from MAD healthy volunteer portion to be evaluated in an open label cohort of patients with atopic dermatitis and hidradenitis suppurativa

#### **KT-474 Development Plan**



#### Non-Interventional

- 40 patients (HS n=30; AD n=10)
- Biomarker endpoints in blood and skin: IRAK4, cytokines, acute phase reactants
- Data updates:
  - Interim: Oct 2020
  - Updated HS: May 2021
  - Final AD: 2H21

#### Phase 1

- SAD dosing initiated 1Q21
- SAD/MAD studies: healthy volunteers (HV) and AD/HS patients
- Endpoints: primary Safety; secondary Proof-of-Biology
- Data updates:
  - Interim SAD proof-of-mechanism: June 2021
  - HV proof-of-biology: 4Q21
  - Patient proof-of-biology: 1H22

#### Phase 2

 Randomized, placebo-controlled trials in patients in potential indications such as AD, HS, RA, others



#### **IRAKIMID**

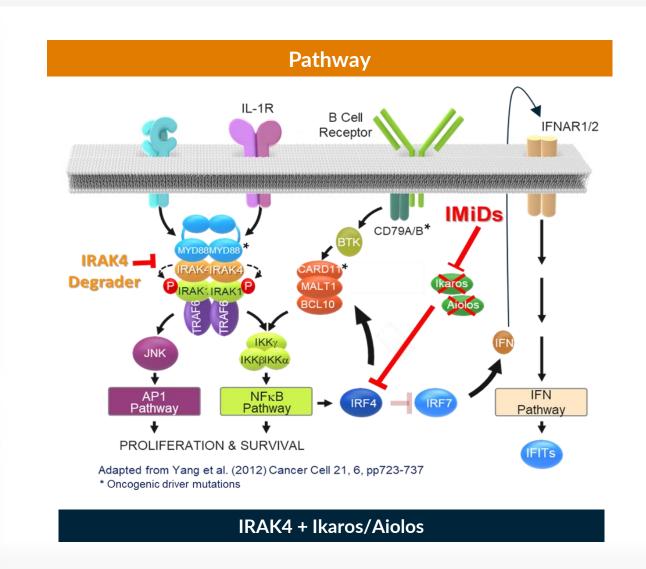
#### A combo in a single molecule

- MYD88 mutation drives differentiation and proliferation in ~25% of diffuse large B cell lymphoma (DLBCL)
- IMiDs downregulate IRF4, increasing IFN signaling and further suppressing NFkB activation and show activity in lymphoma
- Inhibiting both MYD88 and IRF4-dependent NFkB and activating IFN signaling drive cell death in MYD88-mutant lymphomas and leads to full and durable responses in vivo
- Combining two therapeutically relevant pathways in a single molecule has the potential to be first single agent targeted therapy agent in lymphoma (MYD88-mut)

#### **Indications/Expected Timeline**

#### **MYD88-mutant DLBCL**

Current: KT-413 in IND-enabling activities IND/Phase 1 initiation: 2H 2021 Phase 1 proof-of-biology in patients: 2022



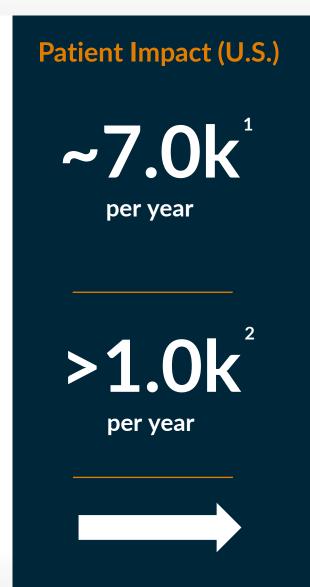
#### **KT-413 Opportunity**

Potential to be first precision medicine in DLBCL to target a genetically defined population (MYD88-mut)

MYD88-mutant DLBCL

Other MYD88-mutant B cell Lymphomas

Additional Cancers



- MYD88 is mutated in at least 25% of DLBCL patients, the most common subtype of non-Hodgkin's lymphoma<sup>1</sup>
- Front-line treatment includes R-CHOP (chemo/rituximab)
- DLBCL 5-year survival rate is ~64%, and MYD88 mutations in DLBCL are associated with poorer survival following frontline R-CHOP chemotherapy<sup>3</sup>

 MYD88 is mutated in approximately 90% of Waldenström's macroglobulinemia cases and 70% of primary central nervous system lymphoma<sup>4,5</sup>

• IL1R/TLR/NFkB-driven cancers, AML & MDS subsets with long isoform of IRAK4 (IRAK4L)

#### KT-413 Shows Regressions in MYD88<sup>MT</sup> Patient-Derived Xenograft Models

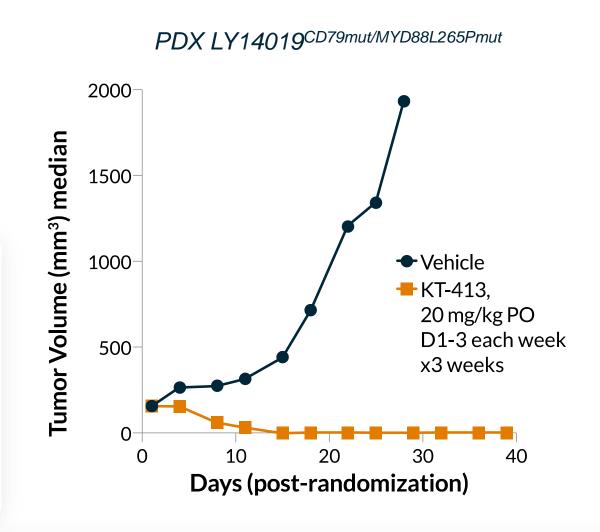
Model	MYD88	CD79B	TNFAIP3	Other	KT-413 (%TGI)
LY14019	L265P	MT	MT		100
LY2264	L265P	MT		IRF4	100
LY2298	L265P	MT		BCL2/BCL6	90
LY12699	L265P	MT			87
LY2345	WT		MT		70
LY2301	WT				30
LY0257	L265P			BCL2/BCL6/IKZF3	0

#### KT-413 dosed orally shows strong tumor growth inhibition (>85% TGI) in 4/5 MYD88-Mutated DLBCL PDX Models

- Activity is observed regardless of co-mutations that activate NFkB and IRF4 pathways
- The non-responsive MYD88<sup>MT</sup> model LY0257 harbors a mutation in Aiolos and is reported to be insensitive to lenalidomide
- The functional consequence of Aiolos mutations in IRAKIMiD and IMiD response is being investigated

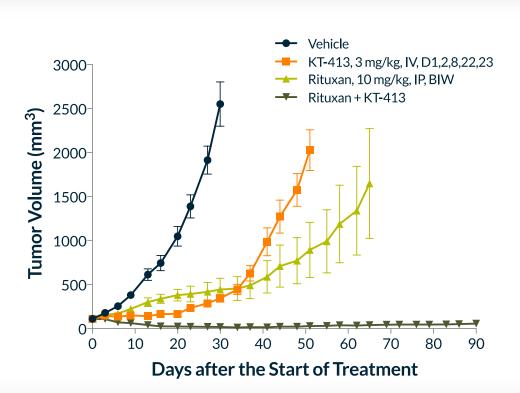
#### Some level of tumor growth inhibition observed in MYD88-WT PDX

May be consistent with IMiD activity of KT-413

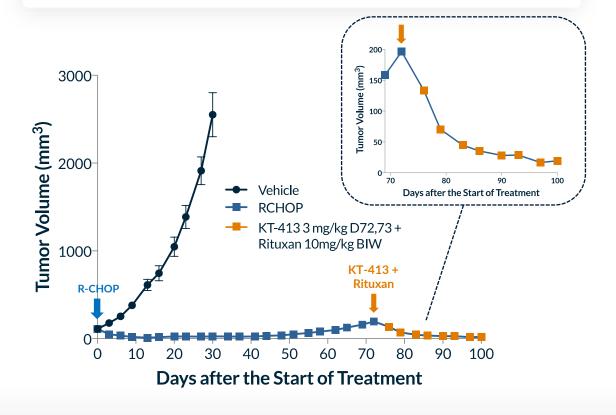


## KT-413 has Synergistic Activity in Driving Deep Tumor Regressions in Combination with Other Therapies in Preclinical Models

