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*Every Second Counts!™*

# Corporate Presentation

*June 2020*

# Forward Looking Statements

This presentation (together with any other statements or information that we may make in connection herewith) contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 with respect to Kiniksa Pharmaceuticals, Ltd. (and its consolidated subsidiaries, collectively, unless context otherwise requires, "Kiniksa," "we," "us" or "our"). In some cases, you can identify forward looking statements by terms such as "may," "will," "should," "expect," "plan," "anticipate," "could," "intend," "goal," "design," "target," "project," "contemplate," "believe," "estimate," "predict," "potential" or "continue" or the negative of these terms or other similar expressions, although not all forward-looking statements contain these identifying words. All statements contained in this presentation that do not relate to matters of historical fact should be considered forward-looking statements, including without limitation, statements regarding our strategy; potential acquisitions and collaborations; potential value drivers; potential indications; potential market opportunities and competitive position; on going, planned and potential clinical trials and other studies; timing and potential impact of clinical data; regulatory and other submissions, applications and approvals; commercial strategy and pre-commercial activities; expected run rate for our cash, cash equivalents and short-term investments; expected funding of our operating plan; and capital allocation.

These statements involve known and unknown risks, uncertainties, and other important factors that may cause our actual results, performance or achievements to be materially different from those expressed or implied by the forward-looking statements, including without limitation potential delays or difficulties with our clinical trials; potential inability to demonstrate safety or efficacy or otherwise producing negative, inconclusive or uncompetitive results; potential for changes in final data from preliminary or interim data; potential inability to replicate in later clinical trials positive results from earlier trials and studies; our reliance on third parties for manufacturing and conducting clinical trials, research and other studies; potential changes in our strategy, operating plan and funding requirements; drug substance and/or drug product shortages; substantial new or existing competition; potential impact of the COVID-19 pandemic, and measures taken in response to the pandemic, on our business and operations as well as the business and operations of our manufacturers, CROs upon whom we rely to conduct our clinical trials, and other third parties with whom we conduct business or otherwise engage, including the FDA and other regulatory authorities; and our ability to attract and retain qualified personnel. These and the important factors discussed under the caption "Risk Factors" in our Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission (the "SEC") on May 4, 2020 and other filings subsequently filed with the SEC. These forward-looking statements reflect various assumptions of Kiniksa's management that may or may not prove to be correct. No forward-looking statement is a guarantee of future results, performance, or achievements, and one should avoid placing undue reliance on such statements. Except as otherwise indicated, this presentation speaks as of the date of this presentation. We undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise.

This presentation also contains estimates, projections, and/or other information regarding our industry, our business and the markets for certain of our product candidates, including data regarding the estimated size of those markets, and the incidence and prevalence of certain medical conditions. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, clinical trials, studies and similar data prepared by market research firms and other third parties, from industry, medical and general publications, and from government data and similar sources. Information that is based on estimates, forecasts, projections, market research, or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information.

# A Clinical-Stage Pipeline of Immune-Modulating Product Candidates

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- Focused on modulating different parts of the innate and adaptive immune system
- Product candidates based on validated mechanisms and/or strong biologic rationale
- Target underserved conditions and offer potential differentiation
- Allocate capital across portfolio relative to opportunity

# Product Candidates and Clinical Status

| Indication | Program & Target | Preclinical | Phase 1 | Phase 2 | Phase 3 | Status |
|---|---|---|---|---|---|---|
| Recurrent Pericarditis | **Rilonacept**[1] IL-1α & IL-1β | | | | | Pivotal Phase 3 Data Announced in June 2020 |
| Giant Cell Arteritis | **Mavrilimumab** GM-CSFRα | | | | | Phase 2 Data Expected in Q4 2020 |
| COVID-19 Pneumonia & Hyperinflammation | **Mavrilimumab** GM-CSFRα | | | | | Phase 2 Initiation Expected in Q3 2020 |
| CAR T Induced Cytokine Release Syndrome[2] | **Mavrilimumab** GM-CSFRα | | | | | Phase 2 Initiation Expected in 2H 2020 |
| Prurigo Nodularis | **Vixarelimab** OSMRβ | | | | | Phase 2b Initiation Expected in Q4 2020 |
| Severe Autoimmune Diseases | **KPL-404** CD40 | | | | | Phase 1 Data Expected in Q4 2020 |

1) Rilonacept (ARCALYST®) is approved and marketed for cryopyrin-associated periodic syndrome, in the United States by Regeneron Pharmaceuticals, Inc.; 2) Clinical collaboration with Kite, a Gilead Company, in relapsed or refractory large B-cell lymphoma; IL-1α = interleukin-1α ; IL-1β = interleukin 1β; GM-CSFRα = granulocyte macrophage colony stimulating factor receptor alpha; OSMRβ = oncostatin M receptor beta



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# Rilonacept

| | |
|---|---|
| **Indication[1]** | **Recurrent Pericarditis:** Painful and debilitating autoinflammatory cardiovascular disease |
| **Mechanism of Action[2]** | IL-1α and IL-1β cytokine trap |
| **Scientific Rationale[2]** | IL-1α and IL-1β are cytokines shown to play key role in inflammatory diseases |
| **Prevalence[3]** | ~40k prevalent in U.S.; addressable opportunity of ~14k in U.S. |
| **Competition[4]** | No FDA-approved therapies for recurrent pericarditis |
| **Status** | Breakthrough Therapy designation granted in December 2019; pivotal Phase 3 data reported in June 2020 |
| **Economics** | Regulatory milestones; 50/50 profit split upon commercialization excluding certain expenses |
| **Rights** | BLA transfers to Kiniksa after receipt of positive Phase 3 clinical data and an acceptable safety profile; upon approval Kiniksa has the rights to recurrent pericarditis worldwide (excluding MENA) |



1) Rilonacept (ARCALYST®) is approved and marketed for cryopyrin-associated periodic syndrome (CAPS), in the United States by Regeneron Pharmaceuticals, Inc.; 2) Brucato et al. JAMA. 2016, 316 (18): 1906-1912; Arcalyst Prescribing Information; 3) IQVIA PharMetrics Plus Claims Data 1/1/2013-3/31/2018; ClearView Analysis, UptoDate, Trinity Partners, Mayo Clin Proc. 2010 ;85 (6): 572-593; New Diagnostic Criteria for Acute Pericarditis: A Cardiac MRI Perspective, 2015 American College of Cardiology; 4) Drugs@FDA: Arcalyst Prescribing Information, Ilaris Prescribing Information, Kineret Prescribing Information; Kaiser et al. Rheumatol Int (2012) 32:295–299; Theodoropoulou et al. Pediatric Rheumatology 2015, 13(Suppl 1):P155 ; Fleischmann et al, 2017 ACR/ARHP Abstract 1196; Kosloski et al, J of Clin Pharm 2016, 56 (12) 1582-1590; Cohen et al. Arthritis Research & Therapy 2011, 13:R125; Cardiel et al. Arthritis Research & Therapy 2010, 12:R192; Hong et al. Lancet Oncol 2014, 15: 656-666;

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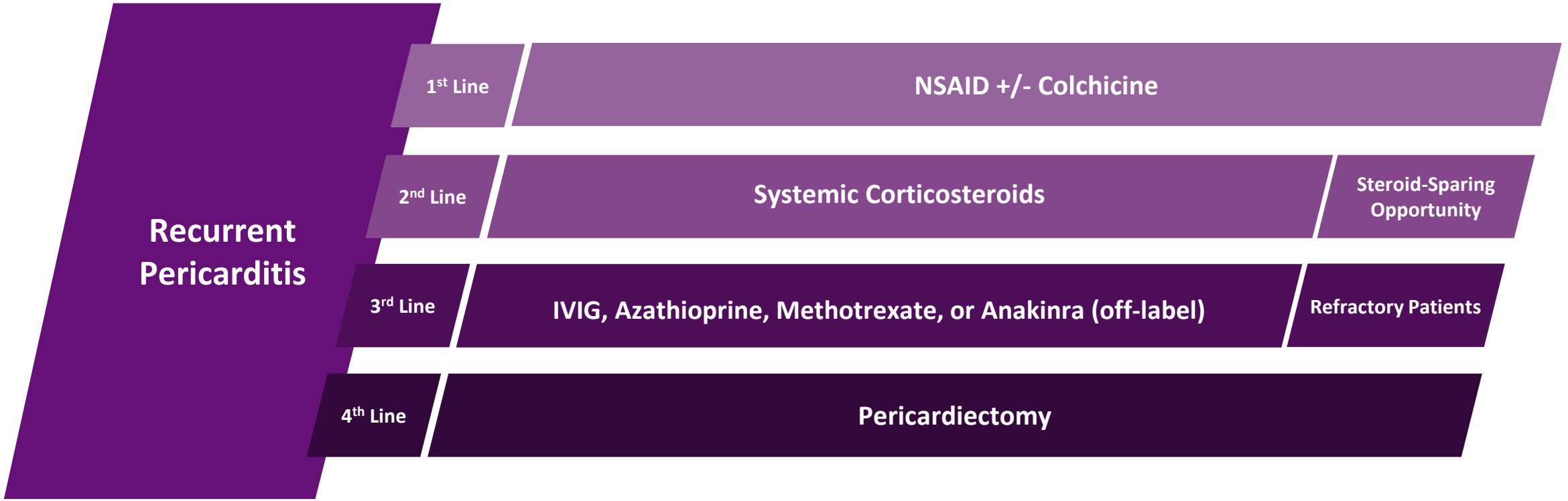
# Recurrent Pericarditis Patients Currently Have Limited Treatment Options

Patients with pericarditis are deemed recurrent after symptom-free period of 4-6 weeks






Sources: 2015 ESC Guidelines for the Diagnosis and Management of Pericardial Diseases. Eur Heart J 2015; Aug 29; Trinity Partners, Kiniksa Analysis

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# Key Areas of Unmet Need in Patients with Recurrent Pericarditis

Recurrent pericarditis episodes: painful, debilitating and disruptive to quality of life


*"The worst thing about pericarditis is its unpredictability and its chronicity. It's a permanent condition, so it has the potential to impact everything…work, exercise, family plans, travel."*

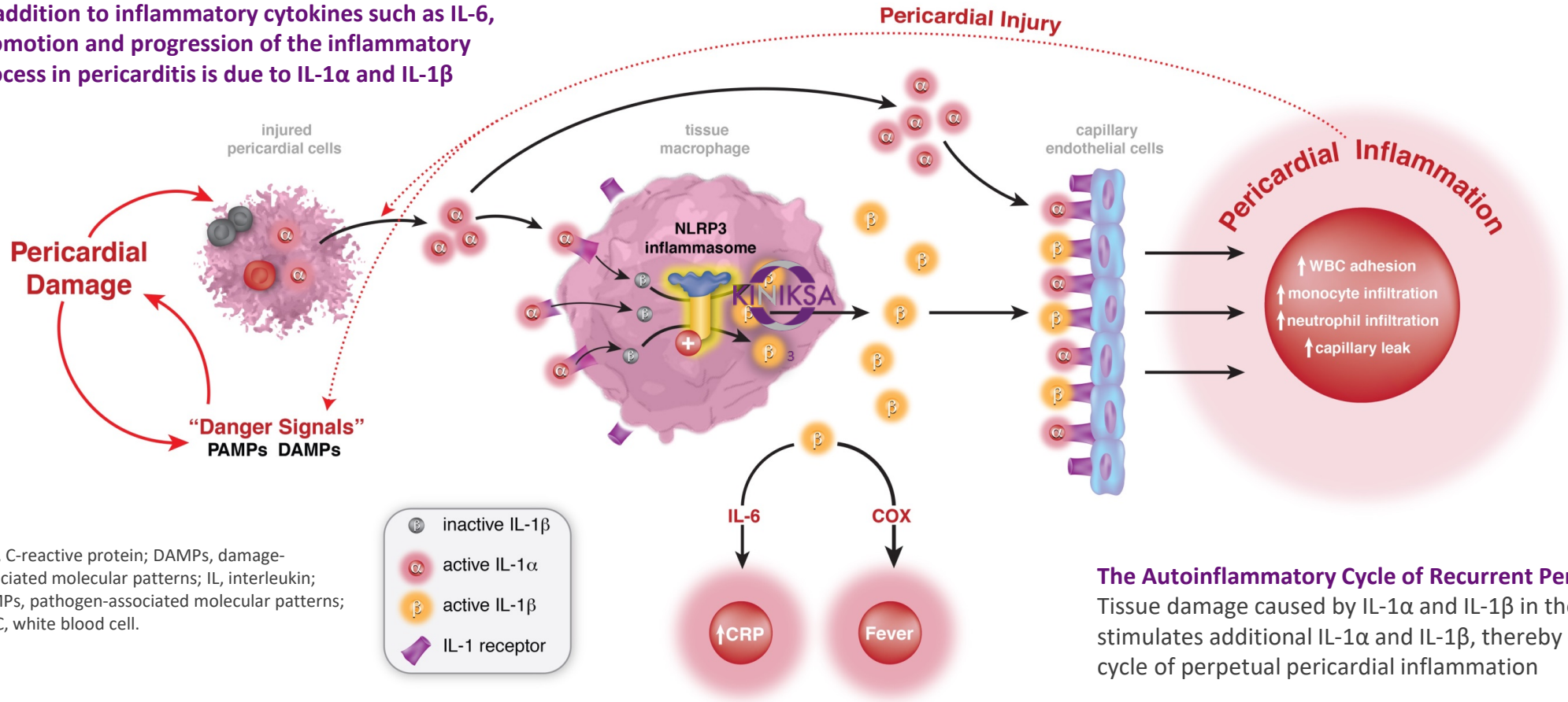
*- Patient quote, 2019*



Source: Kiniksa Pharmaceuticals data on file 2019; 1) Prevention of future episodes while on treatment

# Role of IL-1α and IL-1β in the Autoinflammatory Cycle of Recurrent Pericarditis

**In addition to inflammatory cytokines such as IL-6, promotion and progression of the inflammatory process in pericarditis is due to IL-1α and IL-1β**

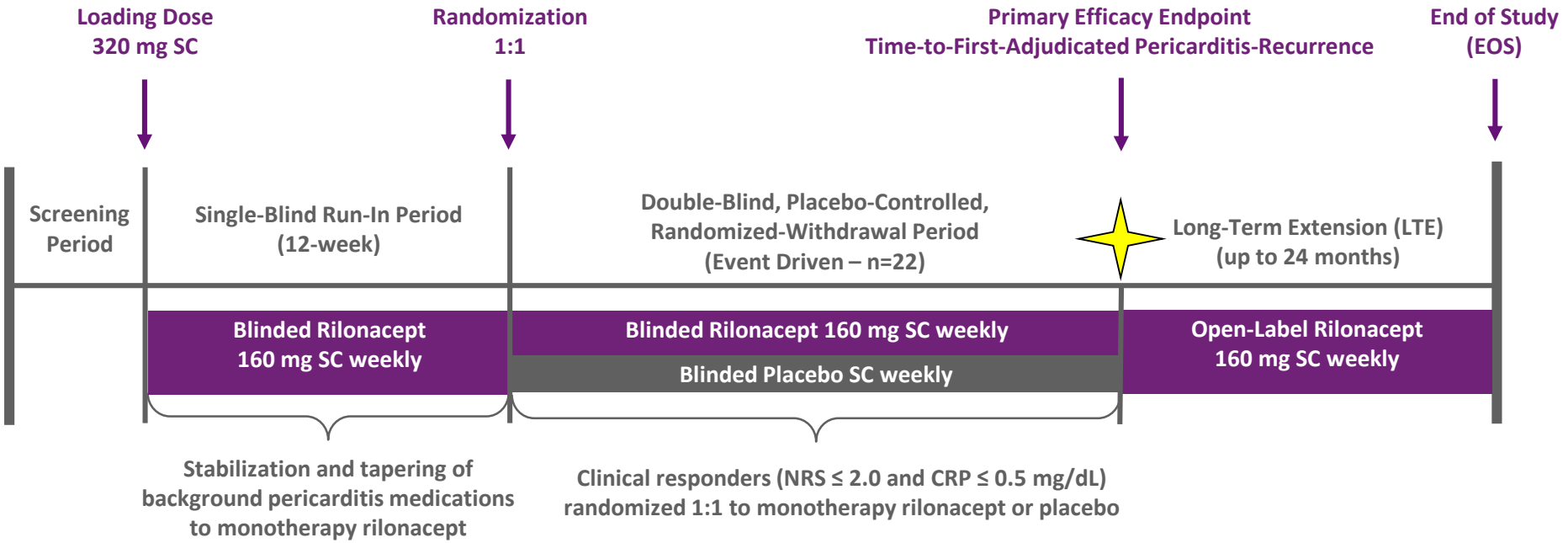



CRP, C-reactive protein; DAMPs, damage-associated molecular patterns; IL, interleukin; PAMPs, pathogen-associated molecular patterns; WBC, white blood cell.

