



# Safety, PK and PD from Single Ascending Dose Portion of KT-474 Phase 1 Trial in Healthy Volunteers

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



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

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

= Oncology = Immunology-Inflammation

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



Role

#### **Development Opportunities for IRAK4 Degrader in Inflammation** Potential for Broad Activity Across Th1-Th17 and Th2 Diseases



- **Hidradenitis Suppurativa**
- **Rheumatoid Arthritis**
- Systemic Lupus Erythematosus
- Inflammatory Bowel Disease
- Gout
- **Psoriasis**
- Behcet's Disease

- Th2/Eosinophils
- **Atopic Dermatitis**
- Asthma
- COPD
- **CRSwNP**

Limitations of **Current Therapies** 

#### **Anti-Cytokine/Cytokine Receptor** Antibodies

- Target only 1-2 cytokines
- Require injection

#### **Small Molecule Inhibitors**

- Limited pathway blockade (IRAK4 SMI)
- Safety issues (JAK family)

### IRAK4 Protein Expression in Autoimmune Diseases: Upregulation in Skin of HS Patients Compared to Healthy Subjects

#### IRAK4 protein levels overexpressed in HS patient skin lesions

IRAK4 expression is upregulated in dermis and epidermis of HS patients relative to healthy subject skin



Immunofluorescence (IF)

**Dermal Immune Cells** 

Alavi et al., Society for Investigative Dermatology Annual Meeting, 2021

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





- Upregulation of TLRs, IL-1β/IL-36, MYD88, and multiple additional drivers of inflammation that all correlate with IRAK4 protein expression
- Highlights potential of IRAK4 targeting to treat diseases like HS characterized by marked pleiotropic inflammation

Alavi et al., Society for Investigative Dermatology Annual Meeting, 2021

#### KT-474: Potent and Specific IRAK4 Degradation with Impact on Cytokines 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-1β 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                        |

### KT-474 is Superior to IRAK4 Small Molecule Inhibitor (SMI) Across Multiple Preclinical Immune-inflammatory *In Vivo* Models



IRAK4 knockdown of ≥85% in whole blood achieved anti-inflammatory effect comparable to potent corticosteroids or approved standard of care drugs in these models as well as in models of TLR4 (MSU-Gout) or TLR7/8 (Imiquimod-Psoriasis) activation that was superior to IRAK4 small molecule inhibitor

#### KT-474 Multi-dosing (Daily x 7 Days) Maximizes IRAK4 Degradation at Lower Doses in Dogs



### KT-474: Near Complete Systemic IRAK4 Degradation is Well Tolerated in Preclinical Non-rodent Model

 Orally-administered KT-474 evaluated in a 14day non-GLP tox and PKPD study in rodent and non-rodents (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 Phase 1 Trial Design**

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



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### SAD Study: Favorable PK after Single Oral Dosing



- Consistent PK after single dosing: Cmax achieved between 7-24 hours, half-life = 25-40 hours
- Dose dependent exposure increases, plateauing after the 1000 mg dose
- Low to moderate inter-subject variability in exposure

### KT-474 Achieved Deep and Dose-Dependent IRAK4 Degradation after Single Oral Doses that Lasted for at Least 6 Days



- Detected by Mass Spectrometry in circulating PBMC
- IRAK4 levels nadired at 48-72 hours (Day 3-4)
- IRAK4 reduction lasted for at least 6 days post-dose in all dose groups
- SAD 5 through 7 approached or exceeded Lower Limit of Quantitation (LLOQ)

### KT-474 Achieved >95% IRAK4 Degradation After Single Dose



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

|         | Ν  | Mean IRAK4<br>Change | Median<br>IRAK4<br>Change | p value |
|---------|----|----------------------|---------------------------|---------|
| Placebo | 13 | -1%                  | -2%                       |         |
| 25 mg   | 6  | -26%                 | -39%                      | 0.1     |
| 75 mg   | 6  | -73%                 | -75%                      | <0.0001 |
| 150 mg  | 6  | -81%                 | -82%                      | <0.0001 |
| 300 mg  | 6  | -84%                 | -89%                      | <0.0001 |
| 600 mg  | 7  | -96%                 | -96%                      | <0.0001 |
| 1000 mg | 5  | -93%                 | -94%                      | <0.0001 |
| 1600 mg | 6  | -95%                 | -95%                      | <0.0001 |