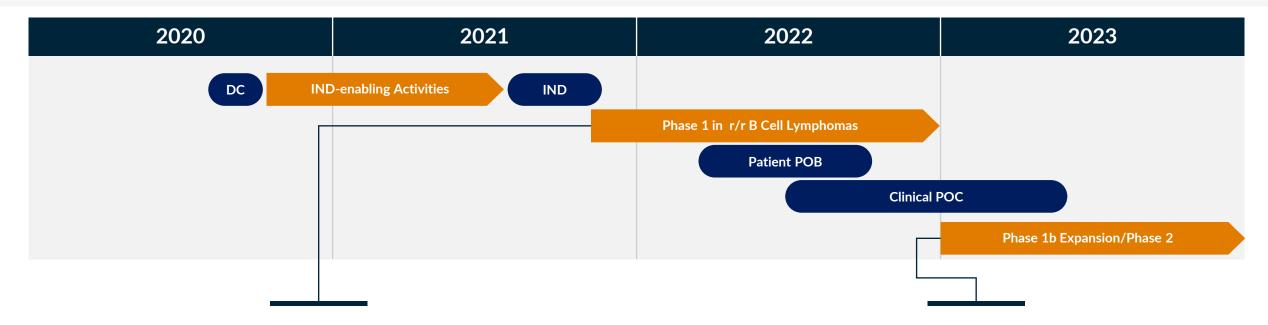
 KT-413 administered on intermittent schedules demonstrated deep and durable regressions in combination with rituximab in MYD88MT OCI-Ly10 xenografts



 KT-413 + rituximab showed strong tumor regressions in tumors that relapsed following initial R-CHOP treatment



#### **KT-413 Development Plan**



- Multi-center Phase 1 dose escalation study (US sites) start in 2H21
- Relapsed/refractory B cell lymphomas, including MYD88-mutant DLBCL
- Objectives include safety, tolerability, PK and PD (proof-of-biology) and preliminary clinical activity
- Clinical and biomarker endpoints
- POB to be presented in 2022

- Phase 1b expansion cohorts in DLBCL (MYD88mut and -wt) and other MYD88-mut lymphomas, including Waldenstrom's macroglobulinemia and primary central nervous system lymphoma
- Objectives include safety, tolerability and clinical activity of monotherapy and select combinations
- Clinical and biomarker endpoints
- Potential expansion in other indications



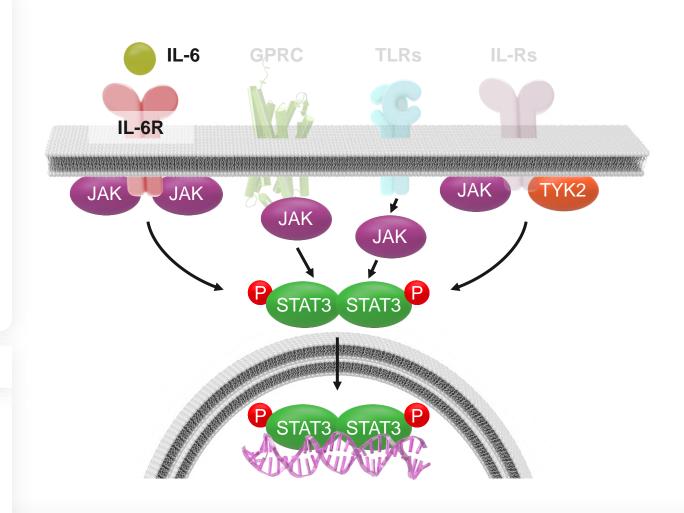
#### **STAT3** Biology and Degrader Rationale

- STAT3 is a traditionally largely undrugged transcription factor activated through cytokine and growth factor receptors via JAKs and non-JAKs mediated mechanisms
- High degree of validation of JAK-STAT pathway in oncology and immuno-oncology supported also by numerous publications
- STAT3 plays a role in tumor biology, evasion of immune surveillance and inflammation/fibrosis
- No known drugs specifically affect STAT3 broadly across all relevant cell types

#### **Indications/Expected Timeline**

#### Hematological Malignancies/Solid Tumors and Autoimmune/Fibrosis

Nomination of development candidate: 1Q 2021 ✓
IND/Phase 1 initiation: 4Q 2021
Phase 1 proof-of-biology in patients: 2022



#### **STAT3 Opportunity in Oncology & Autoimmunity**

First-in-class opportunity to address STAT3-driven pathology across large and diverse indications

#### Patient Impact (U.S.)

~5.0k per year<sup>1</sup>
Peripheral T-cell Lymphoma

~2.0k per year<sup>2</sup>

**Cutaneous T-cell Lymphoma** 

~200.0k per year<sup>3</sup>

Liquid Tumors

**Genetically-defined STAT3 mutation and/or hyperactivation** *PTCL, CTCL, T-LGL leukemia* 

STAT3 activation and dependency

DLBCL, AML, multiple myeloma

Solid Tumors

Cell Intrinsic: STAT3 role in EMT/TKI resistance

Combinations in TKI / chemotherapy resistant settings

Cell Extrinsic: STAT3 role in IO

T-cell infiltrated tumors. Combinations with immune-modulators

>40.0k<sup>4</sup>

**Systemic Sclerosis** 

>16.0M<sup>5</sup>

**Atopic Dermatitis** 

>40.0k<sup>6</sup>

**Idiopathic Pulmonary Fibrosis** 

Autoimmune

STAT3 GOF syndrome

Genetically-defined population characterized by enteropathy, arthritis, dermatitis, lung disease

**Immune-inflammatory** 

Systemic sclerosis, atopic dermatitis, rheumatoid arthritis, Crohn's disease/ulcerative colitis

#### **Chronic inflammation / fibrosis**

Idiopathic pulmonary fibrosis, CKD/renal fibrosis

I/I Fibrosis

Cancer



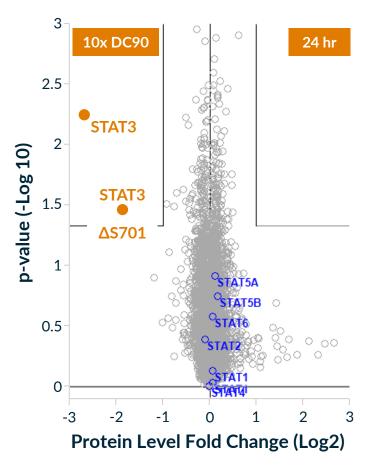
<sup>5.</sup> Chiesa Fuxench et al. J Invest Dermatol. 2019 Mar;139(3):583-590.