**The Autoinflammatory Cycle of Recurrent Pericarditis:**
Tissue damage caused by IL-1α and IL-1β in the pericardium stimulates additional IL-1α and IL-1β, thereby creating a cycle of perpetual pericardial inflammation


Brucato A, et al. Int Emerg Med 2018 https://doi.org/10.1007/s11739-018-1907-x
Dinarello CA, et al. Nat Rev Drug Discov 2012;11:633-652

# Design of Pivotal Phase 3 Trial of Rilonacept in Recurrent Pericarditis




**Inclusion Criteria:**

- All etiologies except infection and malignancy
- Present at screening with at least a third pericarditis episode, defined as at least 1 day with **NRS pain of ≥ 4** and **CRP value ≥ 1 mg/dL** within the 7-day period prior to first study drug administration
- Concomitant NSAIDs and/or colchicine and/or oral corticosteroid treatment in any combination

**Primary Efficacy Endpoint :**

- Time-to-first-adjudicated pericarditis-recurrence in the RW period

**Major Secondary Efficacy Endpoints (16-weeks):**

- Proportion of subjects who maintained Clinical Response
- Percentage of days with no or minimal pain
- Proportion of subjects with absent or minimal pericarditis symptoms

**CEC Adjudication Criteria:**

- Typical pericarditis pain (≥ 1 pain **NRS recording ≥4**) AND elevated **CRP (≥1.0 mg/dL)**, same day or ≤ 7 days
- Typical pericarditis pain (≥ 1 pain **NRS recording ≥4**) AND abnormal **CRP (>0.5 mg/dL),** same day or ≤ 7 days AND **≥ 1 supportive evidence** of pericarditis
- Typical pericarditis pain (BUT pain **NRS recording ≤ 4**) AND elevated **CRP (≥1.0 mg/dL)**, AND **≥ 1 supportive evidence** of pericarditis

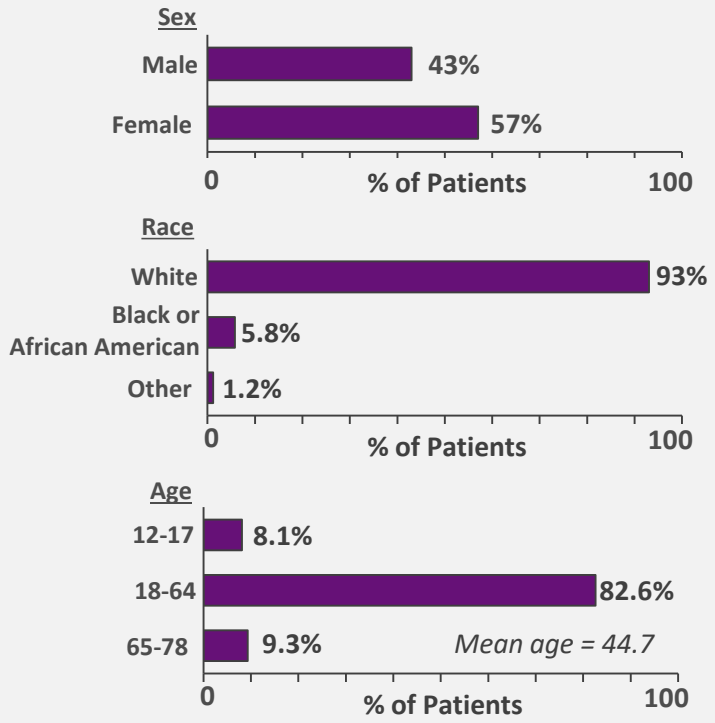


CRP = C-reactive protein; NRS = Numerical Rating Scale

# Baseline Demographics and Clinical Characteristics

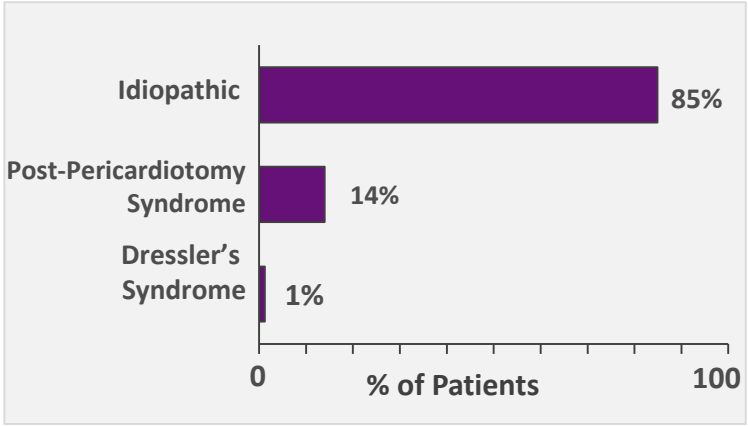
## Pivotal Phase 3 Rilonacept Data

### Baseline Demographics (n=86)

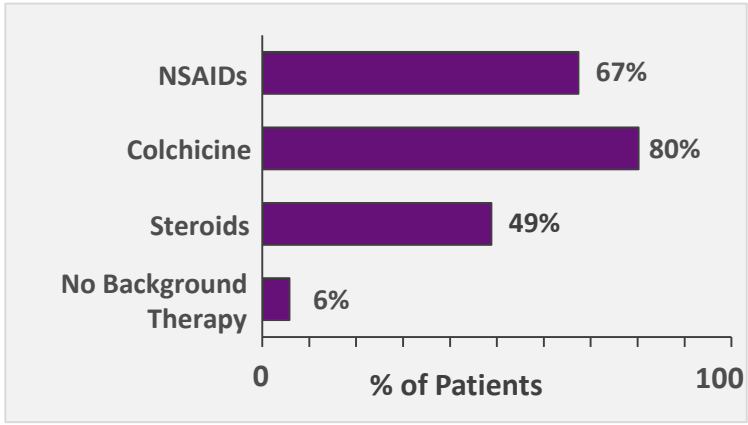



| Total Number of Episodes Including Index and Qualifying Episodes | Run-in Period (n=86) |
|---|---|
| Mean | 4.7 |

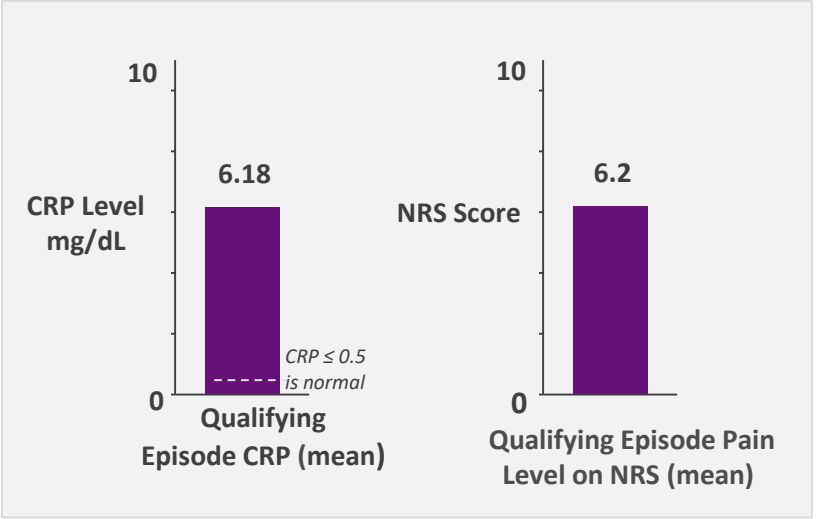
### Prior Pericarditis History at Baseline (n=86)



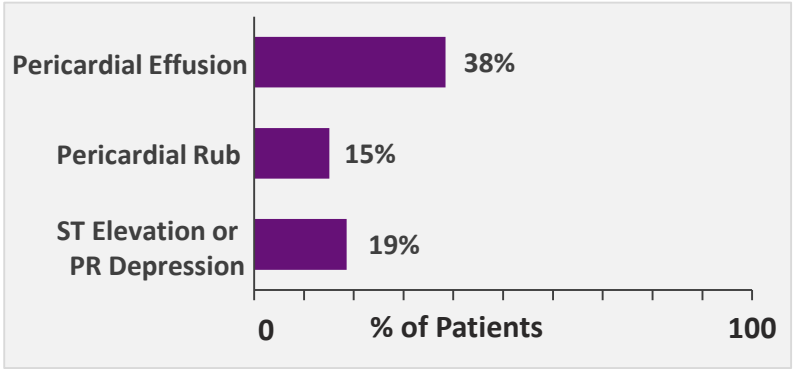

### SoC Received at Qualifying Episode (n=86)




### Qualifying Episode CRP & NRS (n=86)




### Pericarditis Manifestations at Qualifying Episode (n=86)

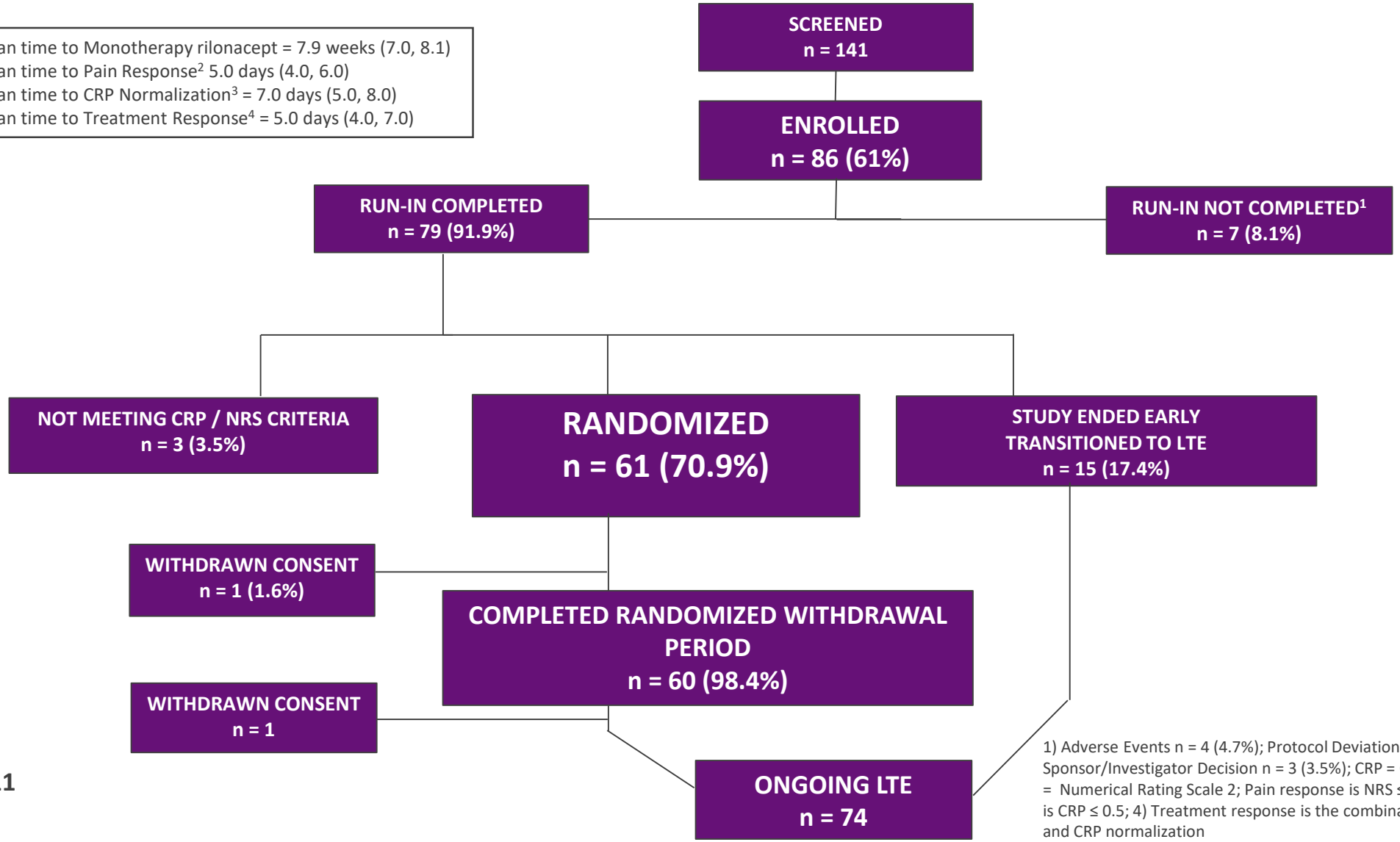



CRP = C-reactive protein; NRS = Numerical Rating Scale

# Subject Disposition

## Pivotal Phase 3 Rilonacept Data

Median time to Monotherapy rilonacept = 7.9 weeks (7.0, 8.1)
Median time to Pain Response[2] 5.0 days (4.0, 6.0)
Median time to CRP Normalization[3] = 7.0 days (5.0, 8.0)
Median time to Treatment Response[4] = 5.0 days (4.0, 7.0)

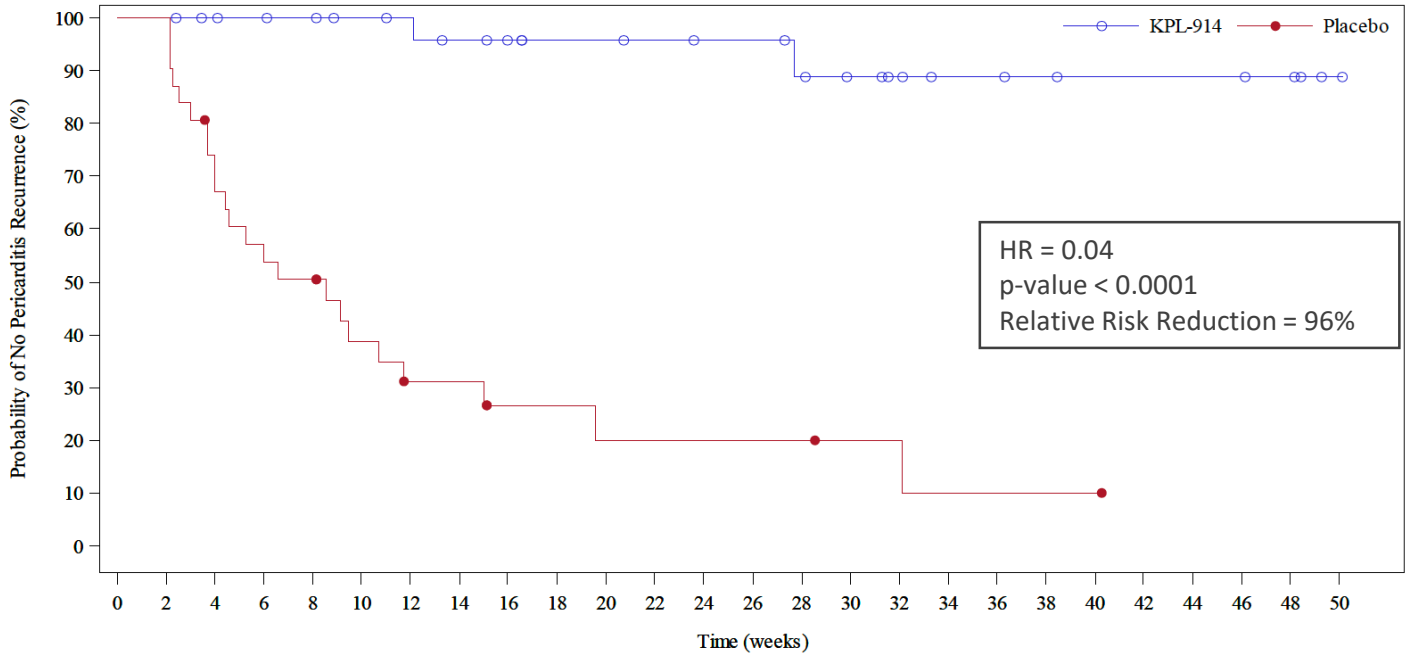



1) Adverse Events n = 4 (4.7%); Protocol Deviation /Withdrawn Consent / Sponsor/Investigator Decision n = 3 (3.5%); CRP = C-reactive protein; NRS = Numerical Rating Scale 2; Pain response is NRS ≤ 2; 3) CRP normalization is CRP ≤ 0.5; 4) Treatment response is the combination of pain response and CRP normalization

# Primary Efficacy Endpoint: Time-to-First Adjudicated Pericarditis Recurrence

## Pivotal Phase 3 Rilonacept Data

**Figure 14.2.1.1 Kaplan-Meier Curves for Time to Pericarditis Recurrence based on CEC Adjudication**
**ITT Analysis Set**




Number of subjects at risk:

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KPL-914 | 30 | 30 | 28 | 27 | 26 | 24 | 23 | 21 | 20 | 17 | 17 | 16 | 15 | 15 | 13 | 11 | 9 | 7 | 7 | 6 | 5 | 5 | 5 | 5 | 4 | 1 |
| Placebo | 31 | 31 | 22 | 17 | 15 | 10 | 7 | 7 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | | | | |

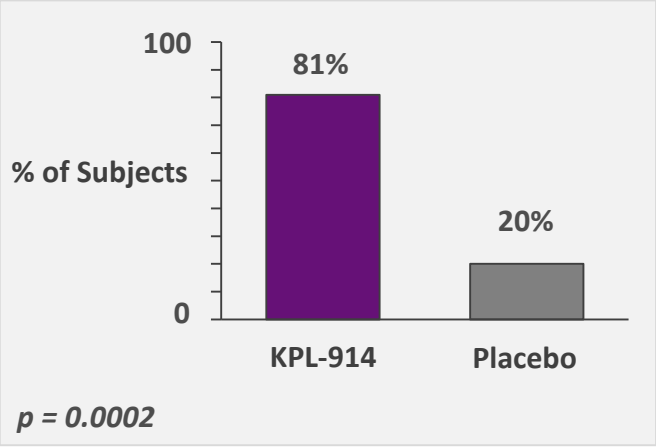
| Pericarditis Recurrence Categories, n (%) | KPL-914 (N=30) | Placebo (N=31) |
|---|---|---|
| Number of Subjects with Events (Adjudicated Pericarditis Recurrence), n(%) | 2 (6.7) | 23 (74.2) |
| Time to First Adjudicated Pericarditis Recurrence; Median, 95% CI (Weeks) | NE (NE, NE) | 8.6 (4.0, 11.7) |

# Secondary Endpoints at Week 16 of the Randomized Withdrawal Period

## Pivotal Phase 3 Rilonacept Data

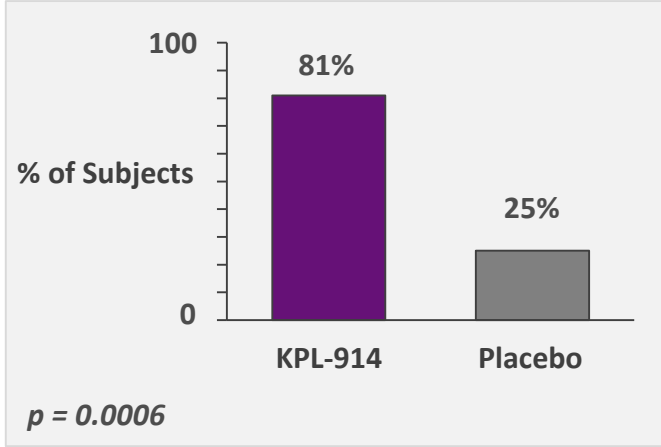
RHAPSODY

### Proportion of Subjects Who Maintained Clinical Response [1]



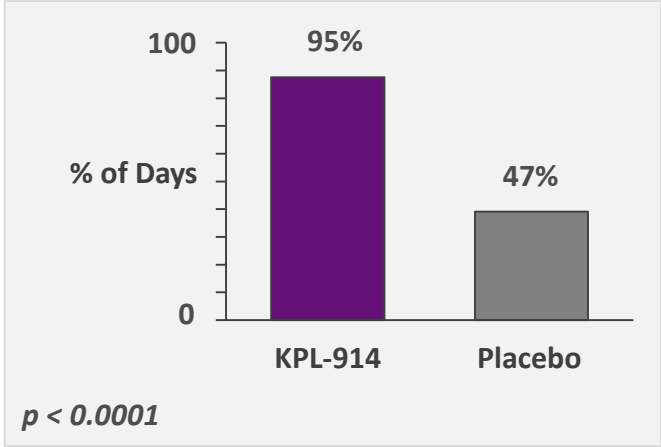

Data at Weeks 8 and 24 were consistent and statistically significant
(Week 8, p < 0.0001; Week 24, p=0.0022)

### Proportion of Subjects with Absent/Minimal Pericarditis Symptoms based on the 7-point PGIPS [2]




Data at Weeks 8 and 24 were consistent and statistically significant
(Week 8, p < 0.0001; Week 24, p=0.0002)

### Percent of Days with No or Minimal Pain in First 16 Weeks (ITT Week *16*) [3]




Data at Weeks 8 and 24 were consistent and statistically significant
(Week 8, p < 0.0001; Week 24, p < 0.0001)

1) Clinical Response is defined as a weekly average of daily pericarditis pain of ≤2.0 on the 11-point NRS, CRP level ≤0.5 mg/dL, and on monotherapy of randomized study drug in that week. Subjects who had recurrence, or used bailout rilonacept, or used rescue medication, discontinued double-blinded treatment, or lost to follow-up before the week will be considered as non-responders;
2) PGIPS = Patient Global Impression of Pericarditis Severity baseline;
3) No or minimal pain is defined as non-missing daily NRS ≤ 2. The percentage of days with no or minimal pain in the first 24, 16, and 8 weeks is calculated for each subject using 24x7, 16x7, 8x7, respectively, as the denominator. Missing values in pain diary will be counted as 0 day with no or minimal pain. On days of using ORT or corticosteroid, count as 0 day with no or minimal pain. If bailout rilonacept was used, each administration (loading dose or not) will be counted as 7 days without qualifying no or minimal pain.