\* p-values relative to placebo

#### Robust IRAK4 Degradation Observed in Lymphocytes and Monocytes: Flow Cytometry Results at SAD 7

#### 0 - Lymphocytes 2500 Monocytes PBMC (Mean (±SE) Percent IRAK4 Change from Baseline -20 Absolute IRAK4 Levels Mean (SE) [MFI] 2000 -40 1500 -60 1000 -80 - Lymphocytes LLOQ: Monos 500 Honocytes LLOQ: PBMC/Lymphs -100 2 14 2 3 7 1 3 14 Λ 1 4 Day Day

Absolute IRAK4 Levels

Mean % Reduction of IRAK4

# Ex Vivo Cytokine Stimulation: Methodology in KT-474 Phase 1 Trial



#### Up to 97% Maximum Ex Vivo Cytokine Inhibition 24-48h Post-Dose Effect Against LPS (TLR4)- or R848 (TLR7/8)-Stimulated Cytokine Induction in Whole Blood



\*Mean IRAK4 degradation in PBMC at 24-48h

<sup>3</sup>Ex vivo cytokine assay was performed at 48h nadir (maximal degradation) only in cohorts 6-7

## **Blinded SAD Safety Summary**

- No SAEs
- Treatment-related AEs observed only in SAD 5 and SAD 6; all were self-limiting and resolved
  - No treatment-related AEs in SAD 7
- No significant ECG changes

#### Possibly or Probably Treatment-Related AEs\* (>1 Subject)

| AE Term  | <b>#AEs</b><br>(subjects) | Severity      | Cohort       |
|----------|---------------------------|---------------|--------------|
| Headache | 4                         | Moderate (x2) | SAD 5, SAD 6 |
|          | (3)                       | Mild (x2)     | SAD 5        |
| Nausea   | 2<br>(2)                  | Mild (x2)     | SAD 6        |

\* per investigator assessment

## **SAD Summary**

- SAD dose escalation completed
- Single doses resulting in sustained pharmacodynamic effect were well-tolerated, with mildmoderate self-limiting headache and GI symptoms the most common treatment-related AEs seen at doses ≥ 600 mg
- Robust, dose-dependent IRAK4 reduction in PBMC maintained for at least 6 days, with mean 93-96% KD (approaching or exceeding lower limit of quantification) at 48 hours plateauing after 600 mg; expectation during multi-dosing is to reach these levels at much lower dose
- Proof-of-biology established with demonstration of broad and potent ex vivo cytokine inhibition in whole blood
  - Up to 79-97% inhibition of R848 or LPS induction of 8 different pro-inflammatory cytokines, including: IFN-γ (97%), IL-12 (93%), IL-1β (92%), IL-10 (89%), IL-6 (88%), TNF-α (88%), IL-8 (81%) and IL-17 (79%)
  - Maximum cytokine effects seen with KT-474 exposures corresponding to ≥85% degradation in PBMC

KT-474 SAD Phase 1 results demonstrate degrader proof-of-mechanism and proof-of-biology, first time for TPD in a placebo-controlled study

# **KT-474 Phase 1 Trial: Next Steps**



- Healthy volunteer MAD enrollment ongoing
  - Anticipate maximizing IRAK4 knockdown and impact on downstream biomarkers at substantially lower doses with daily dosing based on PK and PD and as shown in preclinical models
  - Plan to present safety, PK, and PD data before year end
  - PD includes: IRAK4 levels in blood and skin, *ex vivo* cytokine stimulation, plasma hsCRP
  - On track to complete by year-end
- Cohort of AD and HS patients (up to 20) to start enrolling in Q1'22
  - Data readout planned for mid-year