#### **KT-333 Highly Specific Degradation of STAT3**



- Deep mass spectrometry-based proteomics to assess STAT3 specificity performed
- hPBMC and tumor cells (SU-DHL-1) treated with KT-333 degrader
- STAT3 was the only protein to be degraded with statistical significance
- Data demonstrate highly selective degradation profile



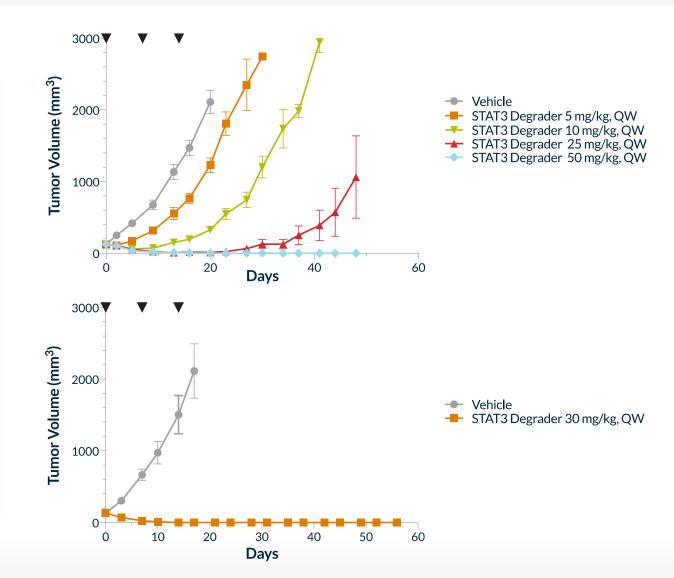


STAT Family Members: STAT1, STAT2, STAT3, STAT4, STAT5A, STAT5B, STAT6

## Full and Durable Regressions Across Multiple in vivo Preclinical Tumor Models



- Mice bearing STAT3-dependent ALK+ ALCL SU-DHL-1 (above) and STAT3-driven ALK+ ALCL xenograft model SUP-M2 (below) tumors dosed with STAT3 degrader
- Dose and degradation dependent tumor growth inhibition observed with once-aweek IV dosing
- 30 mg/kg sufficient to drive full tumor regression that was durable for multiple weeks after the last dose



#### STAT3 Degrader Development Plan in Liquid & Solid Tumors



- Multi-center Phase 1 dose escalation study start in 4Q21
- Safety, tolerability, PK and PD (proof-of-biology) and preliminary clinical activity
- Clinical and biomarker endpoints
- POB to be presented in 2022

- Phase 1b expansion cohorts in STAT3-dependent liquid tumors
- Objectives include safety, tolerability and clinical activity of monotherapy and select combinations
- Separate Phase 2 in solid tumors

#### **Near-Term Milestones Provide Significant Opportunity**



- **Discovery Programs & Platform**
- = Oncology = Immunology-Inflammation
- Continue pipeline expansion by advancing early-stage discovery programs toward IND-enabling studies
- Further expand Pegasus platform to generate novel degrader product candidates
- Leverage Whole-Body Atlas to unlock new opportunities across broad therapeutic applications



#### What We Are Building

#### Vision

A fully integrated degrader medicines company that discovers, develops, and commercializes transformative medicines while leading the evolution of targeted protein degradation (TPD)

#### **Opportunity**

#### **Platform**

#### **Strategy**

#### **Team**

- Potential to expand the druggable proteome dramatically
- Advancing TPD beyond current opportunities
- Focusing on undrugged targets and clinical indications with high unmet medical need and franchise potential
- Driven by a culture of scientific innovation

#### Strategic Partnerships to Accelerate Growth

Supports discovery, development, and commercialization within and outside of core therapeutic areas

#### **Strategic Collaborators**



- Established July 2020; \$150M upfront; >\$2B of potential milestones, plus tiered royalties
- Focused on IRAK4 in I/I + 2<sup>nd</sup> program; KYMR advances IRAK4 through Ph 1; Sanofi Ph 2 and beyond
- KYMR retains U.S. co-dev and co-co opt-in rights, and rights to IRAK4 in oncology



- Established May 2019; \$70M total upfront; >\$1B of potential milestones, plus tiered royalties
- 6 targets in 5 disease areas
- Outside of Kymera's core focus areas in oncology and immune-inflammatory



- Established April 2018
- Gained access to GSK's
   DEL capabilities to screen
   for ligands to targets and
   E3 ligases



- Blood-based cancers
- Leveraging patient network and access

#### **Academic Collaborators**





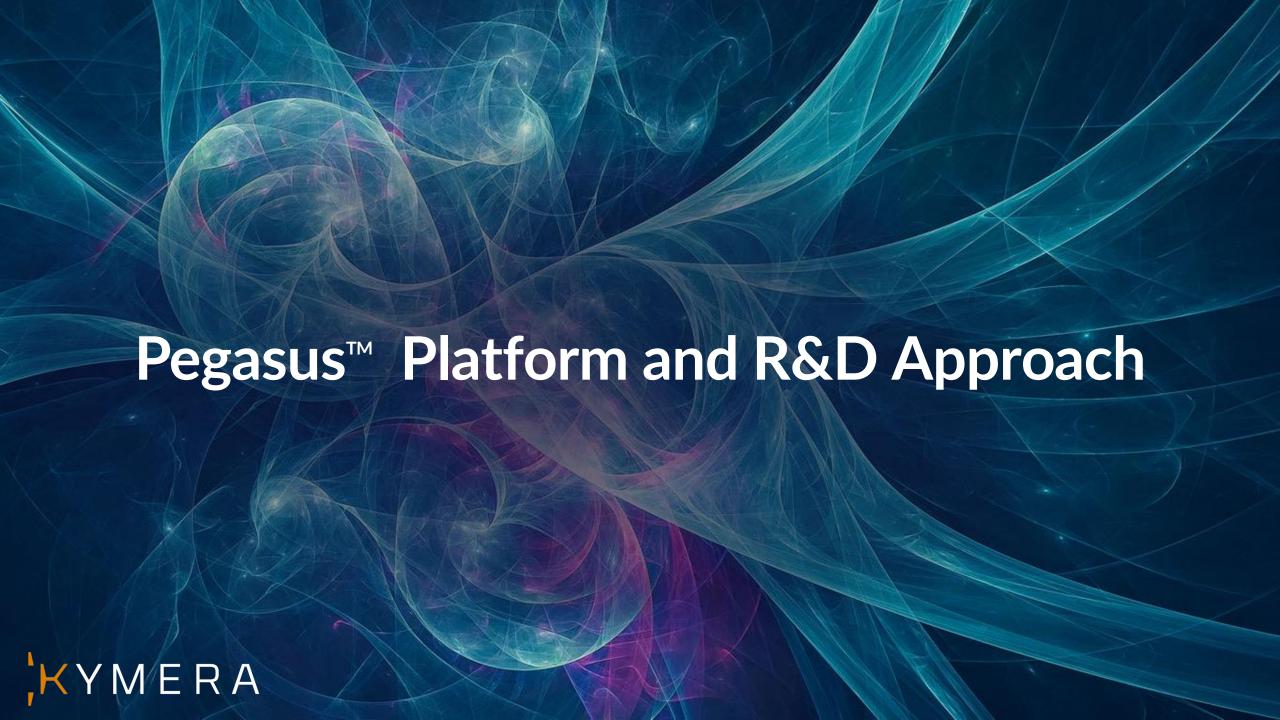












## Pegasus: E3 Ligase Whole-Body Atlas

A Bone Marrow Sparing E3 Ligase



**Expanded E3 ligase toolbox** 



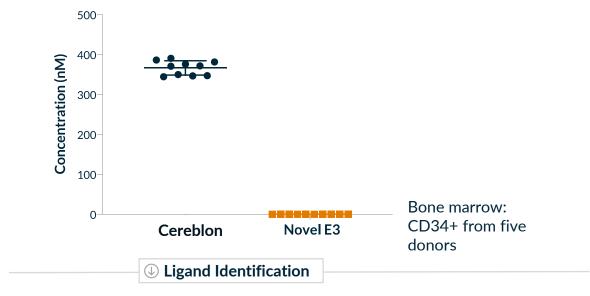
Understanding degradation (PK/PD) across tissue types



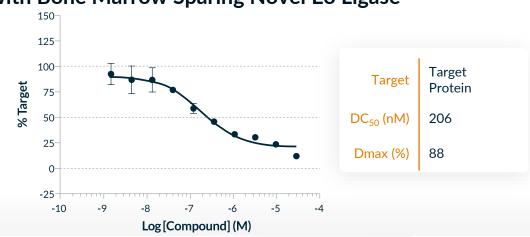
**Proprietary** Chemistry

- E3 Ligase Whole-Body Atlas queried to identify a tissue sparing E3 ligase based on target protein unwanted pharmacology (i.e. bone marrow for a particular target of interest)
- A bone marrow sparing E3 ligase identified
- Screening and optimization lead to a novel binder to a previously unliganded E3 ligase (E3 ligase binders toolbox)
- A novel degrader based on a bone marrow sparing E3 ligase demonstrated target degradation