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# Summary of Adverse Events

## Pivotal Phase 3 Rilonacept Data

RHAPSODY

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| All Adverse Events | 69 (80.2) | 24 (80.0) | 13 (41.9) |
| TEAEs [2] | 69 (80.2) | 24 (80.0) | 13 (41.9) |
| TEAEs by Maximum severity [3] | | | |
| Mild | 52 (60.5) | 16 (53.3) | 9 (29.0) |
| Moderate | 15 (17.4) | 8 (26.7) | 4 (12.9) |
| Severe | 2 (2.3) | 0 | 0 |
| Drug-Related TEAEs [4] | 46 (53.5) | 10 (33.3) | 1 (3.2) |
| Serious TEAEs (SAE)[5] | 1 (1.2) | 1 (3.3) | 1 (3.2) |
| TEAEs Leading to Death | 0 | 0 | 0 |
| Drug-Related SAE [4] | 0 | 0 | 0 |
| TEAEs Leading to Dose Interruption | 0 | 1 (3.3) | 0 |
| TEAEs Leading to Study Drug Discontinuation | 4 (4.7)[6] | 0 | 0 |
| TEAEs of Special Interest (Malignancy) [7] | 0 | 1 (3.3) | 0 |
| TEAEs of Injection Site Reaction | 28 (32.6) | 6 (20.0) | 0 |
| TEAEs of Injections and Infestations | 14 (16.3) | 12 (40.0) | 3 (9.7) |

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Bronchitis | 0 | 1 (3.3) | 0 |
| Conjunctivitis | 0 | 1 (3.3) | 0 |
| Ear infection | 0 | 0 | 0 |
| Gastroenteritis | 0 | 0 | 1 (3.2) |
| Gastroenteritis viral | 0 | 0 | 0 |
| Gastroenteritis viral infection | 0 | 1 (3.3) | 1 (3.2) |
| Hordeolum | 1 (1.2) | 0 | 0 |
| Influenza | 1 (1.2) | 0 | 1 (3.2) |
| Nasopharyngitis | 6 (7.0) | 2 (6.7) | 0 |
| Oral herpes | 1 (1.2) | 1 (3.3) | 0 |
| Otitis media | 0 | 1 (3.3) | 0 |
| Pharyngitis | 1 (1.2) | 0 | 0 |
| Pharyngitis streptococcal | 0 | 0 | 0 |
| Rhinitis | 1 (1.2) | 0 | 0 |
| Sinusitis | 1 (1.2) | 3 (10.0) | 0 |
| Subcutaneous abscess | 1 (1.2) | 0 | 0 |
| Upper respiratory tract infection | 2 (2.3) | 1 (3.3) | 0 |
| Urinary tract infection | 1 (1.2) | 3 (10.0) | 0 |
| Vaginal infection | 0 | 1 (3.3) | 0 |
| Viral upper respiratory tract infection | 2 (2.3) | 1 (3.3) | 0 |



1) Subjects with multiple events are counted once in the same category; 2) A Treatment-emergent adverse events (TEAEs) are defined as AEs that start or increase in severity on or after the date of first dose and before 6 weeks after the last dose of study drug; 3) Each subject has only been represented with the maximum severity; 4) Related or possibly related or missing, as assessed by the investigator; 5) SAEs (all unrelated to study drug) - Run in Period: CVA (carotid dissection); RW Period: Chest fluttering after alcohol (on PBO), and Pyrexia, Squamous cell Carcinoma, and post-operative ileus (on rilonacept); 6) alopecia, allergic alveolitis (related to other factors), erythema, and systemic allergic reaction (hypersensitivity); 7) Includes malignancy, excluding basal cell carcinoma of the skin

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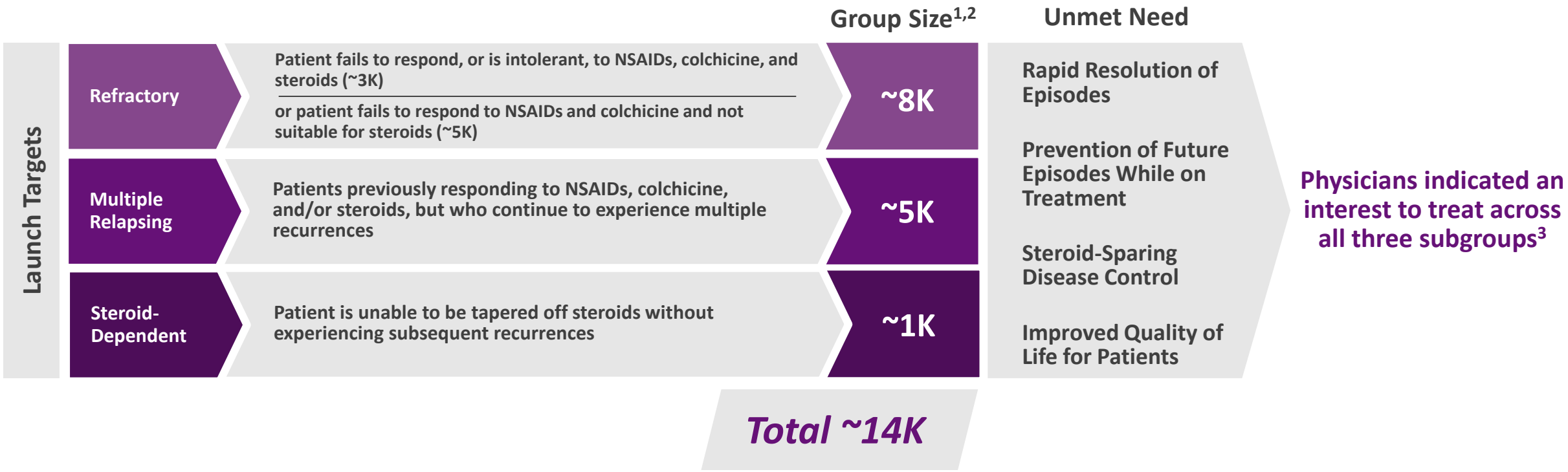
# Recurrent Pericarditis U.S. Prevalence Estimated to be ~40K Patients

## Addressable U.S. opportunity for rilonacept estimated to be ~14K patients



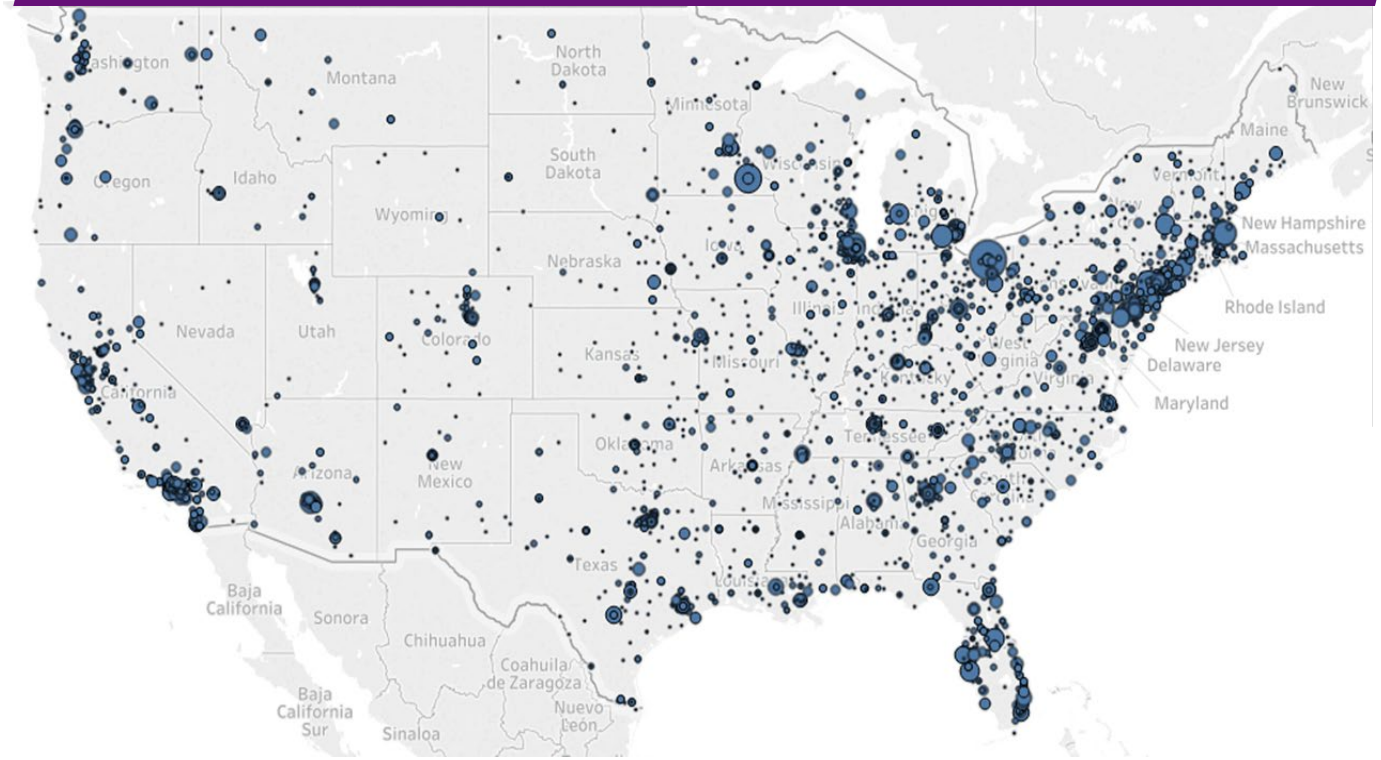



1) Klein A, Cremer P, Kontzias A, Furqan M, Tubman R, Roy M, Magestro M. Annals of Epidemiology. 2019;36:71; 2) Lin D, Majeski C, DerSarkissian M, Magestro M, Cavanaugh C, Laliberte F, Lejune D, Mahendran M, Duh M, Klein A, Cremer P, Kontzias A, Furqan M, Tubman R, Roy M, Mage. (Nov, 2019). *Real-World Clinical Characteristics and Recurrence Burden of Patients Diagnosed with Recurrent Pericarditis in the United States.* Poster session presented at the American Heart Association, Philadelphia, PA.; 3) ClearView Forecasting Analysis 2019 Q1

# Commercial Strategy

Potential launch would focus on high-volume specialists

## Recurrent Pericarditis Patient Volume by Account




### Commercialization Plan Linked to Opportunity

- Specialty cardiology sales force of ~30 reps to call on high volume specialists
- Supported by current MSL team
- Efficient digital marketing to educate lower volume specialists
- Patient services capabilities to maintain appropriate patients on therapy
- Duration of therapy expected to be 6-9 months initially and up to 12 months longer-term
- Pricing in-line with specialty biologics in conditions of high unmet need



Source: IQVIA HPD Targeting Data, Komodo INTERGRITY Data, & Decision Resources Group RWD Data
Dataset generated by Kiniksa analysis

# Summary of Rilonacept Profit Share Arrangement with Regeneron[1]


- Upfront payment: $5 million
- Future regulatory milestones: $27.5 million in aggregate
- Kiniksa covers 100% of development expenses related to approval of additional indications
- In the U.S. and Japan, the initial license covers all indications other than CAPS[4], DIRA[5], oncology, and local application for eye and inner ear
- Kiniksa has rights to develop and commercialize rilonacept in our field worldwide, with the exception of MENA[6]
- After receipt of positive Phase 3 clinical data, the BLA[7] for rilonacept transfers to Kiniksa
- Upon approval for a new indication, the scope of the license expands to include CAPS and DIRA in the US and Japan, and we will assume the sales and distribution of rilonacept in these additional indications
- Profits on sales of rilonacept will be equally split after deducting certain commercialization expenses subject to specified limits



1) Subject to description contained in definitive agreement; 2) Global net sales for CAPS and recurrent pericarditis recognized as revenue on Kiniksa's income statement; 3) Including cost of product purchased from Regeneron; 4) CAPS = Cryopyrin-Associated Periodic Syndromes; 5) DIRA = deficiency of the interleukin-1 receptor antagonist 6) MENA = Middle East and North Africa; 7) BLA = Biologics License Application

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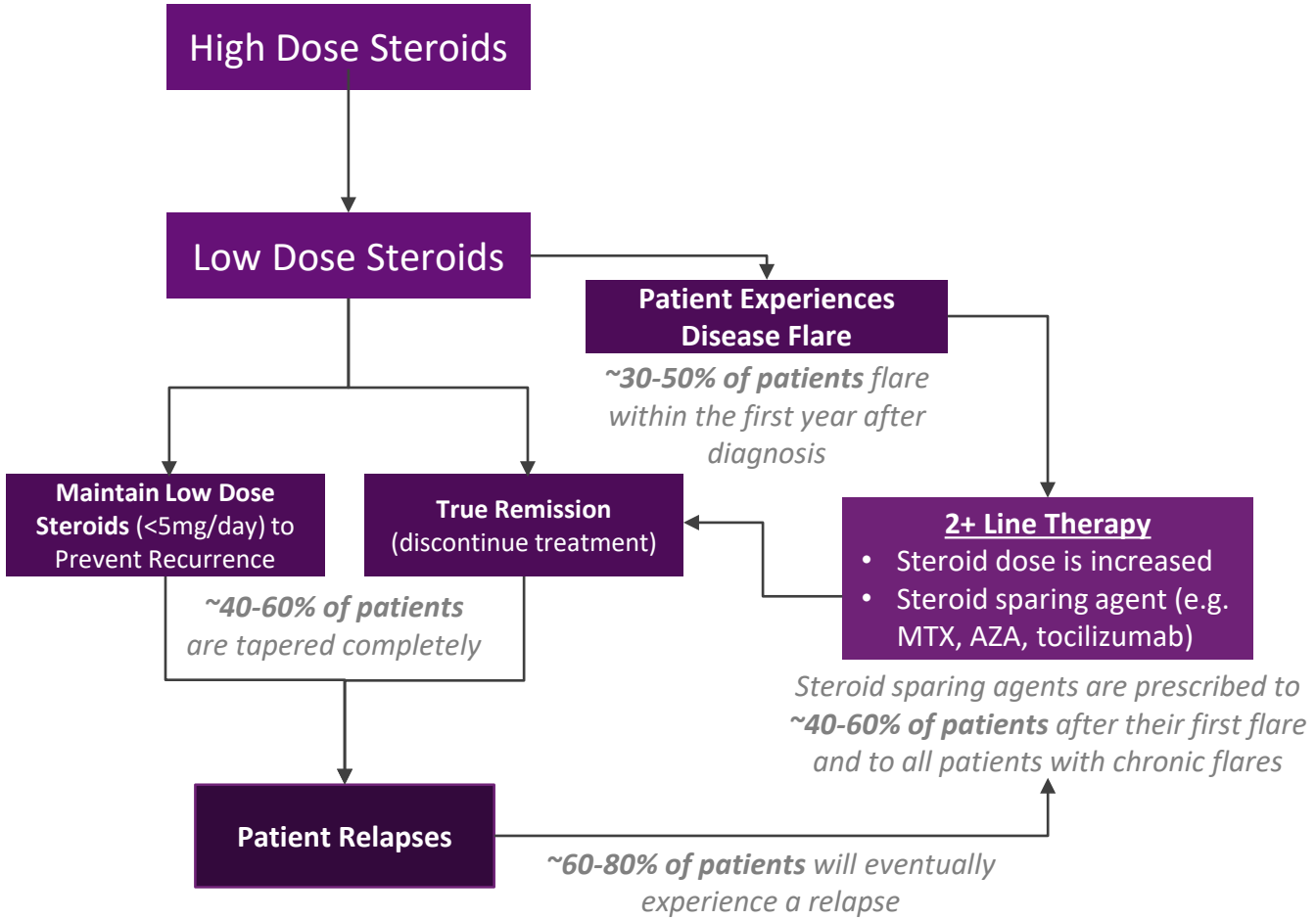
# Mavrilimumab

| | |
|---|---|
| **Indications** | **Giant Cell Arteritis (GCA):** Chronic inflammatory disease of medium-to-large arteries<br>**Severe COVID-19 Pneumonia and Hyperinflammation**<br>**CAR T Induced Cytokine Release Syndrome (CRS)[7]** |
| **Mechanism of Action[1]** | Monoclonal antibody inhibitor targeting GM-CSFRα |
| **Scientific Rationale[2]** | GM-CSF is a key growth factor and cytokine in autoinflammation and autoimmunity |
| **Prevalence** | GCA[3]: ~75k - 150k prevalent in U.S.; similar prevalence in other major markets<br>COVID-19 Pneumonia and Hyperinflammation (based on ARDS associated w/ the seasonal flu)[5]: ~150,000 in U.S.<br>CAR T Induced CRS in R/R LBCL[4]: ~7,500 in U.S. |
| **Competition[6]** | Only one FDA-approved therapy for GCA, COVID-19 and CAR T induced CRS, but unmet needs remain |
| **Status** | Phase 2 data in GCA expected in Q4 2020; Phase 2 initiation in severe COVID-19 pneumonia and hyperinflammation expected in Q3 2020; Phase 2 initiation in CAR T Induced CRS expected in 2H 2020 |
| **Economics** | Clinical, regulatory and sales milestones; tiered royalty on annual net sales |
| **Rights** | Worldwide |

1) Wicks, Roberts, Nature Review Immunology, 2015; Hamilton, Expert Review of Clinical Immunology, 11:4, 457-465; 2) Wicks & Roberts. Nature Reviews. Rheumatology, 2016; 12(1):37-48; 3) Chandran et al., Scand J Rheumatol, 2015; Trinity Consulting – HCUP/Medicare Data, Quantitative Survey (n=102 rheumatologists); 4) Kite, a Gilead Company, press release: http://www.businesswire.com/news/home/20171018006639/en/; 5) https://www.cdc.gov/flu/about/burden/index.html; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3192778/ ; https://www.atsjournals.org/doi/pdf/10.1164/rccm.201401-0066LE; https://pdfs.semanticscholar.org/f3cb/d0574dc85304366dfadbd477b5eb7a271f43.pdf; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3198489/ ; 6) Cortellis,;UpToDate; Correspondence, Trial of Tocilizumab in Giant-Cell Arteritis, NEJM, 2017; 7) Clinical collaboration with Kite, a Gilead Company, in relapsed or refractory large B-cell lymphoma (R/R LBCL)

# Current Treatment Paradigm for GCA Involves High-Dose Steroids Upon Clinical Suspicion



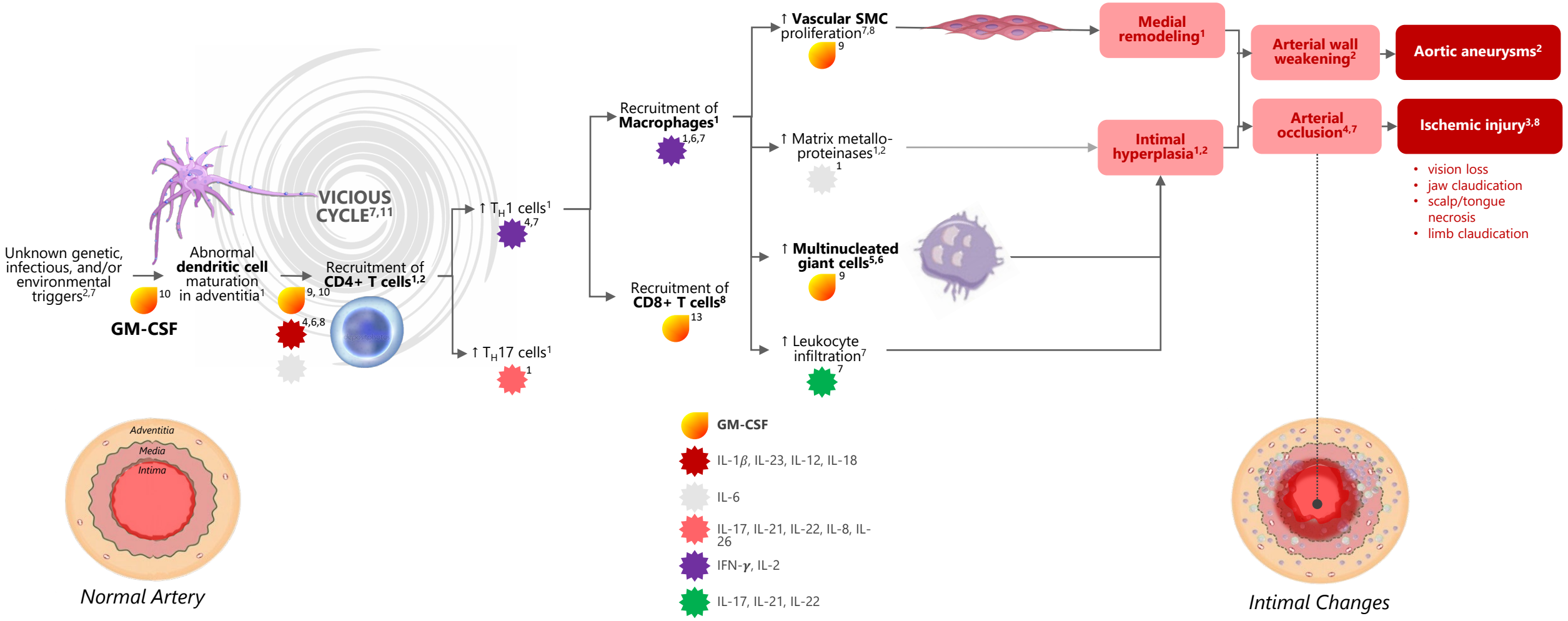

## Treatment Approach:

- All treated patients receive **high-dose steroids**, which are effective at preventing disease related complications; however, **they may lead to life altering side-effects** like osteoporosis and diabetes
- A few treaters initiate **steroid sparing agents** early in the treatment paradigm, relying on them more for the chronic treatment of GCA
- Others treat GCA in more of a stepwise fashion, adding new agents on top of steroids only following disease flares/relapse