### This E3 Ligase is Not Expressed in Bone Marrow



### **TPD with Bone Marrow Sparing Novel E3 Ligase**



## **Kymera Drug Development Principles**

Initial focus on pathways that have been clinically and commercially validated with undrugged nodes



Unmet Medical Need



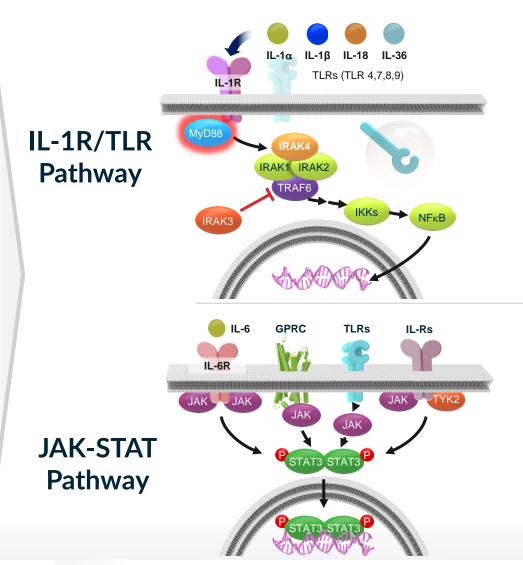
Validated Biology



Undrugged Node



Precision Medicine Approach



## **Clinical Pathway Validation**

**IL1-R** $\alpha$ /**IL-1** $\beta$ : Rheumatologic Diseases

**IL-1α:** Atopic Dermatitis

IL-1β: CANTOS Data, Atherosclerosis, Lung Cancer

**IL-18:** Macrophage Activation Syndrome

**IL-36:** Generalized Pustular Psoriasis

**IRAK4 SMI**: Rheumatoid Arthritis

IL-6R: Rheumatoid Arthritis

**IL-6:** Multicentric Castleman's Disease

JAK1/2: Myelofibrosis

JAK3: Alopecia Areata

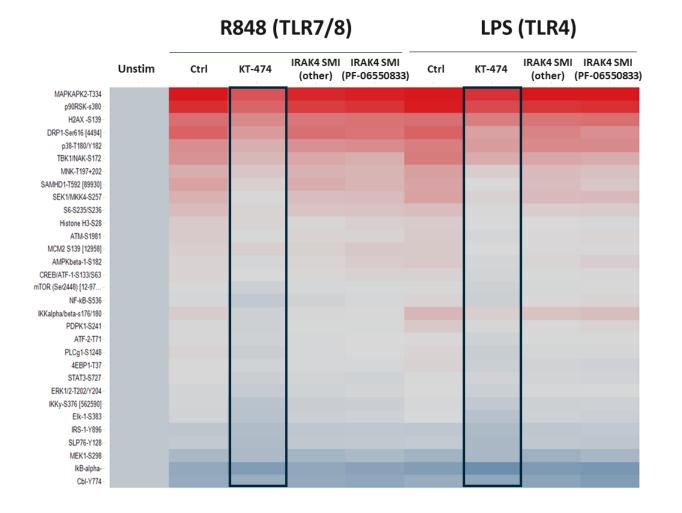
**TYK2:** Autoimmune Diseases

STAT3 ASO: AZD9150 in Oncology



# IRAK4 Degradation Superior to Kinase Inhibition in Intracellular Signaling

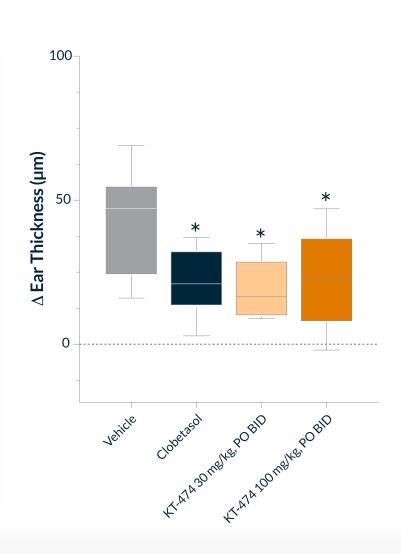
- Phosphorylation events upon TLR activations monitored using flow cytometry
- KT-474 inhibited proinflammatory phosphorylation events in a superior manner to small-molecule inhibitors including clinically active PFcompound

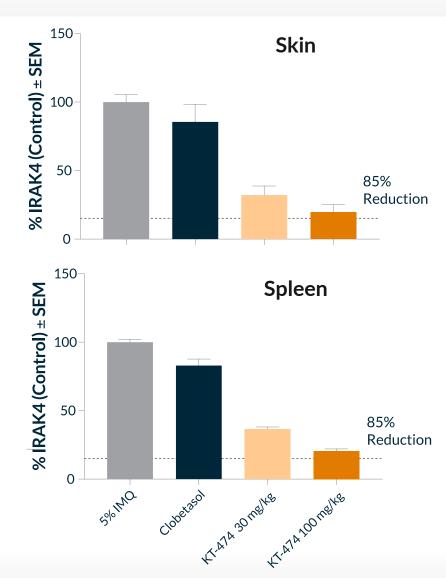


# 85% IRAK4 Degradation Sufficient for Maximal *In Vivo* Efficacy in Preclinical Models

- Ability to inhibit topical skin thickening induced by imiquimod was measured in a mouse model of psoriasis
- Orally dosed KT-474

   inhibited thickening, a
   reflection of local and
   systemic inflammation,
   comparable to a topic
   corticosteroid after 2 or 4
   days of dosing
- Full efficacy at doses achieving at 65-80% IRAK4 reduction in skin and spleen. In other models KT-474 has demonstrated full efficacy with 85% degradation

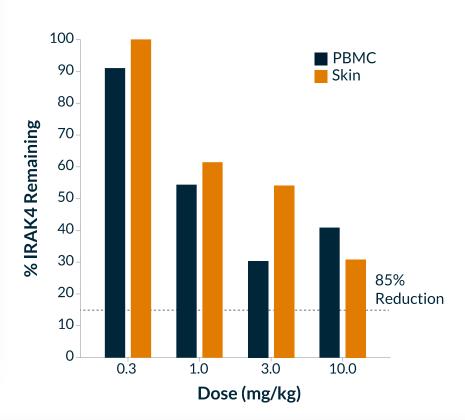




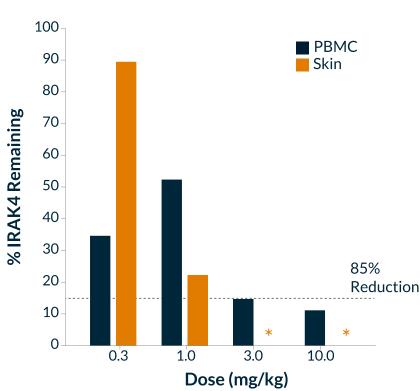
## KT-474 in Dog: Multi-dosing Required to Achieve Target Degradation

- Orally-administered KT-474 achieves >85% knockdown of IRAK4 at Day 7 with repeat dosing in MAD study
- Multiple doses (MAD) lead to optimal degradation profile vs SAD upon reaching steady-state
- Consistency of IRAK4 knockdown observed across peripheral blood mononuclear cells (PBMC) and skin tissue

# Dog Single Ascending Dose (SAD) IRAK4 Knockdown at Day 1



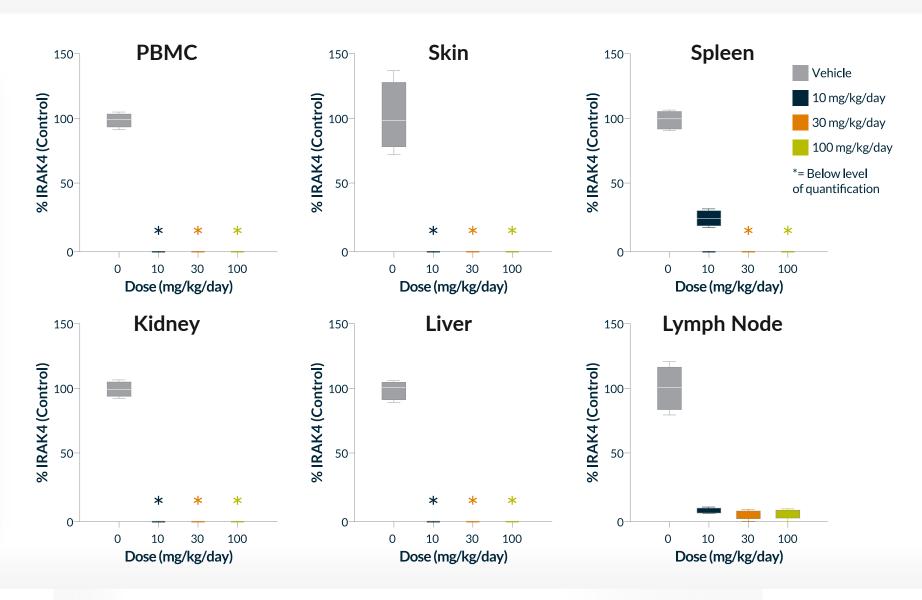
## Dog Multiple Ascending Dose (MAD) IRAK4 Knockdown at Day 7



\* = Below Limit of Quantitation

# KT-474: Close to Complete IRAK4 Degradation and Well Tolerated in Preclinical Non-rodent Model

- Orally-administered KT-474 evaluated in a 14-day non-GLP tox and PKPD study in rodent and nonrodents (shown).
- Almost complete knockdown demonstrated across multiple tissues at multiple doses
- Compound well-tolerated at all doses up to 600 mg/kg for rodents and 100 mg/kg for nonrodents



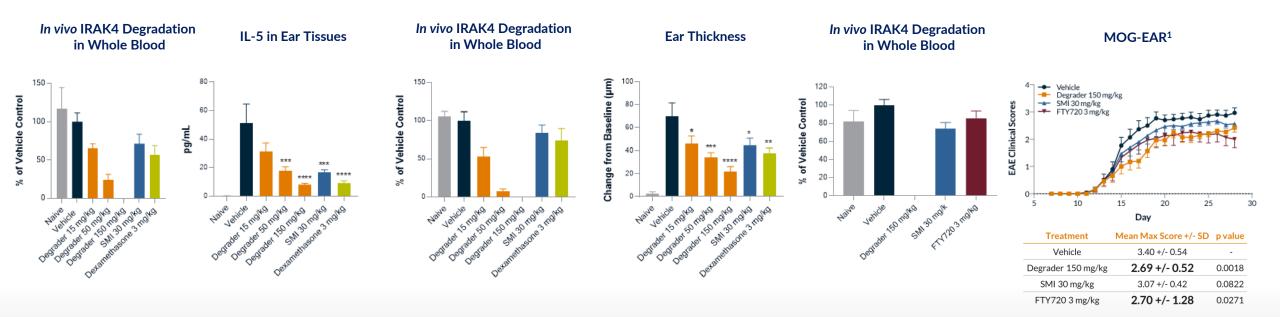
# KT-474 is Superior to IRAK4 Kinase Inhibitors Across Multiple Preclinical Immune-inflammatory *In Vivo* Models

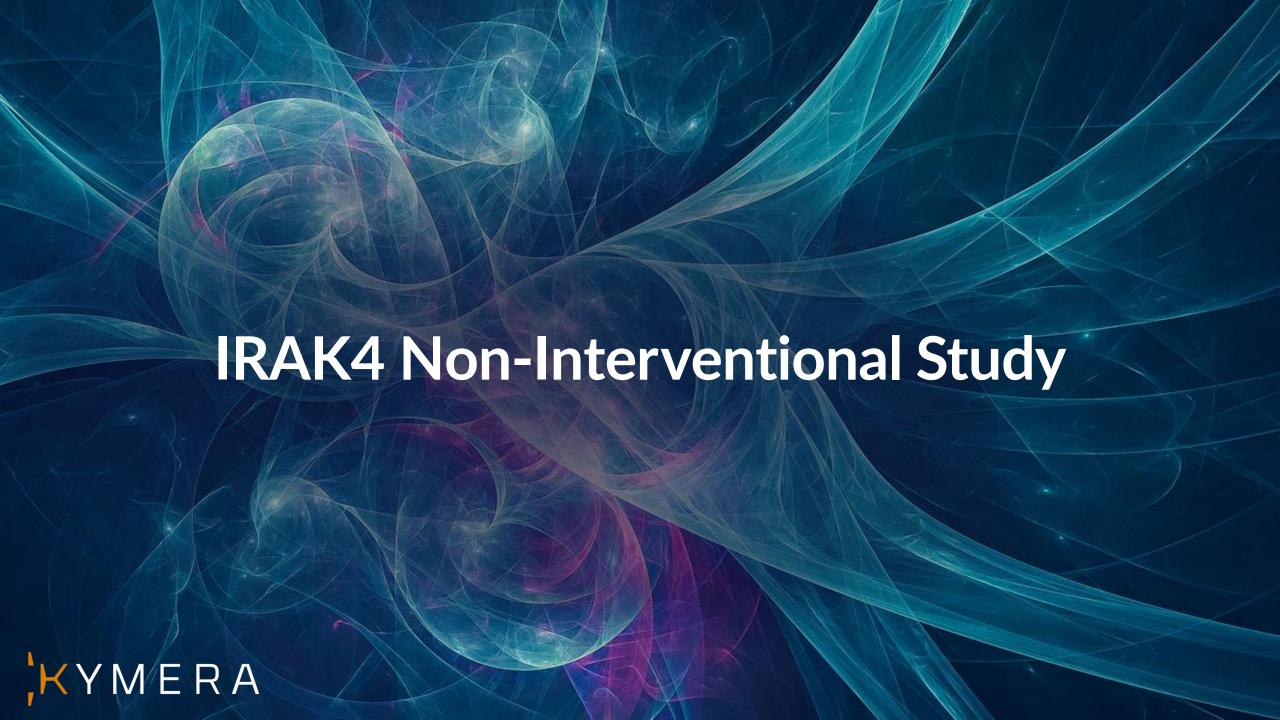
- KT-474's efficacy and superiority to IRAK4 small molecule inhibitors in models of IL-33, IL-36 and Th17-mediated inflammation
- In IL-33 and IL-36 models, KT-474 dose-dependently reduced IRAK4 levels in blood cells and inhibited skin inflammation and/or systemic as well as local cytokine production to the same extent as a potent corticosteroid (dexamethasone) and more potently than an IRAK4 small molecule inhibitor
- In a mouse model of Th17-mediated multiple sclerosis, KT-474 was superior to IRAK4 kinase inhibition and similar to FDA-approved fingolimod (FTY720) in significantly reducing clinical disease scores

rmIL-33 Intradermal Challenge Model

rhIL-36αβγ Intradermal Challenge Model

Th17-mediated Multiple Sclerosis Model





## Non-interventional Study in HS and AD Patients

Designed to characterize IRAK4 expression and its relationship to inflammatory biomarkers