Source: Trinity Partners Primary Market Research (n=10 Rheumatologists)

# Central Role of GM-CSF in Pathophysiology of Giant Cell Arteritis

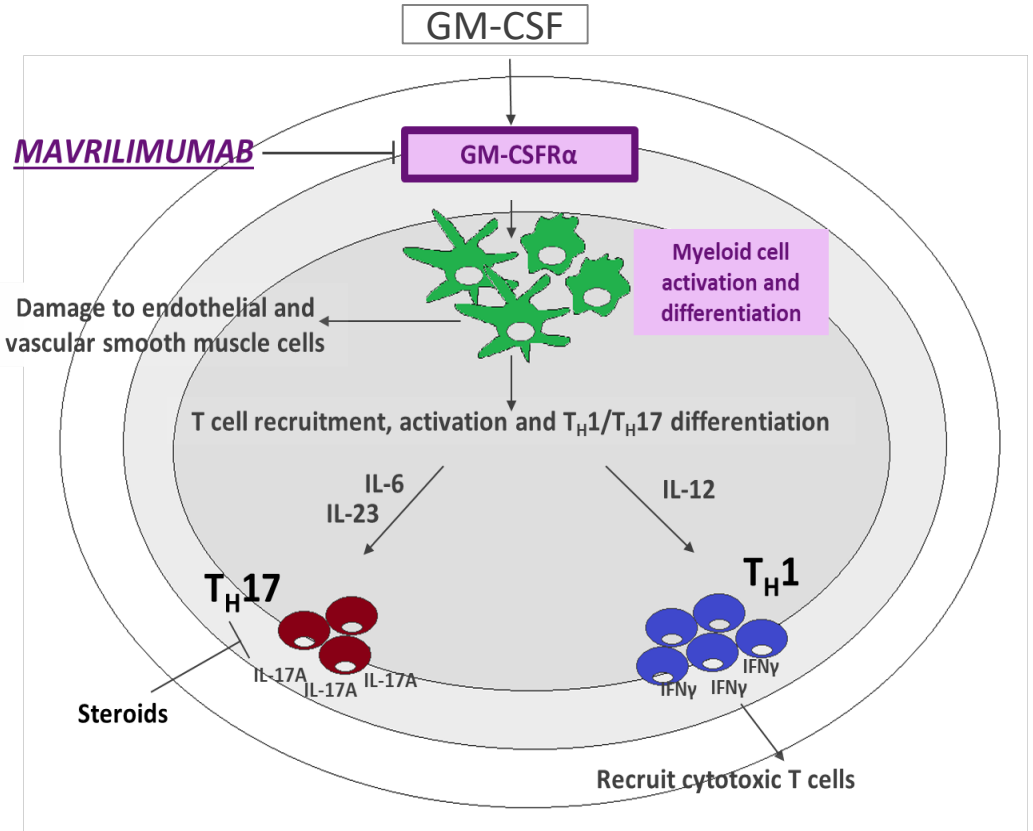




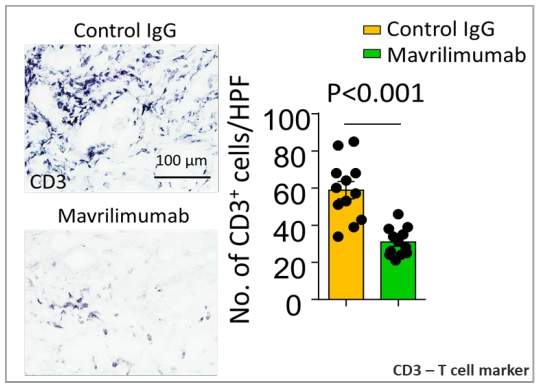

1. Al-Mousawi AZ, et al. Ophthalmol Ther 2019;8:177-193. 2. Boura P, et al. Updates in the Diagnosis and Treatment of Vasculitis. Chapter 4 2013; http://dx.doi.org/10.5772/55222. 3. Cho HJ, et al. Disease-a-Month 2017;63:88-91. 4. Ly KH, et al. Autoimm Review 2010;9:635-645. 5. Lazarewicz K, et al. BMJ 2019;365l1964 doi: 10.1136/bmj.l1964. 6. O'Neill L, et al. Rheumatol 2016;55:1921-1931. 7. Planas-Rigol E, et al. J Vasc 2016;1:2:DOI: 10.4172/2471-9544.100103. 8. Samson M, et al. Autoimmun Rev 2017;16:833-844. 9. Cid MC, et al. GM-CSF Pathway Signature Identified in Temporal Artery Biopsies of Patients With Giant Cell Arteritis. 2019 EULAR;12-15 June. Madrid, Spain. 10. Cid M, et al. Ann Rheumatol 2019; DOI: 10.1136/annrheumdis-2019-eular.2694. 11. Pupim L, et al. Rheumatology 2019;58:https://doi.org/10.1093/rheumatology/kez063.060. 12. Herndler-Brandstetter D, et al. Cell Research 2014;24:1379-1380. 13. Becher B, et al. Immunity 2016;45:963-973.

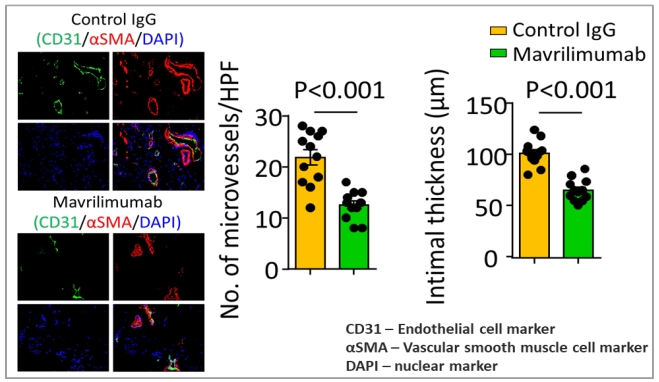
# Preclinical Data Support the Mechanistic Rationale of Targeting GM-CSF in GCA

**GM-CSF and its receptor, GM-CSFRα, shown to be elevated in GCA biopsies compared to control[1]**

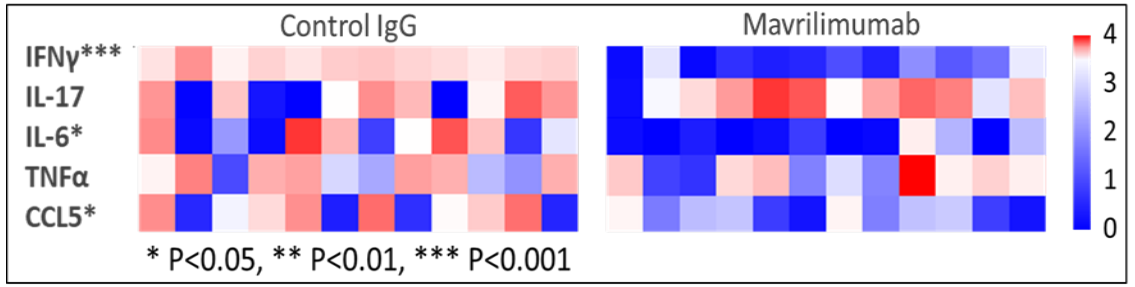



**Mavrilimumab reduced arterial inflammation compared to control in an *in vivo* model of vasculitis[2]**



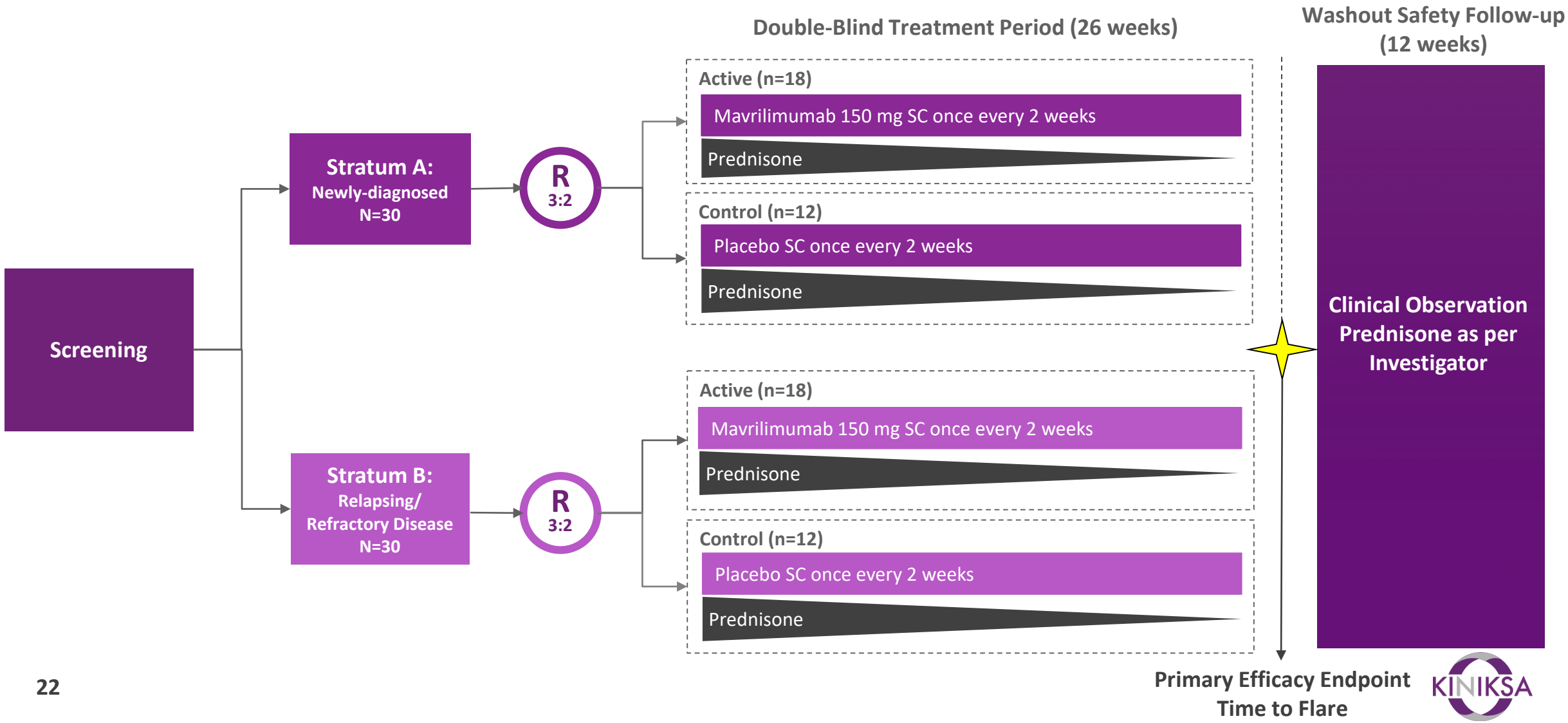

**Mavrilimumab suppressed expression of inflammatory genes in artery**






1) Poster presentation at European Congress of Rheumatology 2019 (EULAR): *GM-CSF Pathway Signature Identified in Temporal Artery Biopsies of Patients With Giant Cell Arteritis* Maria C. Cid, Rohan Gandhi, Marc Corbera-Bellalta, Nekane Terrades-Garcia, Sujatha Muralidharan, John F. Paolini; 2) Presentation at 2019 American College of Rheumatology (ACR): *GM-CSF is a Pro-Inflammatory Cytokine in Experimental Vasculitis of Medium and Large Arteries* Ryu Watanabe, Hui Zhang, Toshihisa Maeda, Mitsuhiro Akiyama, Rohan Gandhi, John F. Paolini, Gerald J. Berry, Cornelia M. Weyand

# Phase 2 Clinical Trial of Mavrilimumab in GCA



# Mavrilimumab: Potential to Advance Clinical Profile of CAR T Cell Therapy

| | |
|---|---|
| **Mechanism** | • GM-CSF is a key growth factor and cytokine in autoinflammation and autoimmunity[1]<br>• Mavrilimumab is a monoclonal antibody inhibitor targeting GM-CSFRα |
| **Rationale** | • Treatment related induction of GM-CSF has been identified through clinical, translational and preclinical studies as a potential key signal associated with side effects of chimeric antigen receptor T (CAR T) cell therapy[2] |
| **Preclinical and Clinical Data** | • Preclinical data suggest the potential for interruption of GM-CSF signaling to disrupt CAR T cell mediated inflammation without disrupting anti-tumor efficacy[3]<br>• Correlative data from YESCARTA®[4] (axicabtagene ciloleucel) pivotal trials suggest that elevated GM-CSF levels are linked to development of Grade 3+ neurologic events (NEs)[2] |
| **Differentiation** | • Mavrilimumab is believed to be the only GM-CSF receptor blocker; other anti-GM-CSF mechanisms inhibit the ligand<br>• GM-CSFRα blockade potentially prevents pathogenic cells from infiltrating into the target tissue, and suppresses multiple markers of inflammation (e.g., IL-2Rα, IL-6, CRP)[5,6,7]<br>• One currently approved treatment of CAR T induced CRS, data suggest that its use as a prophylactic may increase rates of severe NE[8] |
| **Development Status** | • The safety of mavrilimumab has been evaluated in a Phase 2 trial: Mavrilimumab was dosed in over 550 patients with rheumatoid arthritis through Phase 2b by MedImmune in Europe and achieved prospectively-defined primary safety and efficacy endpoints<br>• Clinical collaboration with Kite, a Gilead Company, to evaluate the investigational combination of Yescarta and mavrilimumab in relapsed or refractory large B-cell lymphoma. The objective of the trial is to evaluate the effect of mavrilimumab on the safety of Yescarta. Expected to commence a Phase 2 trial in the second half of 2020 |



1) Wicks, Roberts, Nature Review Immunology, 2015; Hamilton, Expert Review of Clinical Immunology, 11:4, 457-465; 2) Neelapu et al., NEJM 2017; Sterner et al., Blood 2019; Roberts ZJ et al., Leukemia Lymphoma 2018 3) Sterner et al., Blood 2019 ; 4) Yescarta® is a registered trademark of Gilead Sciences, Inc., or its related companies; 5) De Alessandris et al., J Leukoc Biol. 2019; 6) Sterner et al., Blood 2019; 7) Guo et al., Rheumatology 2017; 8) Locke et al., Preliminary Results of Prophylactic Tocilizumab After (Axi-cel;KTE-C19) Treatment for Patients with Refractory, Aggressive NHL, Poster 1547; CRS = cytokine release s syndrome; NE = neurologic events

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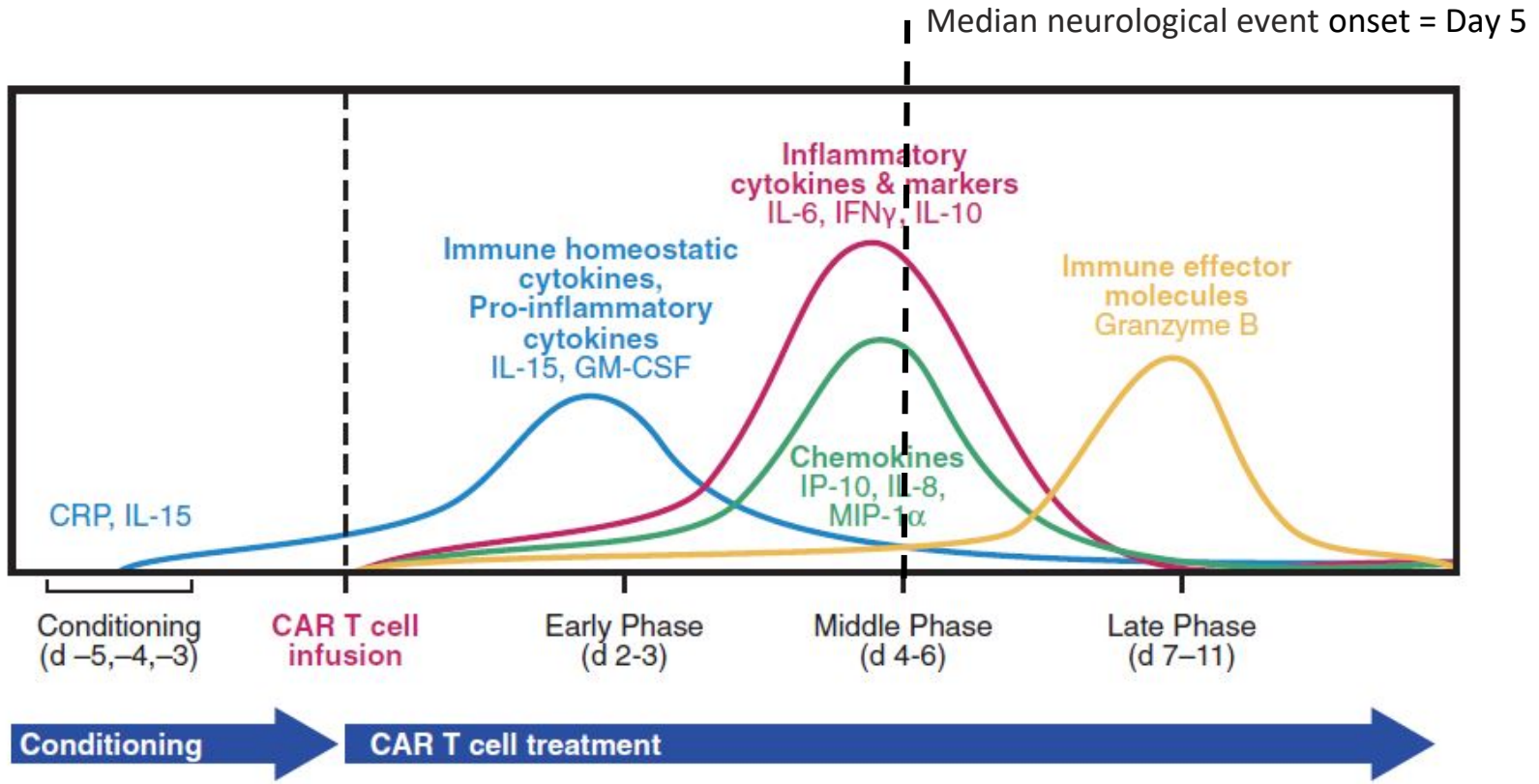
# GM-CSF is a Potential Key Signal Associated with Side Effects of CAR T Cell Therapy