### **Study Design**

#### 30 HS: 9 mild, 10 moderate, 11 severe **Patients Enrolled** 10 AD: 8 mild. 1 moderate. 1 severe Age 18 or older Active Hidradenitis Suppurativa (HS) or Atopic Dermatitis (AD) Inclusion Criteria Mild, moderate, and severe HS (IHS4 score) or AD (EASI score) Patients currently on a biologic or other immunosuppressive treatment for HS or AD Use of biologic treatment for HS or AD within 3 months or 5 half-**Exclusion Criteria** lives, whichever is longer Use of non-biologic immunosuppressive treatment in last 4 weeks Targeted MS of IRAK4 in skin biopsies IRAK4 immunofluorescence in skin biopsies Proinflammatory gene transcripts in skin biopsies **Biomarker Endpoints** Flow cytometry for IRAK4 in ex vivo treated whole blood Cytokines from ex vivo treated whole blood Plasma cytokines and acute phase reactants Interim data on IRAK4 expression in HS skin and blood presented in October 2020 at SHSA Meeting **Reporting Status** Updated data presented in May 2021 at SID Meeting on full HS skin dataset for IRAK4 protein and proinflammatory gene transcripts as well as healthy skin and monocyte controls

## Non-interventional Study Methods

HS Skin Biopsies (N=30)

Lesion (L), Peri-lesion (PL), Non-lesion (NL)



#### IRAK4

Immunofluorescence (IF)
Localization/ Semi-quant

- 1. Expression in L vs PL vs NL
- 2. Expression by disease severity
- 3. Expression in Epidermis vs Dermis



#### IRAK4

Mass Spectrometry (MS)
Whole Tissue/Quantitative

- 1. Expression in L vs PL vs NL
- 2. Expression by disease severity
- NanoString
  Gene Expression Profiling (GEP)
- 1. Significantly elevated genes in L vs NL
- Spearman correlation of elevated genes with IRAK4 protein levels by MS and IF

### **Control Methods**

Healthy Subject Skin Biopsies (N=10)



#### IRAK4 Immunofluorescence (IF)

- 1. Expression in Healthy vs HS
- Expression in Epidermis vs Dermis





#### IRAK4 Mass Spectrometry (MS)

- 1. Expression in Healthy vs HS
- Significantly elevated genes in HS vs Healthy
   Spearman correlation of elevated genes with
- Spearman correlation of elevated genes will IRAK4 protein levels by MS and IF

#### Ex-vivo R848-Stimulated Monocyte Methods

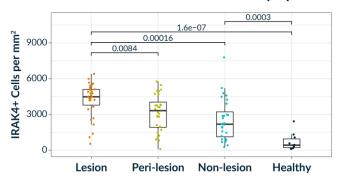
- Mechanistic study designed to evaluate impact of IRAK4 degradation on response of healthy monocytes to TLR7/8
  agonist R848
- Monocytes isolated from blood of healthy donors (N=3), treated overnight with 500nM of IRAK4 degrader KT-474, and then stimulated with R848
- 3. For RNA-seq, cells were collected at 2 hours following stimulation
- 4. Analysis of KT-474 effect on R848 upregulation of subset of genes overexpressed in HS skin lesions that correlate with IRAK4 protein levels

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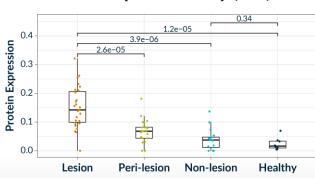
# IRAK4 Protein is Overexpressed in HS Skin Compared to Skin from Healthy Subjects

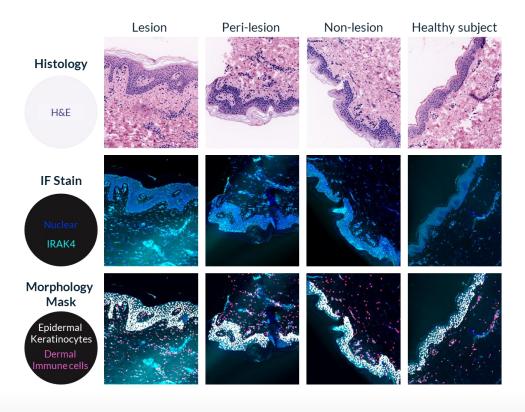
- IRAK4 protein levels overexpressed in HS patient skin lesions
- Concordance between IF and MS
- IRAK4 expression is upregulated in dermis and epidermis of HS patients relative to healthy subject skin
- Higher overall IRAK4 expression in HS lesions and peri-lesion skin was due primarily to an increase in the dermal immune cell infiltrate

#### Immunofluorescence (IF)

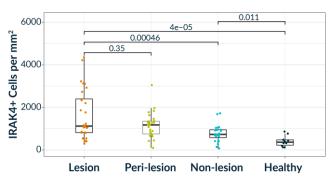


#### Mass Spectrometry (MS)

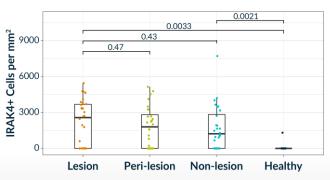




#### **Dermal Immune Cells**

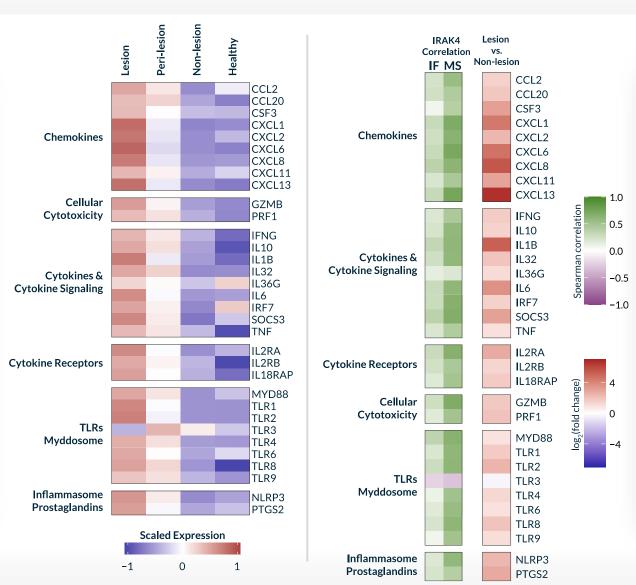


#### **Epidermal Keratinocytes**



# Multiple Proinflammatory Transcripts Are Upregulated and Correlate with IRAK4 Protein Levels in HS Skin Lesions

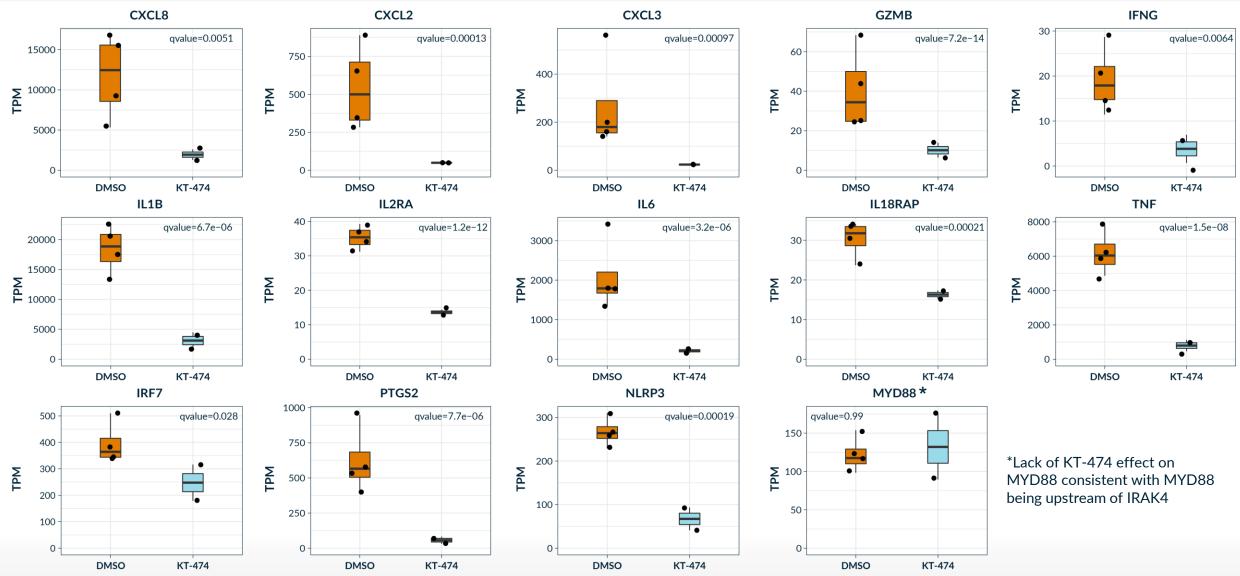
- Gene expression profiling showed upregulation of multiple mediators of inflammation in HS skin lesions
- Inflammatory gene transcripts significantly upregulated in HS skin lesions included genes involved in TLR/myddosome signaling, inflammasome activity, prostaglandin generation, Th1 and Th17 inflammation, and monocyte/neutrophil migration and activation