*Early increases in GM-CSF levels (2-3 days post CAR T cell treatment) is thought to precede and initiate the onset of CRS and NE; therefore prophylactic treatment with mavrilimumab has potential to significantly reduce rates of these severe toxicities*[1]



CRS = cytokine release syndrome; NE = neurologic events; 1) Neelapu et al., NEJM 2017; Sterner et al., Blood 2019; Roberts ZJ et al Leukemia Lymphoma 2018

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# Mavrilimumab: Potential Treatment of COVID-19 Pneumonia and Hyperinflammation

| | |
|---|---|
| **Mechanism** | • GM-CSF is a key growth factor and cytokine in autoinflammation and autoimmunity[1]<br>• Mavrilimumab is a monoclonal antibody inhibitor targeting GM-CSFRα |
| **Rationale** | • GM-CSF is implicated in the mechanism of excessive and aberrant immune cell infiltration and activation in the lungs thought to contribute significantly to mortality in COVID-19[2]<br>• Robust literature evidence showing a consistent immunophenotype and pathology of ARDS across inflammatory/infectious etiologies (influx of neutrophils and upregulation of immature, pro-inflammatory macrophages)[3] |
| **Clinical Data** | • Evidence of treatment response with mavrilimumab observed in an open-label treatment protocol in Italy in 13 non-mechanically ventilated patients with severe COVID-19 pneumonia and hyperinflammation[4] |
| **Differentiation** | • Mavrilimumab is believed to be the only GM-CSF receptor blocker; other anti-GM-CSF therapeutic approaches inhibit the ligand<br>• GM-CSFRα blockade potentially prevents pathogenic cells from infiltrating into the target tissue, and suppresses multiple markers of inflammation (e.g., IL-2Rα, IL-6, CRP)[5,6,7]<br>• Once hyperinflammation and CRS have begun, anti-virals may be less effective[8]<br>• Vaccines likely to provide incomplete population immunity + limited supply/access; vaccine does not help once virus occurs[9] |
| **Development Status** | • The safety of mavrilimumab has been evaluated in a Phase 2 trial: Mavrilimumab was dosed in over 550 patients with rheumatoid arthritis through Phase 2b by MedImmune in Europe and achieved prospectively-defined primary safety and efficacy endpoints<br>• Active investigational new drug (IND) application with the U.S. Food and Drug Administration (FDA) for a Phase 2/3 clinical trial of mavrilimumab in severe COVID-19 pneumonia and hyperinflammation; placebo-controlled investigator-initiated study in the U.S. enrolling patients |

1) Wicks, Roberts, Nature Review Immunology, 2015; Hamilton, Expert Review of Clinical Immunology, 11:4, 457-465; 2) Zhou et al. bioRxiv. 2020; 3) Huang et al. 2018; Huang et al 2005; Rosseau et al 2000; Thompson et al., NEJM 2017; 4) Data as of 4/28/2020; 5) De Alessandris et al., J Leukoc Biol. 2019; 6) Sterner et al., Blood 2019; 7) Guo et al., Rheumatology 2017; 8) Darwish, Muvareka, Liles. Expert Rev. Anti Infect: Ther. 9(7), 2011; 9) Osterholm et al., The Lancet Infectious Diseases, 2012; ARDS = Acute Respiratory Distress Syndrome; CRS = Cytokine Release Syndrome



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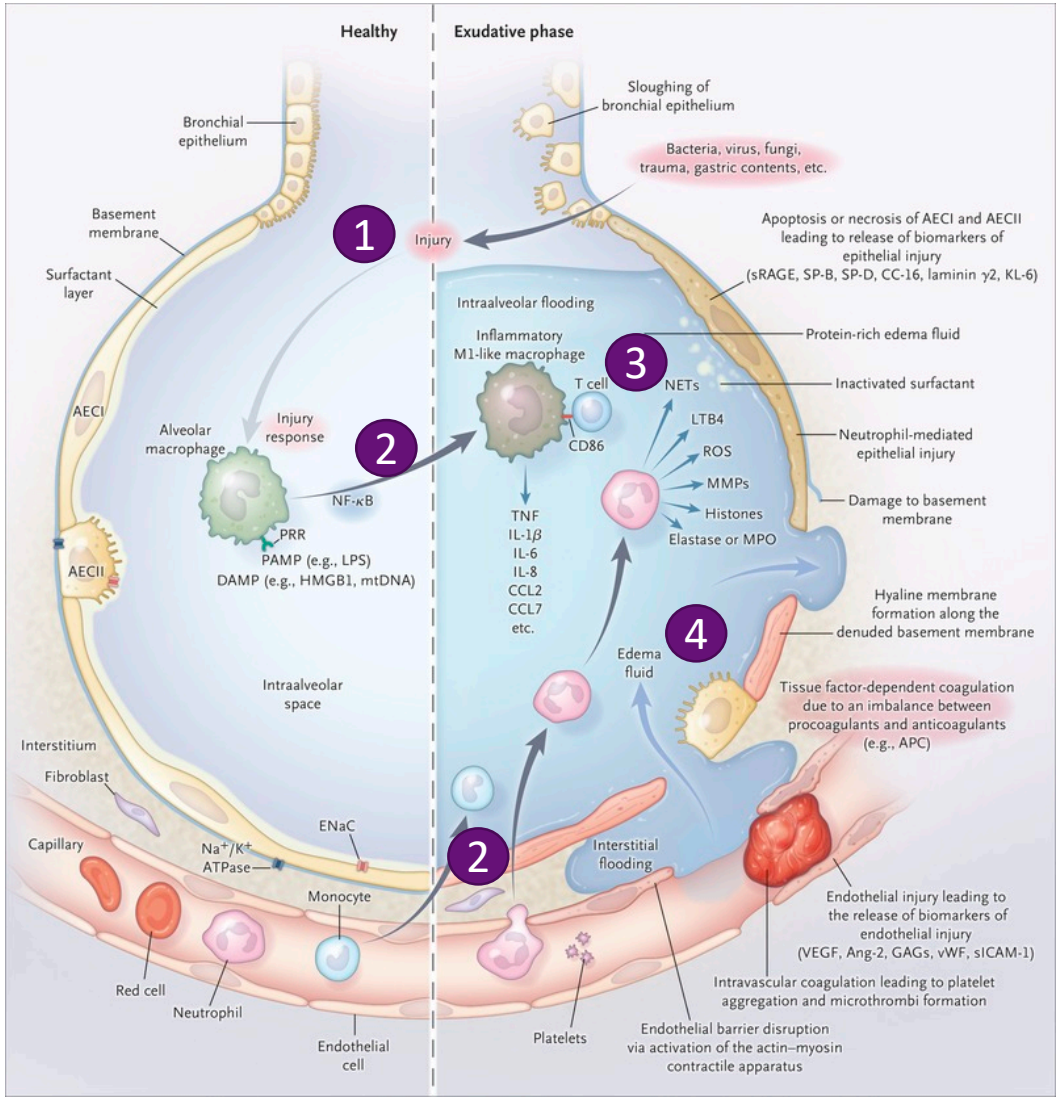
# Cytokine Cascade Amplification System in the Pathophysiology of ARDS

## Pathophysiology of ARDS (Exudative Phase)




1
- Inflammatory insults, either locally from the lungs or systemically from extra-pulmonary sites, affect bronchial epithelium, alveolar macrophages, and vascular endothelium

2
- **Resident alveolar macrophages** secrete proinflammatory cytokines, leading to **neutrophil** and **monocyte** or **macrophage** recruitment, as well as activation of **alveolar epithelial cells** and **effector T cells**, to promote and sustain inflammation and tissue injury.

3
- Hyperactivation of myeloid cells and T-cells produce large amounts of inflammatory cytokines, which in turn lead to **endothelial activation** and microvascular injury ultimately leading to barrier disruption in ARDS which can worsened by mechanical stretch.

4
- Extensive damage to lung epithelia and endothelia results in an impaired alveolar-capillary barrier.
- Disruption of this barrier allows protein-rich fluid to enter the alveoli causing fluid accumulation in alveolar spaces (pulmonary edema) interfering with gas exchange

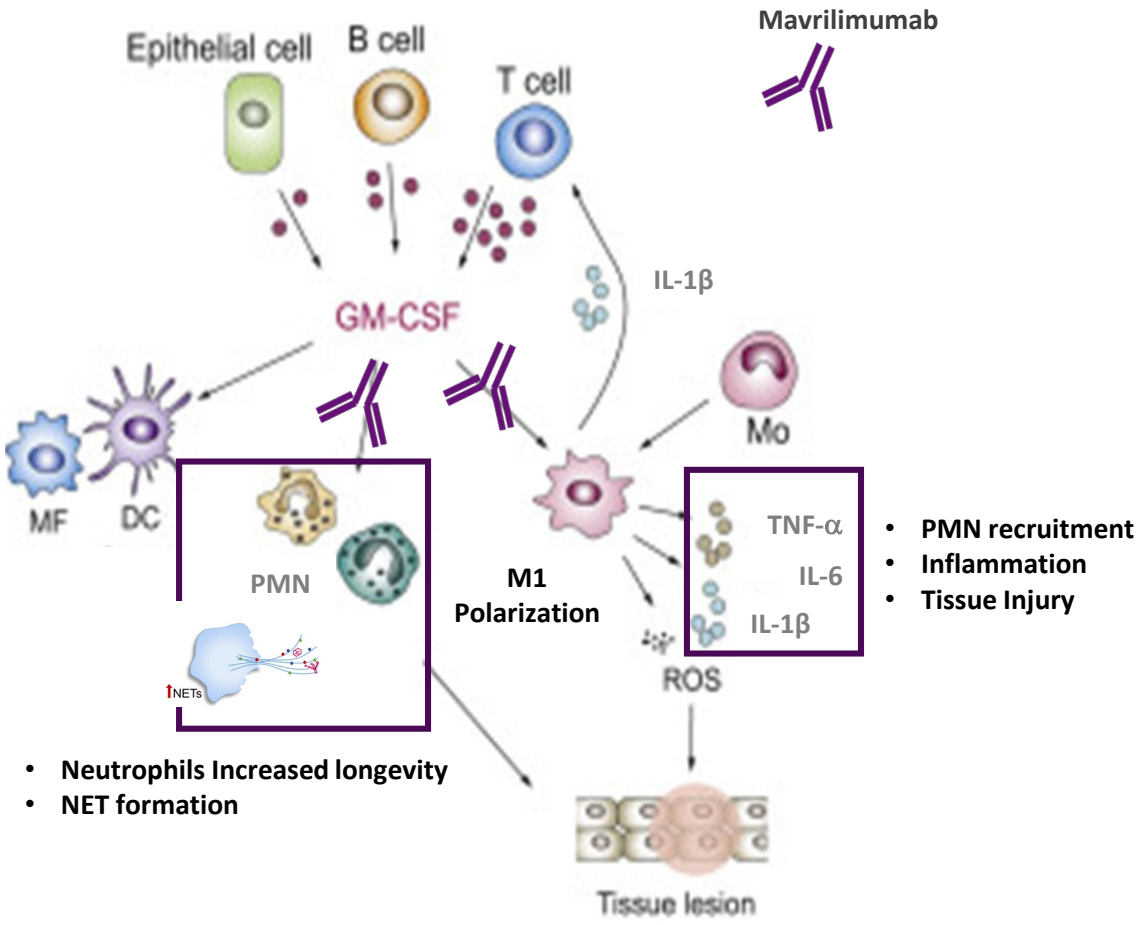


ARDS = Acute Respiratory Distress Syndrome

The New England Journal of Medicine. 2017

# The Role of Mavrilimumab Throughout the Immune System and its Potential to Treat COVID-19 Pneumonia and ARDS More Broadly

| Mechanisms driving ARDS pathophysiology | Targetable by Mavrilimumab[4-14] | Targetable by anti-IL-6[15-20] | Targetable by anti-IL-1β[21-26] |
|---|---|---|---|
| Recruitment of neutrophils | √ | √ | √ |
| Neutrophil longevity | √ | Conflicting evidence | |
| Formation of neutrophil extra cellular traps (NET) | √ | | |
| Activation of AM & polarization to M1-like phenotype | √ | | |
| Th1 inflammation[1-3] | √ | | |
| Th17 inflammation[1-3] | √ | √ | √ |




**Evidence of targetable pathways by anti-IL-6**

[1]Wu J Microbiol, Immunol and Infection (2020), [2] Xu Lancet Respir Med (2020), [3] Huang Lancet (2020).

**Evidence of targetable pathways by anti-IL-6**

[4] De Alessandris JLB (2019), [5] Matute-Bello Am J Resp Crit Care Med (1997), [6] Juss Am J Resp Crit Care Med 1997 (2016), [7] Yousefi Cell Death and Differentiation (2009), [8] Gray Thorax (2018), [9] Fleetwood JI (2007), [10] Dalrymple BMC Immunol. (2013), [11] Benmerzoug Sci Rep (2018), [12] Krausgruber Nat Imm (2011), [13] Shiomi JI (2014), [14] Shiomi Med Inflamm (2015).

**Evidence of targetable pathways by anti-IL-6**

[15] Jones J Infect Dis (2006), [16] Wright Rheumatology (2014), [17] Afford JBC (1992), [18] Biffl JLB (1995), [19] Oh J Exp Med (2011), [20] Yan Sci Rep (2016).

**Evidence of targetable pathways by anti-IL-1β**

[21] Sichelstiel PLOS One (2014), [22] Jones AJRCB (2014), [23] Ganter Circ Res (2008), [24] Frank Thorax (2008), [25] Wu JI (2013), [26] Gasse PLOS One (2011).



ARDS = Acute Respiratory Distress Syndrome
Becher B. et al., Immunity 45, (2016)

# Mavrilimumab Treatment Protocol in COVID-19 Pneumonia and Hyperinflammation

## Improved clinical outcomes compared to matched contemporaneous controls, including earlier weaning from supplemental oxygen, shorter hospitalizations, and no deaths

**The mavrilimumab open-label treatment protocol was a prospective, interventional, single-active-arm, single-center pilot experience in Italy.**

- Thirteen non-mechanically ventilated patients with severe COVID-19 pneumonia and hyperinflammation were treated with a single intravenous dose of mavrilimumab upon admission to the hospital.
- Twenty-six contemporaneous non-mechanically ventilated patients with severe COVID-19 pneumonia and hyperinflammation and with similar characteristics upon admission to the hospital, including comorbidities, baseline inflammatory markers and respiratory dysfunction, were evaluated as a control group.
- All patients in the treatment protocol received optimum local standard of care, including protease inhibitors and antiviral therapies.

**Main outcome:** Time to clinical improvement (defined as improvement ≥ 2 categories on a 7-point scale for assessment of clinical status)

**Clinical Outcomes:**

- Over the course of the 28-day follow-up period, mavrilimumab-treated patients experienced greater and earlier clinical improvements than control-group patients, including earlier weaning from supplemental oxygen, shorter hospitalizations, and no deaths.
  - Death occurred in 0% (n=0/13) of mavrilimumab-treated patients by Day 28, compared to 27% (n=7/26) of control-group patients (p=0.086).
  - 8% (n=1/13) of mavrilimumab-treated patients progressed to mechanical ventilation by Day 28, compared to 35% (n=9/26) of control-group patients who progressed to mechanical ventilation or died (p=0.077).
  - 100% (n=13/13) of mavrilimumab-treated patients and 65% (n=17/26) of control-group patients attained the clinical improvement endpoint (defined as improvement of ≥ 2 categories on a 7-point scale for assessment of clinical status) by Day 28 (p=0.0001).
  - Fever resolved in 91% (n=10/11 febrile patients) of mavrilimumab-treated patients by Day 14, compared to 61% (n=11/18 febrile patients) of control-group patients (p=0.0093).
  - Representative mavrilimumab-treated patients showed significant improvement in lung opacification on computerized tomography (CT) scans, consistent with the overall improvement in their clinical status.
- Mavrilimumab was well-tolerated in all patients, without infusion reactions. P-values above are unadjusted for multiplicity.



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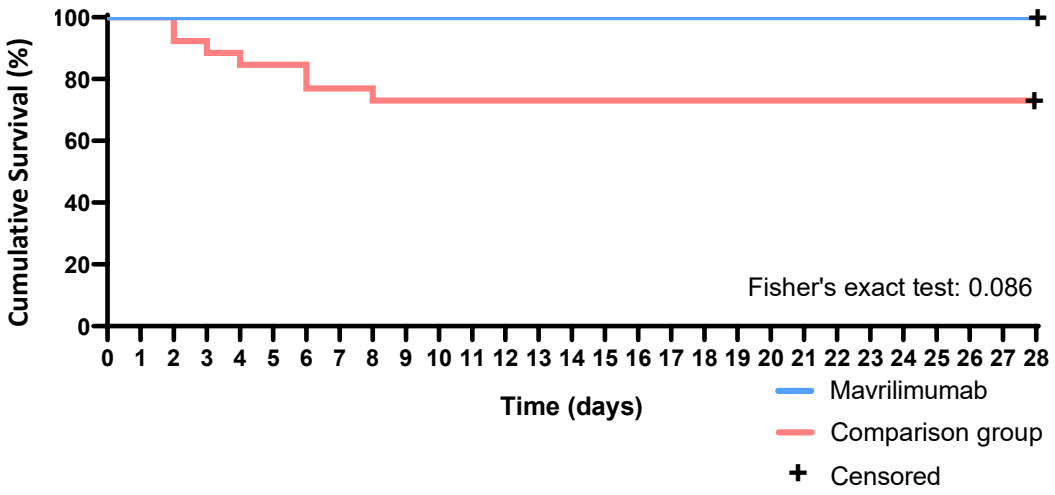
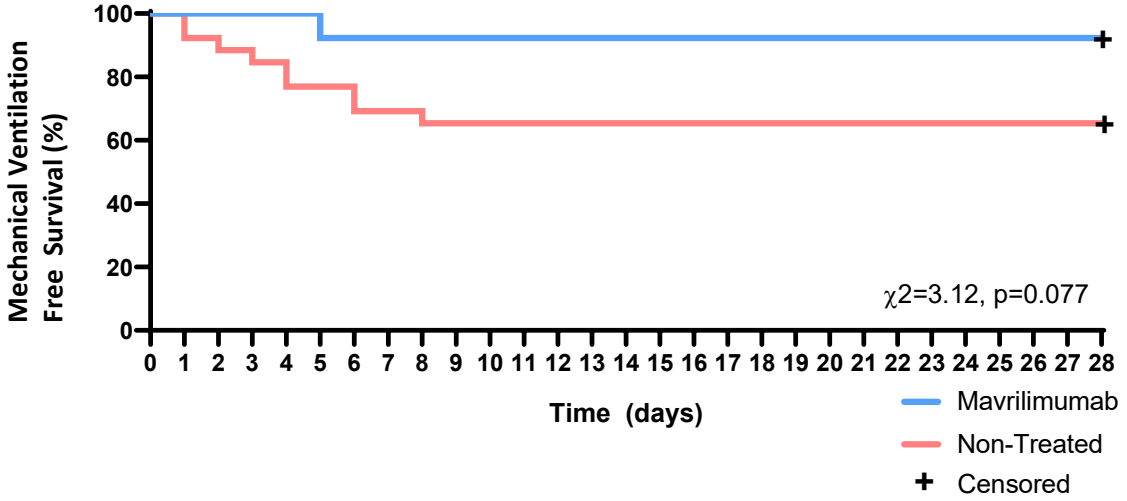
# Mavrilimumab Treatment Protocol in Patients with COVID-19 Pneumonia & Hyperinflammation Showed Improved Clinical Outcomes Compared to Matched Contemporaneous Controls[1]




| Patients at Risk | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mavrilimumab | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Comparison group | 26 | 26 | 26 | 24 | 23 | 22 | 22 | 20 | 20 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 |

| Patients at Risk | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mavrilimumab | 13 | 13 | 13 | 13 | 13 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Comparison group | 26 | 26 | 24 | 23 | 22 | 20 | 20 | 18 | 18 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |

*Death occurred in 0% (n=0/13) of mavrilimumab-treated patients by Day 28, compared to 27% (n=7/26) of control-group patients (p=0.086)*

*8% (n=1/13) of mavrilimumab-treated patients progressed to mechanical ventilation by Day 28, compared to 35% (n=9/26) of control-group patients who progressed to mechanical ventilation or died (p=0.077)*



1) De Luca G. et al. GM-CSF blockade with mavrilimumab in severe COVID-19 pneumonia and systemic hyperinflammation: a single-centre, prospective cohort study. Lancet Rheumatol 2020 Published Online June 16, 2020 https://doi.org/10.1016/ S2665-9913(20)30170-3; The treatment protocol with the investigational drug mavrilimumab was conducted by Professor Lorenzo Dagna, MD, FACP, Head, Unit of Immunology, Rheumatology, Allergy and Rare Diseases IRCCS San Raffaele Scientific Institute and Vita-Salute San Raffaele University in Milan, Italy within a COVID-19 Program directed by Professor Alberto Zangrillo, Head of Department of Anesthesia and Intensive Care of the Scientific Institute San Raffaele Hospital and Professor in Anesthesiology and Intensive Care, Università Vita-Salute San Raffaele; p-values above are unadjusted for multiplicity.