- Almost all of these same inflammatory gene transcripts upregulated in HS skin lesions positively correlated with IRAK4 protein expression by both IF and MS, as did multiple other proinflammatory genes
- TLR3, which is the only TLR that does not signal through IRAK4, was not upregulated in HS lesions and negatively correlated with IRAK4

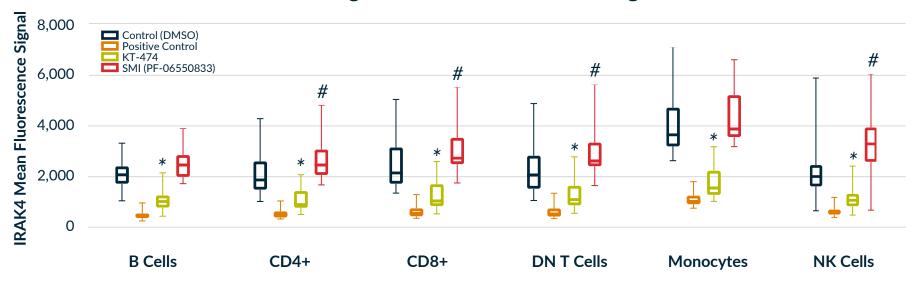
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## IRAK4 Degrader KT-474 Inhibits TLR-Mediated Induction of HS-Overexpressed Proinflammatory Transcripts in Healthy Monocytes



# IRAK4 Degrader Downregulates IRAK4 Expression Across All PBMC Subsets

### IRAK4 Levels Following Treatment with IRAK4 Degrader or Kinase Inhibitor



N=30 patients, One-way ANOVA\* KT-474 vs DMSO Control p≤0.0001, #SMI (PF-06550833) vs DMSO Control p≤0.02 Positive Control: cells treated with IRAK4 blocking antibody prior to IRAK4 staining

## KEY TAKEAWAYS

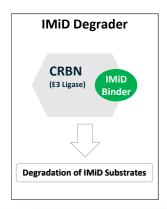
- Ex vivo incubation of HS blood with KT-474 reduced IRAK4 to a level approaching the lower limits of detection across all PBMC subsets, irrespective of baseline expression intensity, whereas an IRAK4 kinase inhibitor increased IRAK4 levels in T and NK cells
- Treatment with an IRAK4 kinase inhibitor led to an increase in IRAK4 levels of up to 2.6-fold in T and NK cells

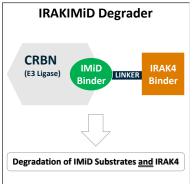
## Non-interventional Study Conclusions

- IRAK4 is overexpressed in HS skin relative to healthy subjects due to increase in number of IRAK4+ dermal immune cells and epidermal keratinocytes
  - Higher expression in active HS skin Lesions compared to peri-lesion and/or non-lesion skin associated with increase in infiltrating IRAK4+ dermal immune cells
  - Higher expression in dermis and epidermis of non-lesion skin compared to skin of healthy subjects raises possibility that IRAK4
    overexpression may predispose to inflammatory lesion formation in HS
- Gene expression profiling shows upregulation of multiple mediators of inflammation in HS skin lesions that correlates with IRAK4 protein overexpression
  - Includes genes involved in TLR/myddosome signaling, inflammasome activity, prostaglandin generation, Th1 and Th17 inflammation, and monocyte/neutrophil migration and activation, thereby linking IRAK4 to the pleiotropic inflammation in HS
  - Neither proinflammatory gene expression nor IRAK4 protein expression correlated with disease severity, suggesting common pathophysiology underlying inflammation in active lesions irrespective of disease stage
- IRAK4 degrader KT-474 inhibits TLR-stimulated upregulation of HS-overexpressed inflammatory genes in monocytes from healthy subjects
  - Provides further evidence for role of IRAK4 in overexpression of these mediators of inflammation in HS skin lesions and rationale for targeting IRAK4 with KT-474 for the treatment of patients with HS
  - Phase 1 trial of KT-474 in healthy volunteers and patients with HS or AD is ongoing and includes pre- and post-treatment skin biopsies and blood sampling to assess the effect of KT-474 on the expression of IRAK4 and associated biomarkers of inflammation

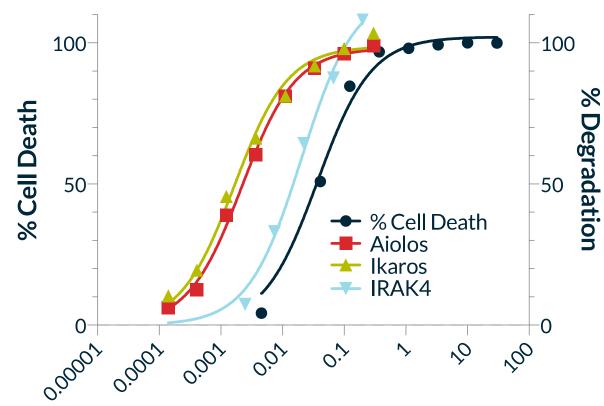


## Degradation of IRAK4, Ikaros and Aiolos Correlates to Cell Killing





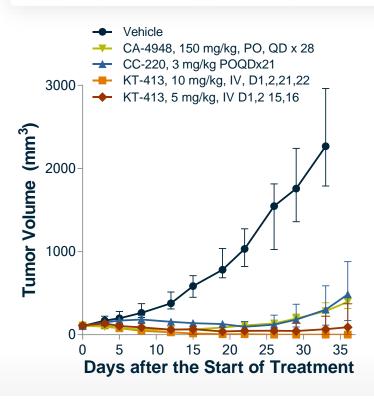
- IRAK4, Ikaros and Aiolos degradation measured in MYD-88-mutated OCI-Ly10 cells after 24 h of drug exposure
  - IRAK4 DC<sub>50</sub> = 4 nM
  - Ikaros/Aiolos DC<sub>50</sub> = 2/2 nM
- Degradation correlates with cell killing effects
  - $IC_{50} = 31 \text{ nM}$



**IRAKIMiD** Degrader Concentration (μM)

# KT-413 is Highly Active on Intermittent Dosing Regimens and Superior to Clinically Active CA-4948 and CC-220

- In the OCI-Ly10 MYD88<sup>MT</sup> xenograft model, intermittent dosing of KT-413 induced strong antitumor activity, including complete or partial regressions
  - Superior activity compared to the clinically active IRAK4-inhibitor CA-4948 or the latest generation IMiD CC-220 alone
- Minimally active dose of 3 mg/kg D1,2 showed extended tumor exposure and strong degradation of both IRAK4 and IMiD substrates that was maintained for at least 72h



Drug	CR	PR	SD	PD
CA-4948	0	0	3	4
CC-220	0	1	4	2
<b>KT-413</b> (5 mpk)	2	2	3	-
KT-413 (10 mpk)	5	2	-	-
<b>an</b> 40 0:		501		

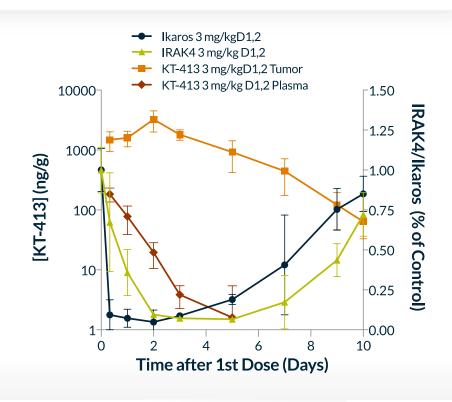


PR: >50% regression from baseline

**SD**: <50% regression to 20% increase in

tumor volume

PD: >20% tumor growth on D26



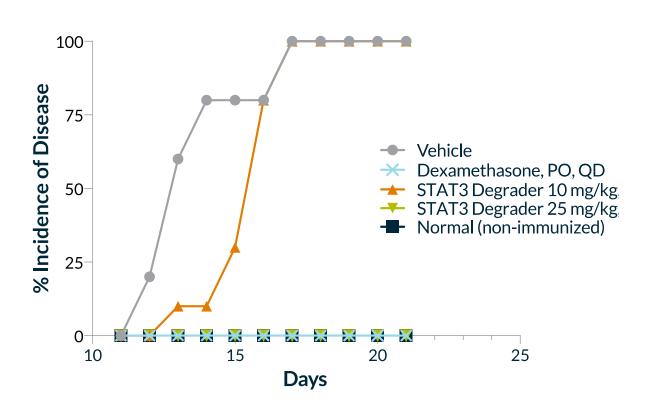


## STAT3 Degrader Active in T Cell Activation Preclinical In Vivo Model

Multiple Sclerosis Model



- A preclinical model of experimental autoimmune encephalomyelitis (T cell activation) was used to evaluate STAT3 degradation
- Kymera STAT3 Degrader completely prevented onset of the disease in mice



# STAT3 Degradation and Downstream Effects Across Tumor Cells



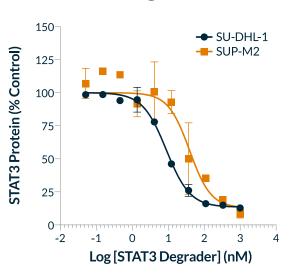
**CANCER** 

toimmune

I/I FIBROSIS

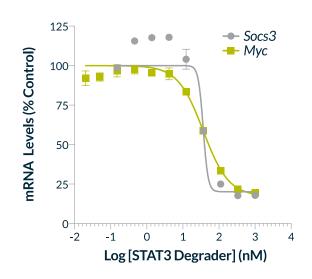
**Fibrosis** 

### **STAT3** Degradation



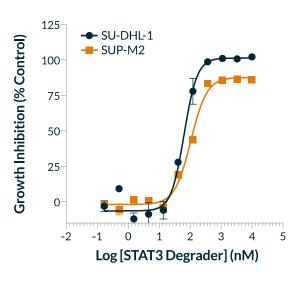
- STAT3 protein levels measured in two STAT3-dependent cell lines
- STAT3 degrader decreased levels of STAT3 by greater than 95% with DC<sub>50</sub> of 15nM and 86 nM, respectively

### **Gene Transcription Effects**



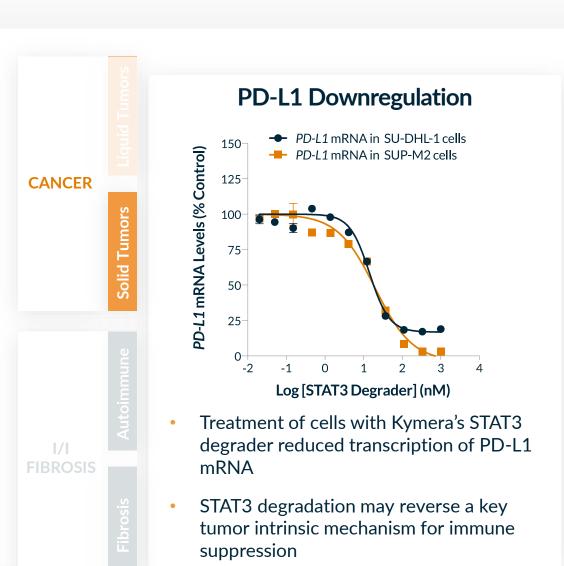
- Expression of STAT3 downstream target genes in SU-DHL-1 cells measured
- Treatment with STAT3 degrader for 24 hours led to significant downregulation of STAT3 target genes, including SOCS3 (IC<sub>50</sub> = 36 nM) and MYC (IC<sub>50</sub> = 37 nM)

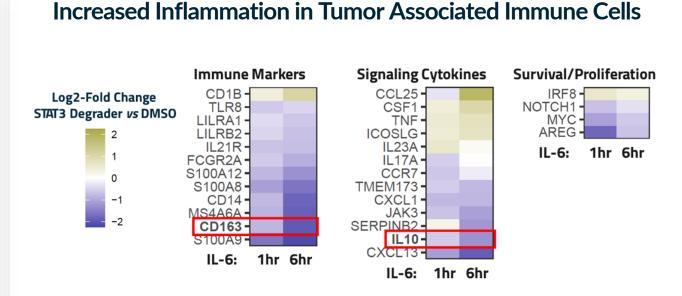
### **Cell Viability Effects**



- Impact of STAT3 degradation on viability of lymphoma cells measured
- Inhibited growth of SU-DHL-1 and SUP-M2 cells with IC<sub>50</sub> values of 64 and 105 nM, respectively

## **Effects of STAT3 Degradation on Tumor Microenvironment**





- STAT3 degrader blocked IL-6-induced increases in gene expression in hPBMC
- Data suggest degradation of STAT3 reverses expression of genes contributing to immune suppression

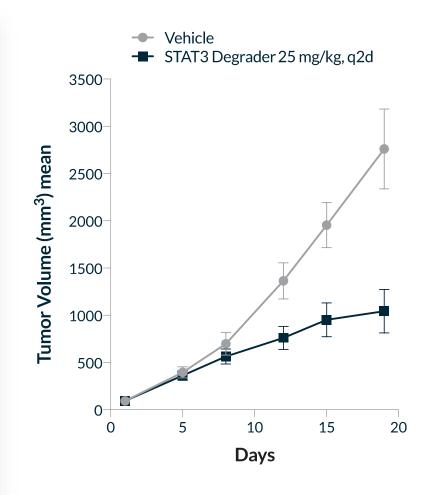
# STAT3 Degrader *In Vivo* Active in Preclinical PD-1/L-1 Refractory Solid Tumor Model



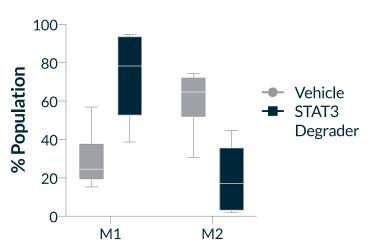
lid Tumors

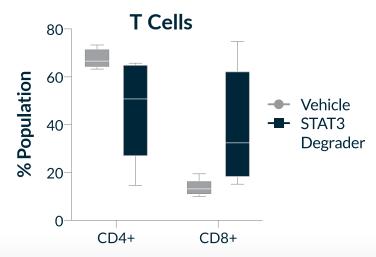
I/I IBROSIS  Kymera's STAT3 degrader assessed in colorectal cancers (CT-26) known to be refractory to approved immunotherapies

- STAT3 degrader significantly reduced tumor growth when administered every two days
- Analysis of tumors showed synergistic modulation of immune cells (M2/M1 and T cells) within the tumor microenvironment to favor an anti-tumor response



### Macrophages (M1/M2)





# **THANK YOU**



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