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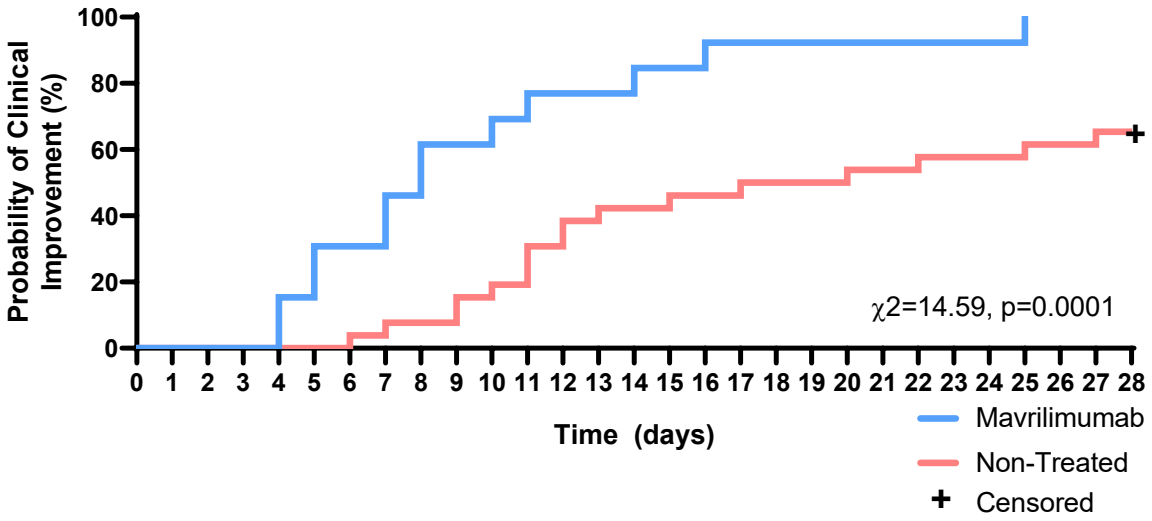
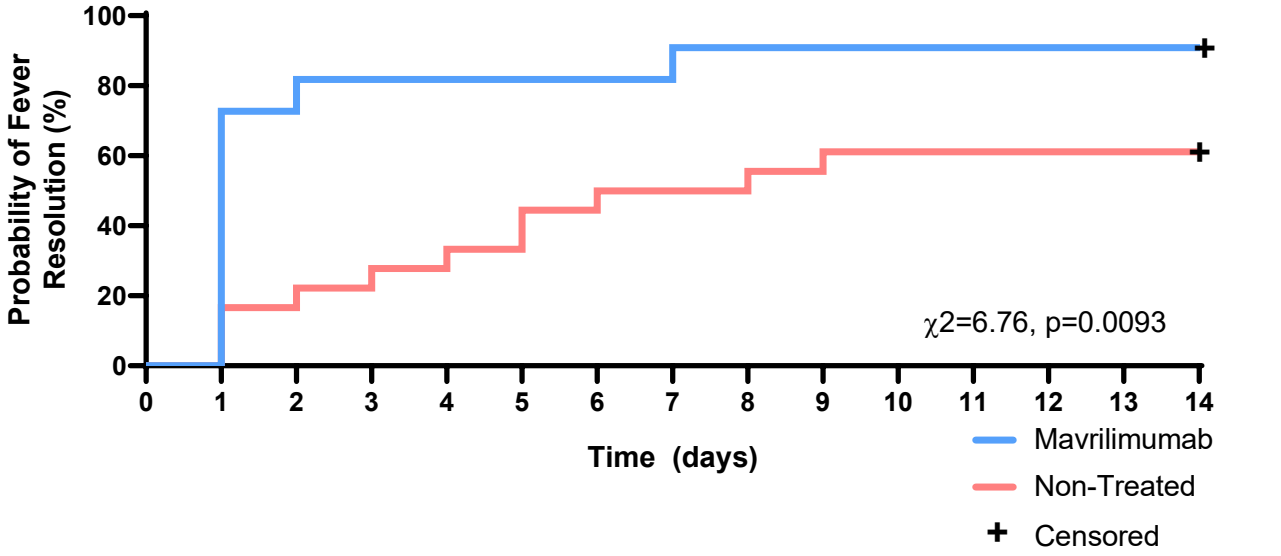
# Mavrilimumab Treatment Protocol in Patients with COVID-19 Pneumonia & Hyperinflammation Showed Improved Clinical Outcomes Compared to Matched Contemporaneous Controls[1]




| Patients at Risk | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mavrilimumab | 13 | 13 | 13 | 13 | 13 | 11 | 9 | 9 | 7 | 5 | 5 | 4 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Comparison group | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 25 | 24 | 24 | 22 | 21 | 18 | 16 | 15 | 15 | 14 | 14 | 13 | 13 | 13 | 12 | 12 | 11 | 11 | 11 | 10 | 10 | 9 |

*100% (n=13/13) of mavrilimumab-treated patients and 65% (n=17/26) of control-group patients attained the clinical improvement endpoint (defined as improvement of ≥ 2 categories on a 7-point scale for assessment of clinical status) by Day 28 (p=0.0001)*




| Patients at Risk | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mavrilimumab | 11 | 11 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Comparison group | 18 | 18 | 15 | 14 | 13 | 12 | 10 | 9 | 9 | 8 | 7 | 7 | 7 | 7 | 7 |

*Fever resolved in 91% (n=10/11 febrile patients) of mavrilimumab-treated patients by Day 14, compared to 61% (n=11/18 febrile patients) of control-group patients (p=0.0093)*



1) De Luca G. et al. GM-CSF blockade with mavrilimumab in severe COVID-19 pneumonia and systemic hyperinflammation: a single-centre, prospective cohort study. Lancet Rheumatol 2020 Published Online June 16, 2020 https://doi.org/10.1016/ S2665-9913(20)30170-3; The treatment protocol with the investigational drug mavrilimumab was conducted by Professor Lorenzo Dagna, MD, FACP, Head, Unit of Immunology, Rheumatology, Allergy and Rare Diseases IRCCS San Raffaele Scientific Institute and Vita-Salute San Raffaele University in Milan, Italy within a COVID-19 Program directed by Professor Alberto Zangrillo, Head of Department of Anesthesia and Intensive Care of the Scientific Institute San Raffaele Hospital and Professor in Anesthesiology and Intensive Care, Università Vita-Salute San Raffaele; p-values above are unadjusted for multiplicity.

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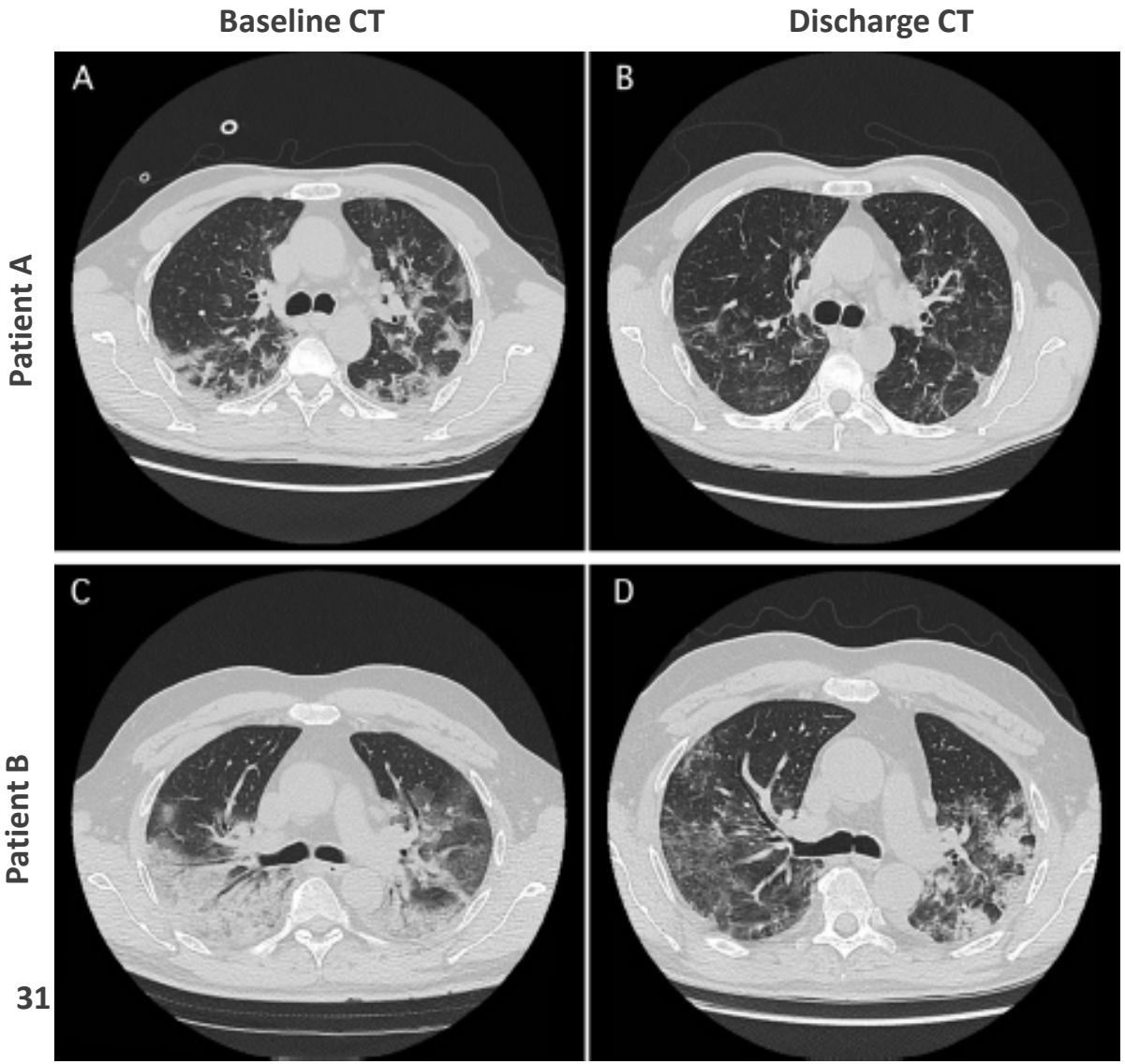
# Representative mavrilimumab-treated patients showed significant improvement in lung opacification on computerized tomography (CT) scans, consistent with the overall improvement in their clinical status




**Patient A**: 58 year old male.

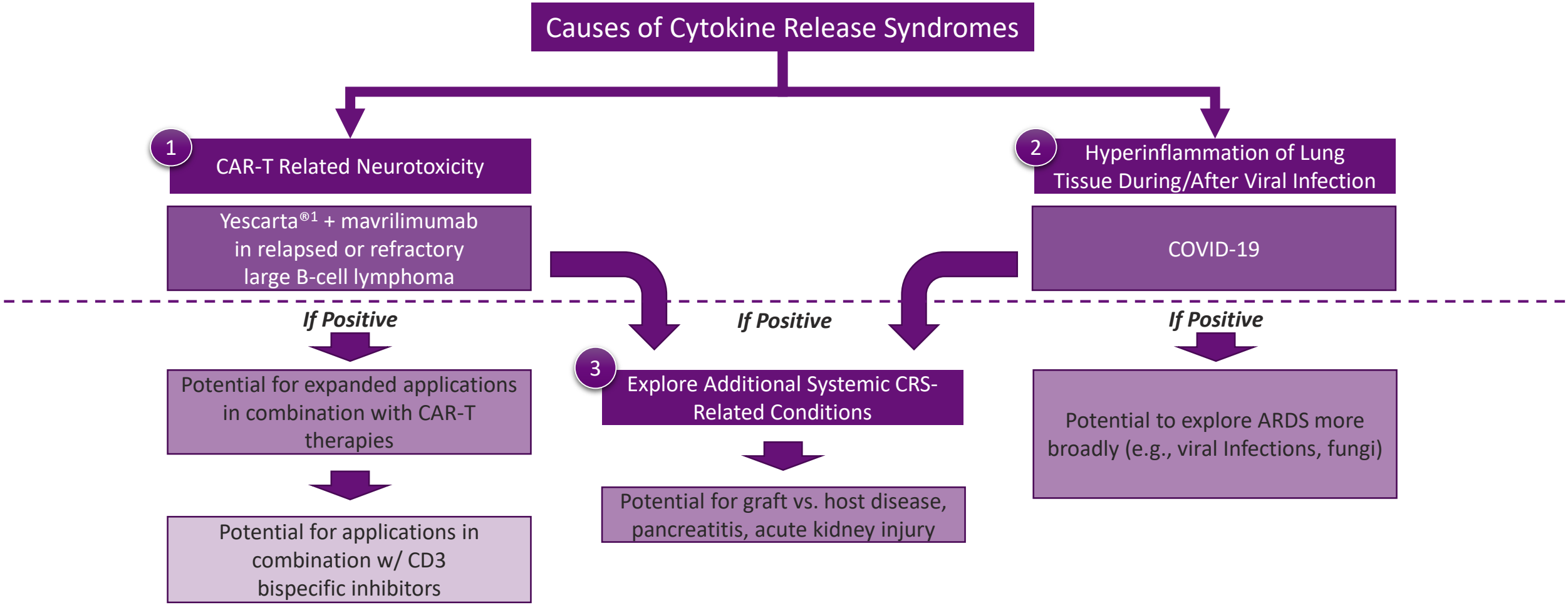
- At day 0: febrile, receiving O2 through a facemask; FiO2 0.4, PaO2 86 mmHg, lactic acid dehydrogenase (LDH) 374 U/L, C-reactive protein (CRP) 100 mg/L.
- At day 7: afebrile, on room air, SpO2 98%, LDH normalized, CRP 12.5 mg/L.

**Patient B**: 56 year old male

- At day 0: febrile, receiving high-low O2 through a facemask with reservoir bag + 12 hours/day of CPAP, PaO2 176 mmHg, LDH 944 U/L, CRP 177 mg/L.
- At day 14: afebrile, on room air, SpO2 98%, LDH normalized, CRP 28.2 µg/mL (28.2 mg/L).

De Luca et al. Lancet Rheum 2020. In press.

# Kiniksa's Development Strategy for Diseases with Cytokine Storm and Hyperinflammation





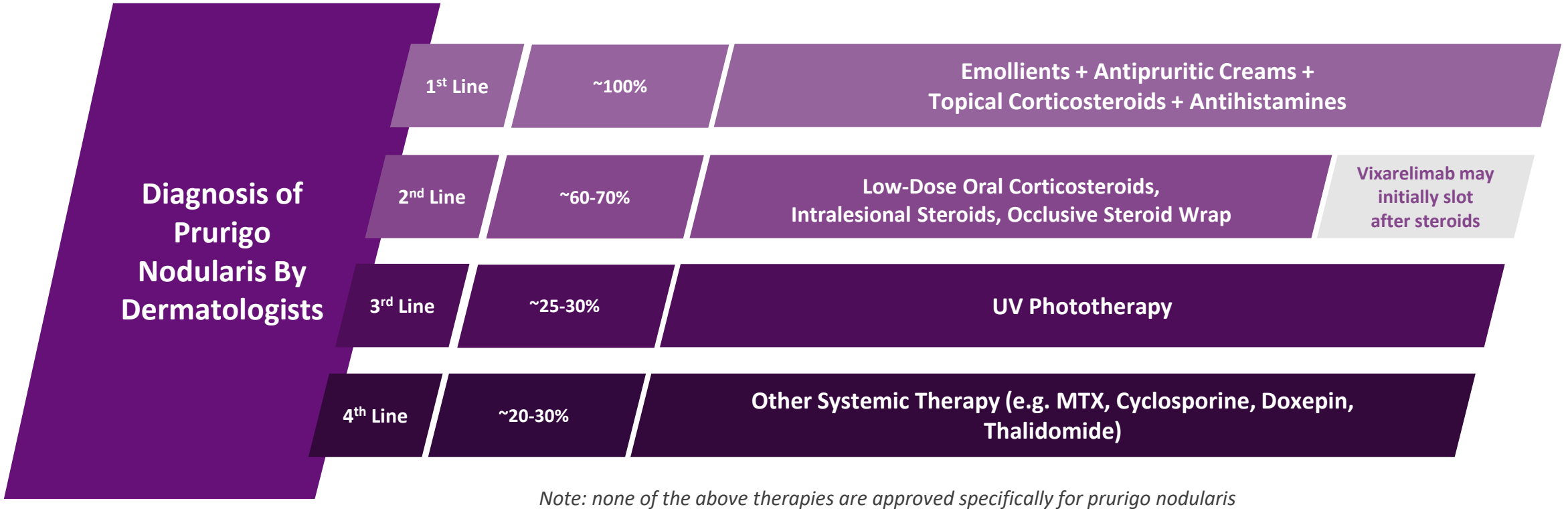

1) Yescarta® is a registered trademark of Gilead Sciences, Inc., or its related companies; CRS = Cytokine Release Syndrome; Sterner et al., Blood 2019; Mehta et al., The Lancet 2020:https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30628-0.pdf

# Vixarelimab

| | |
|---|---|
| **Indication** | **Prurigo Nodularis (PN):** Chronic inflammatory skin disease with pruritic lesions |
| **Mechanism of Action**[1] | Monoclonal antibody inhibitor targeting OSMRβ |
| **Scientific Rationale**[2,5,6] | OSMRβ is a key receptor subunit shared by IL-31 and OSM; cytokines implicated in chronic pruritic diseases |
| **Prevalence**[3] | PN: ~300k prevalent in U.S. |
| **Competition**[4] | No FDA-approved therapies for PN |
| **Status**[5,6] | Phase 2a data in PN achieved statistical significance in both reduction in weekly-average WI-NRS and attainment of PN-IGA 0/1 score at Week 8[5]; dose-ranging Phase 2b initiation expected in Q4 2020 |
| **Economics** | Clinical, regulatory and sales milestones; tiered royalty on annual net sales |
| **Rights** | Worldwide |

1) Trinity Qualitative Interviews; 2) Dillon SR, Sprecher C, Hammond A, Bilsborough J, Rosenfeld-Franklin M, Presnell SR, et al. Interleukin 31, a cytokine produced by activated T cells, induces dermatitis in mice. Nat Immunol. 2004; 5(7):752-60; Weigelt N, et al. J Cutan Pathol . 2010;37:578 86. 3) Trinity Consulting - HCUP/Medicare Data 2012/2013; Quantitative Survey (n=100 dermatologists); Dantas, 2015, "Prevalence of dermatoses in dermatologic evaluation requests from patients admitted to a tertiary hospital for 10 years"; Mortz et al., British Journal of Dermatology, 200; 4) Journal of the American Academy of Dermatology - Analysis of Real-World Treatment Patterns in Patients with Prurigo Nodularis: https://www.jaad.org/article/S0190-9622(19)32744-6/pdf ; 5) Vixarelimab Phase 2a data in prurigo nodularis (www.investors.Kiniksa.com); 6) Vixarelimab exploratory Phase 2 data in diseases characterized by chronic pruritus (www.investors.Kiniksa.com); WI-NRS = Worst-Itch Numeric Rating Scale; PN-IGA = prurigo nodularis-investigator's global assessment

# Prurigo Nodularis is Typically Treated by Dermatologists Through a Combination of Medications and Behavioral Therapies; Treatment is Usually Unsuccessful




*Note: none of the above therapies are approved specifically for prurigo nodularis*



Sources: 1. Medscape, 2. Trinity Qualitative Research

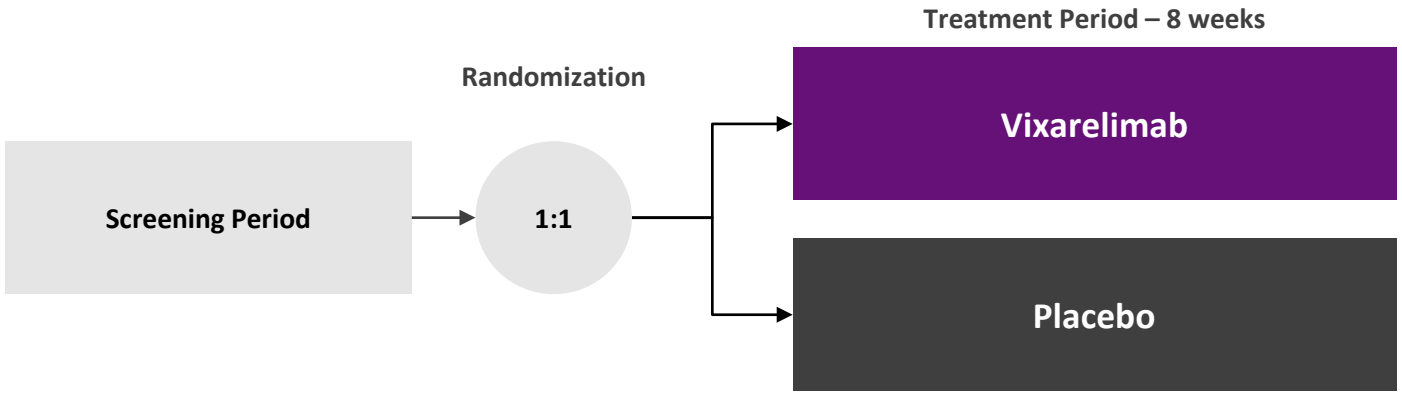
# Vixarelimab Phase 2a Study in Prurigo Nodularis

## Phase 2a Proof-of-Concept

**Objective:** Assess pruritus reduction

**Dose:** 720 mg SC loading dose --> 360 mg single SC QW thereafter

**Primary Efficacy Endpoint** : % change from baseline in weekly average Worst Itch-Numeric Rating Scale (WI-NRS)




**Inclusion Criteria**

- Male or female aged 18 to 75 years, inclusive, at the time of consent
- Have a physician-documented diagnosis of prurigo nodularis that is confirmed by review of medical photography during the Screening Period. Duration of prurigo nodularis (since the time of first PN nodule) must be at least 6 months from the time of first PN nodule to Day 1, as affirmed by the subject
- Have at least 10 nodules of approximately 0.5 to 2 cm at the Screening Visit and Day 1. The nodules must be pruritic and present on at least 2 different anatomical locations (not be localized), involve the extremities, with extensor extremity involvement greater than the flexor extremity involvement. Nodules on the head (face and scalp) are not counted as an anatomical location for eligibility criteria. There must be normal appearing skin present in between nodules with the exception of atopic dermatitis. Each arm, each leg, and trunk are considered different anatomical locations
- Subject has moderate to severe pruritus, defined as WI-NRS ≥ 7 at the Screening Visit and a mean weekly WI-NRS ≥ 5 for each of the 2 consecutive weeks immediately prior to randomization
- Patients were required to stop antihistamines and topical treatments, including corticosteroids, for at least two weeks prior to dosing
- Prurigo nodularis treatments, other than study drug, were not allowed except for rescue

# Vixarelimab Phase 2a Study Prurigo Nodularis

## Statistically significant primary efficacy endpoint of reduction in weekly-average WI-NRS at Week 8

**Enrolled and treated 49 patients with moderate-to-severe prurigo nodularis (mean PN- IGA of 3.4) experiencing moderate-to-severe pruritus (mean WI-NRS score of 8.3)**

- Randomized 1:1 to receive a loading dose of vixarelimab 720 mg (n=23) or placebo (n=26) subcutaneous (SC) followed by vixarelimab 360 mg or placebo SC weekly
- Data includes 49 subjects through the 8-week treatment period

**Primary Efficacy Endpoint:** percent change versus baseline in weekly-average WI-NRS at Week 8 (using the last observation carried forward analysis)

**Topline Observations:**

- Least squares-mean change from baseline in weekly-average WI-NRS at Week 8 was -50.6% in vixarelimab recipients compared to -29.4% in placebo recipients (mean difference 21.1%; p=0.035)
- Median change from baseline in weekly-average WI-NRS at Week 8 was -69.8% in vixarelimab recipients compared to -36.1% in placebo recipients
- 30.4% of vixarelimab recipients achieved a PN-IGA score of 0/1 at Week 8 compared to 7.7% of placebo recipients (p=0.032)
- 52.2% of vixarelimab recipients demonstrated a ≥ 4-point reduction in weekly-average WI-NRS at Week 8 compared to 30.8% of placebo recipients (p=0.109)
- In this Phase 2a trial, vixarelimab was well-tolerated by all subjects and no dose-limiting adverse experiences were observed. There were no serious adverse events or atopic dermatitis flares



WI-NRS = Worst-Itch Numeric Rating Scale
PN-IGA = prurigo nodularis-investigator's global assessment

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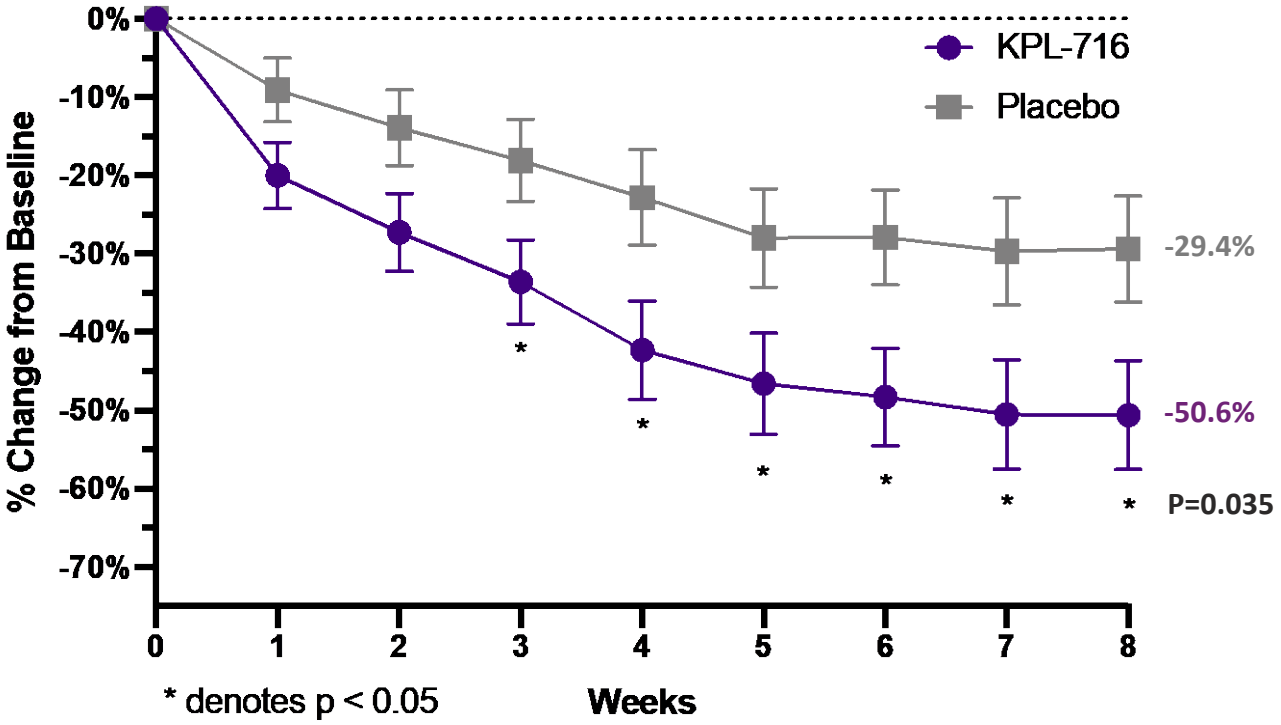
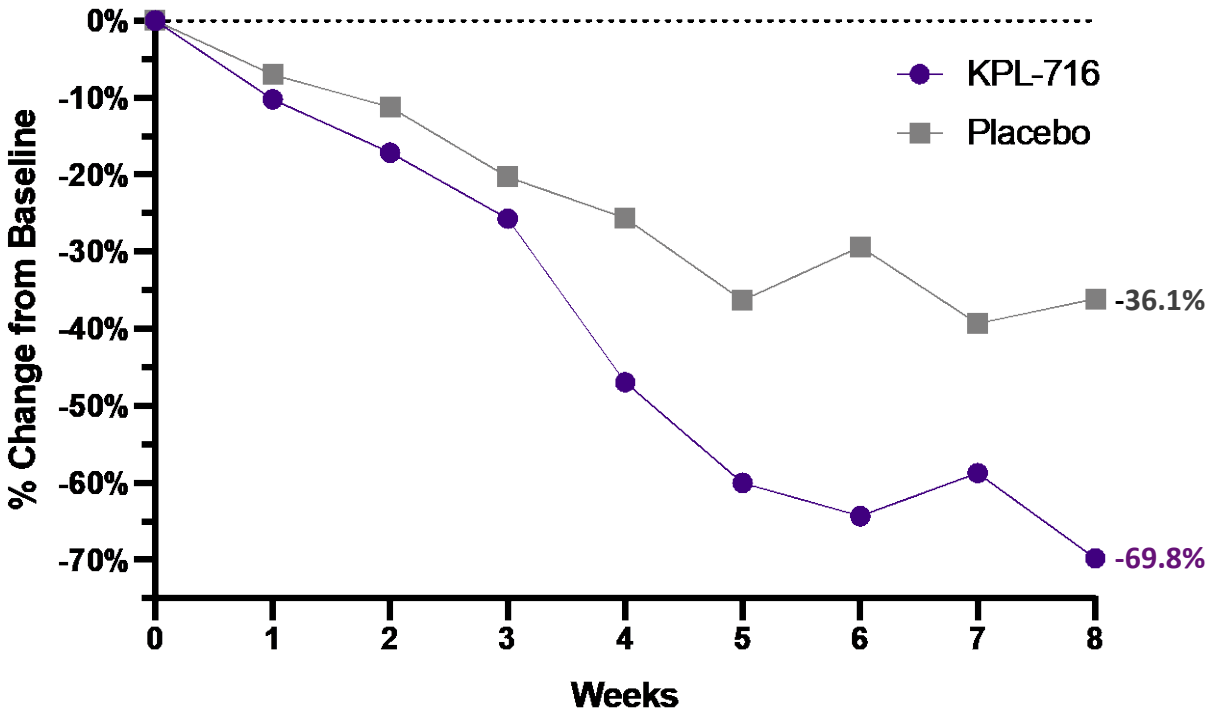
# Vixarelimab Phase 2a Study in Prurigo Nodularis: Statistically Significant Primary Efficacy Endpoint of Reduction in Weekly-Average WI-NRS at Week 8

Median change from baseline in weekly-average WI-NRS at Week 8 was -69.8%

## LS-Mean % Change in Weekly Average WI-NRS



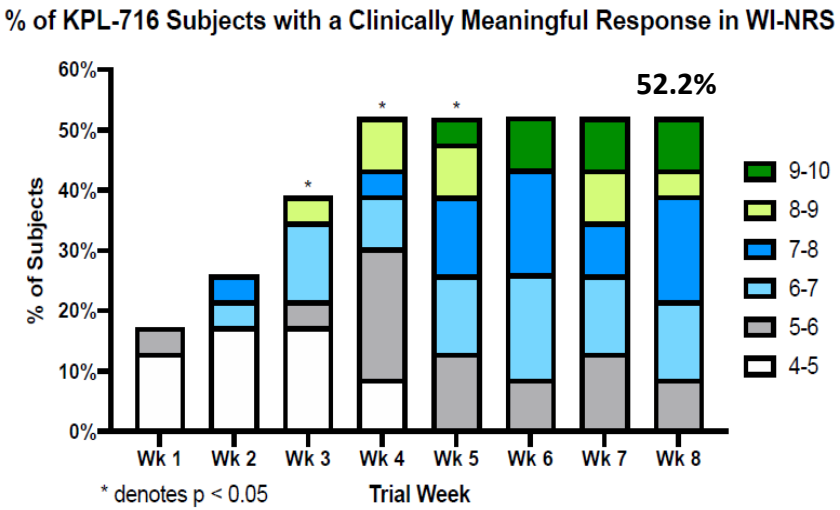

## Median % Change in Weekly Average WI-NRS

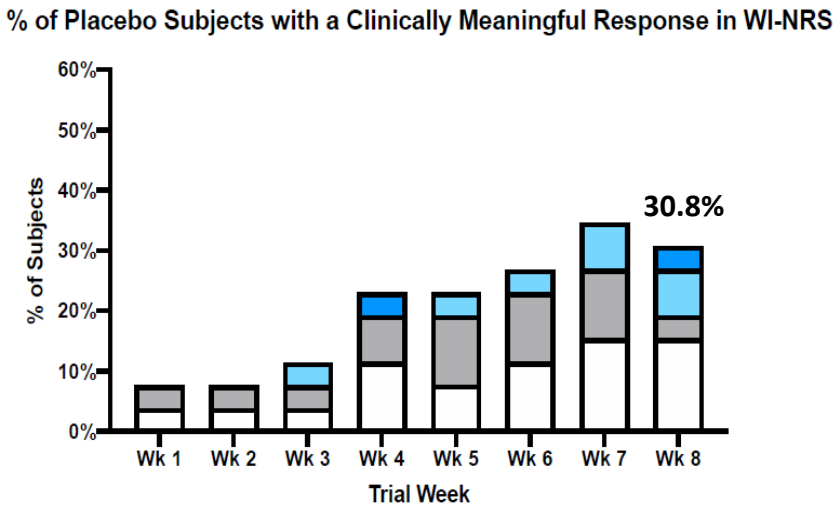


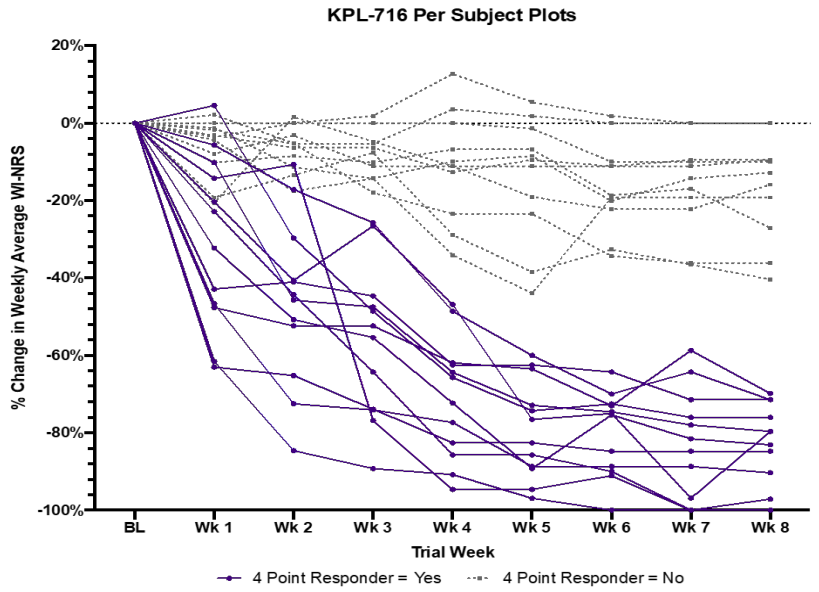


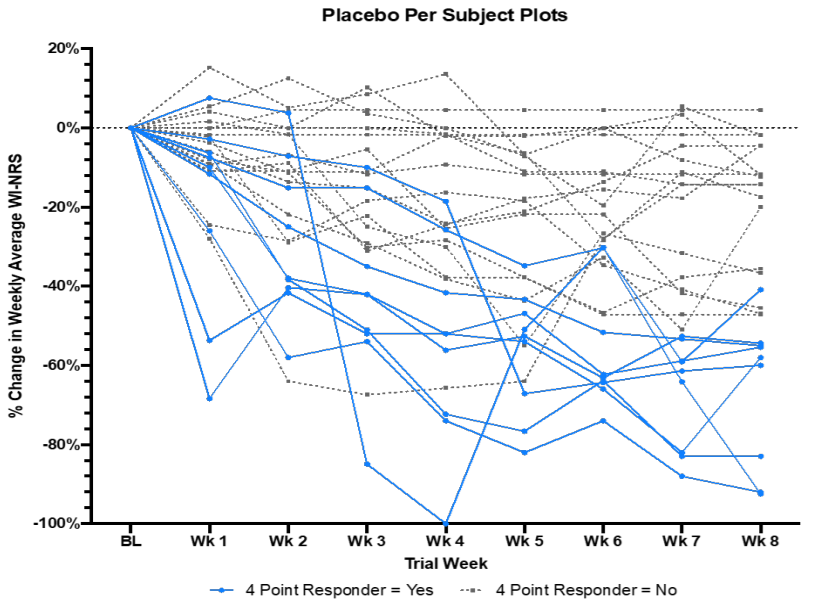

Vixarelimab = KPL-716
WI-NRS = Worst-Itch Numeric Rating Scale
LS = least squares

# Vixarelimab Phase 2a Study in Prurigo Nodularis: Majority of Vixarelimab Recipients Showed a Clinically Meaningful ≥4-Point Weekly-Average WI-NRS Reduction at Week 8



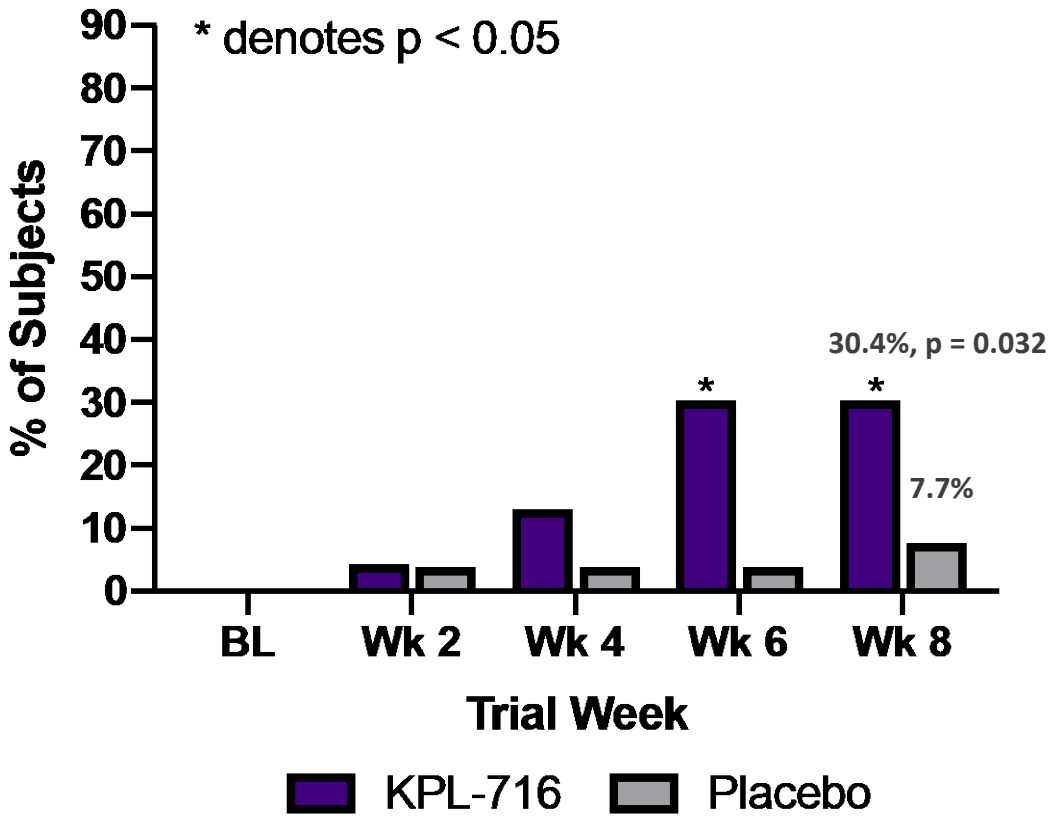



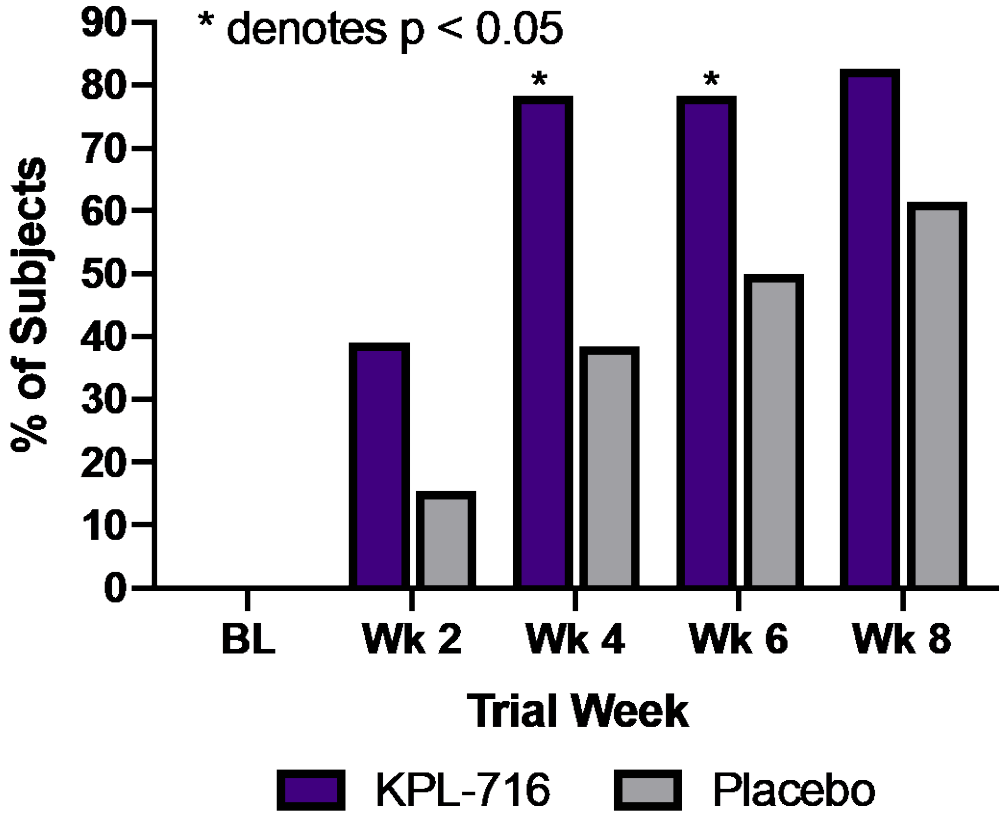

Vixarelimab = KPL-716
WI-NRS = Worst-Itch Numeric Rating Scale

# Vixarelimab Phase 2a Study in Prurigo Nodularis: Significantly More Vixarelimab Recipients Attained A Clear/Almost Clear Lesion Score by Week 8

## PN-IGA Score of 0 or 1




## ≥1 Point Change in PN-IGA

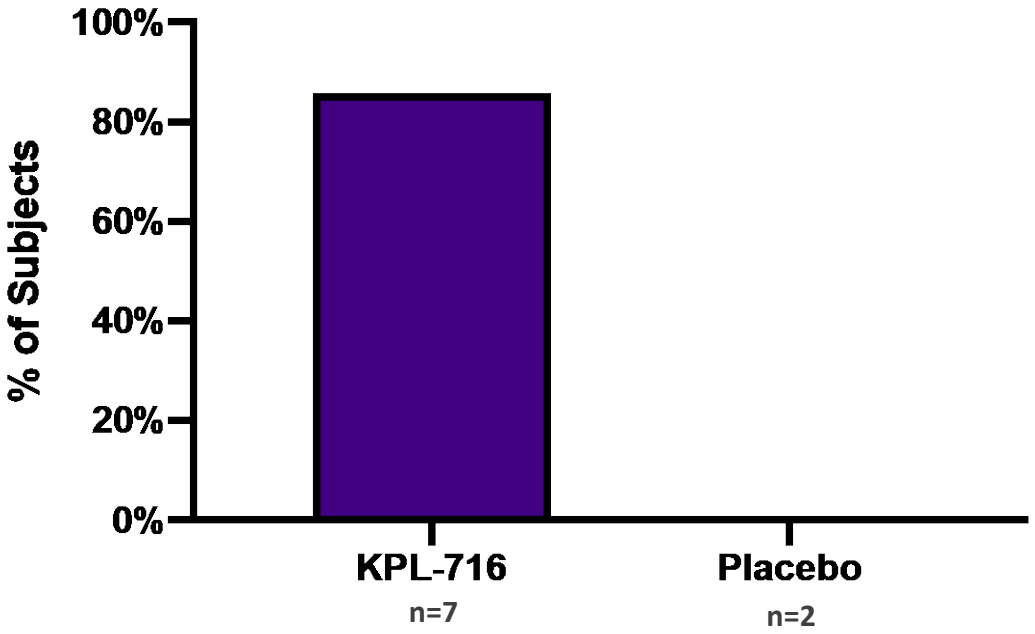





Vixarelimab = KPL-716; PN-IGA = prurigo nodularis-investigator's global assessment

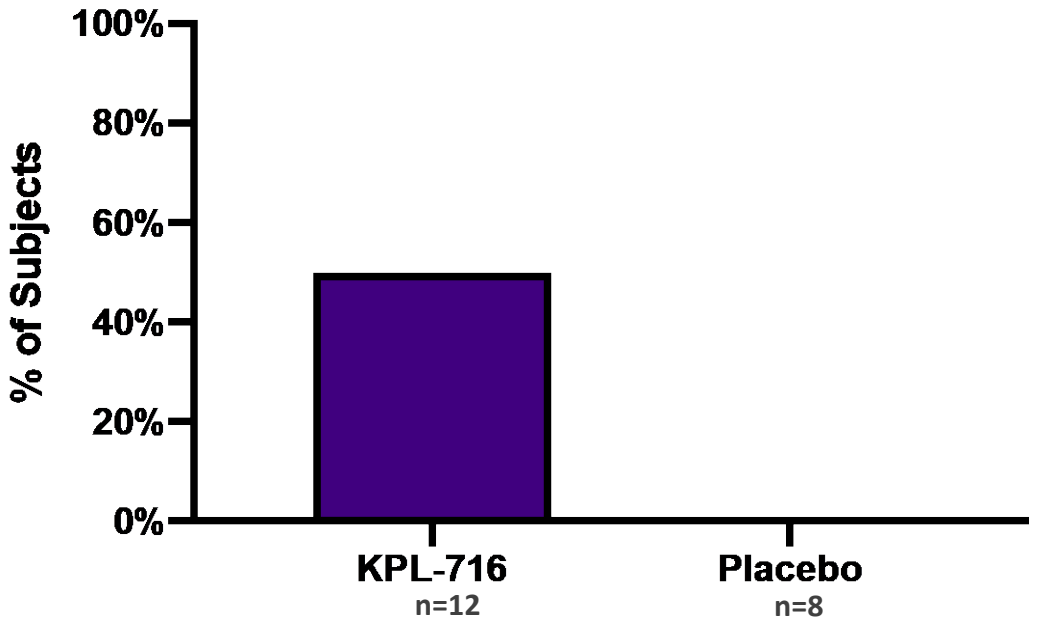
# Vixarelimab Phase 2a Study in Prurigo Nodularis: Concordant Activity of Vixarelimab on PN-IGA and Pruritus

**% of IGA 0-1 Subjects with ≥4 Point Change in WI-NRS**




***85.7% of the subjects who achieved 0-1 on the PN-IGA scale were also 4-point responders on WI-NRS vs. none for placebo***

**% of Subjects with ≥4 Point Change in WI-NRS and an IGA of 0-1**

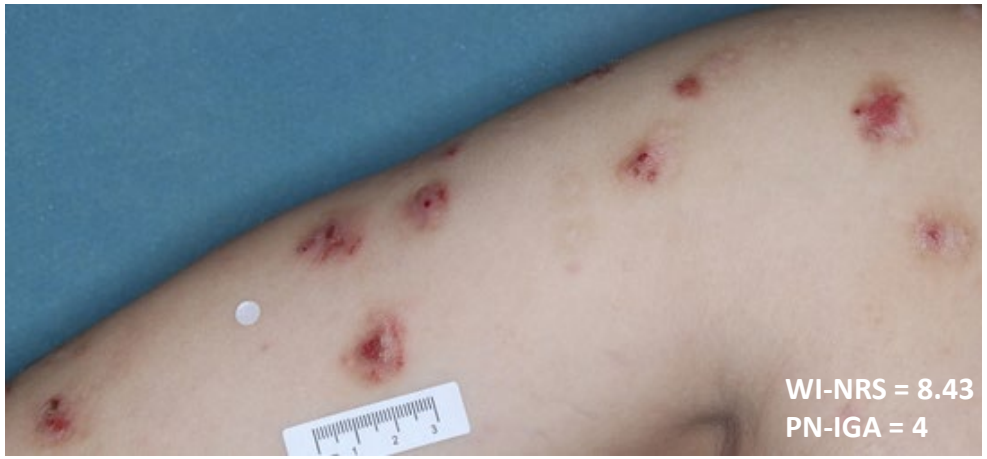
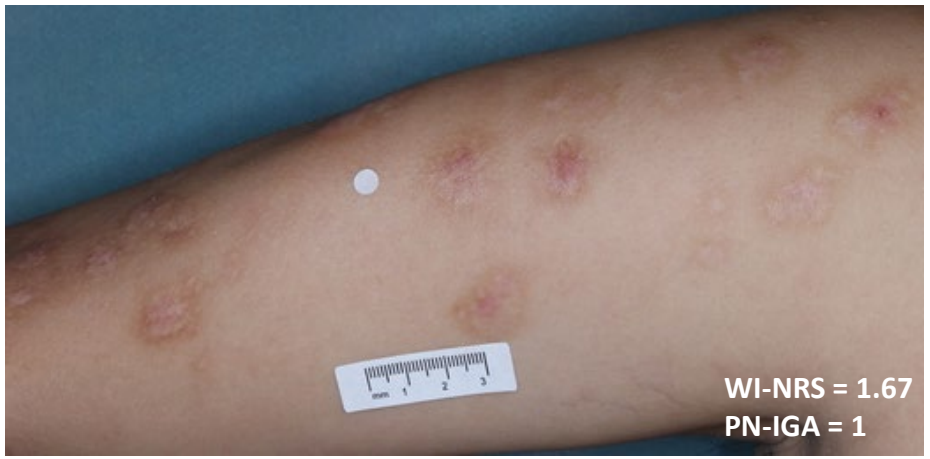
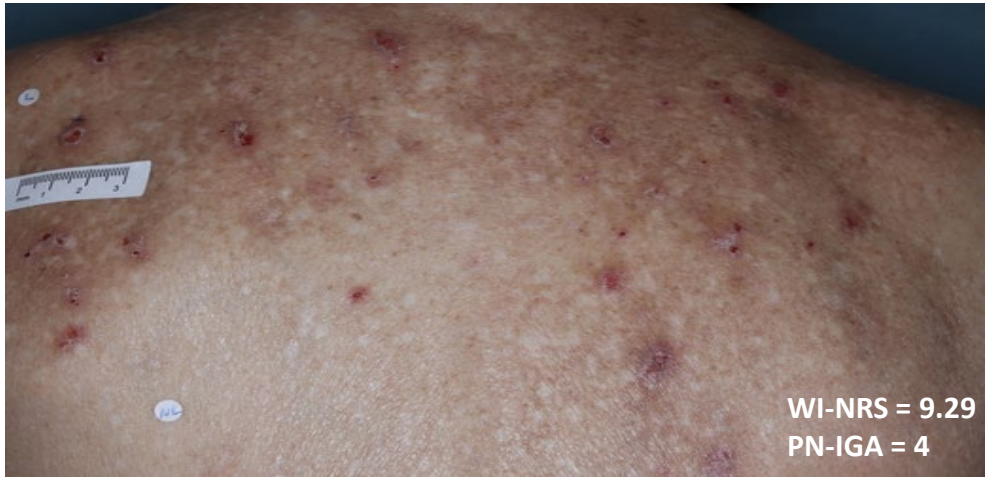
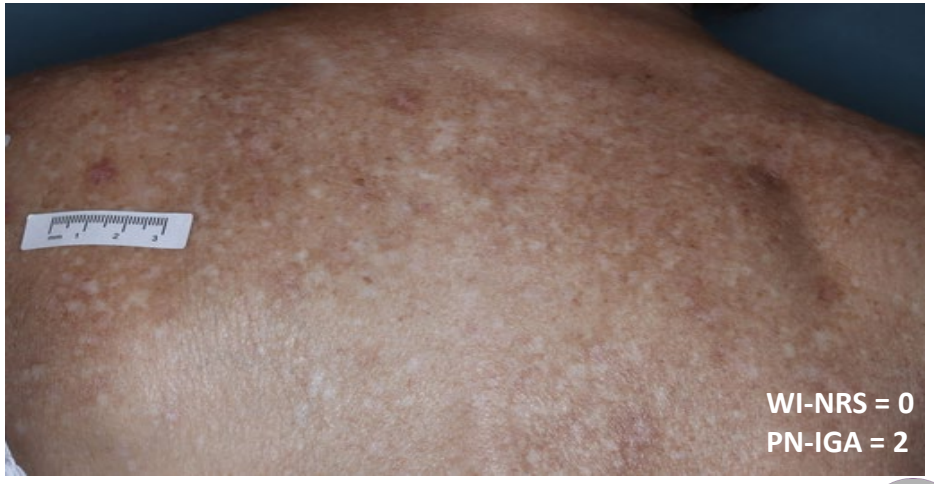



***50% of the subjects who had a clinically meaningful reduction in itch by week 8 also had an PN-IGA score of 0-1 vs. none for placebo***



Vixarelimab = KPL-716
WI-NRS = Worst-Itch Numeric Rating Scale
PN-IGA = prurigo nodularis-investigator's global assessment

# Vixarelimab Phase 2a Study in Prurigo Nodularis: Representative Images of Nodule Resolution at Week 8 in Vixarelimab-Treated Subjects

| | Day 1 | Week 8 |
|---|---|---|
| Subject 1 |  WI-NRS = 8.43<br>PN-IGA = 4 |  WI-NRS = 1.67<br>PN-IGA = 1 |
| Subject 2 |  WI-NRS = 9.29<br>PN-IGA = 4 |  WI-NRS = 0<br>PN-IGA = 2 |

# KPL-404

| | |
|---|---|
| **Autoimmune Diseases[1]** | External proof-of-concept previously established in broad range of autoimmune diseases: Sjogren's disease, systemic lupus, rheumatoid arthritis, solid organ transplant and Graves' disease[1] |
| **Mechanism of Action[2]** | Monoclonal antibody inhibitor of CD40-CD40L interaction |
| **Scientific Rationale[3,4]** | Attractive target for blocking T-cell dependent, B-cell–mediated autoimmunity |
| **Status** | Enrolling first-in-human study with antigen challenge TDAR[5]; Phase 1 data expected in Q4 2020 |
| **Economics** | Clinical and regulatory milestones and royalty on annual net sales |
| **Rights** | Worldwide |



1) National Center for Biotechnology Information - Targeting the CD40-CD154 Signaling Pathway for Treatment of Autoimmune Arthritis: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6721639/; 2) Poster presentation at the Keystone Symposia: Antibodies as Drugs: New Horizons in the Therapeutic Use of Engineered Antibodies: KPL-404, a CD40 antagonist, blocked antigen-specific antibody responses in an in vivo NHP model and demonstrated strong PK/PD correlation; 3) Elgueta, et al. Immunol Rev 2009, 229 (1), 152-172; 4) Peters, et al. Semin Immunol 2009, 21 (5) 293-300; 5) TDAR, T-cell Dependent Antibody Response

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# KPL-404: Potential Molecule for Evaluation in a Broad Range of Autoimmune Diseases

| | | |
|---|---|---|
| **Mechanism** | **Humanized mAb inhibitor of CD40-CD40L interaction[1]** | • Designed to inhibit CD40-CD40L, a T-cell co-stimulatory pathway critical for B-cell maturation and immunoglobulin class switching |
| **Rationale** | **External POC for CD40-CD40L inhibition observed in a range of autoimmune diseases[2,3]** | • **Published Positive Class-Related Clinical Data**: Sjogren's syndrome, systemic lupus erythematosus, solid organ transplant, rheumatoid arthritis, Graves' disease<br>• **Ongoing Class-Related Studies**: type 1 diabetes, ulcerative colitis, lupus nephritis, hidradenitis suppurativa, kidney transplant and focal segmental glomerulosclerosis |
| **Preclinical Data** | **Robust preclinical package supports development potential** | • Favorable pharmacokinetic and pharmacodynamic findings, including engagement of CD40 target and block of antigen-specific primary and secondary antibody responses in a T-cell dependent antibody response cynomolgus monkey model |
| **Competition** | **Potential differentiation** | • KPL-404 at 10mg/kg achieved/maintained ~100% receptor occupancy in 7/7 non-human primates (NHP) through 4 weeks<br>• KPL-404 10mg/kg suppressed T-cell dependent antibody responses (TDAR) in NHP model to tetanus toxoid (TT) and keyhole limpet hemocyanin (KLH) for >4 weeks |
| **Status** | **Enrolling first-in-human study** | • Enrolling a single-ascending-dose Phase 1 study in healthy volunteers which will provide safety data and pharmacokinetics as well as receptor occupancy and TDAR<br>• Top-line data are expected in 4Q 2020 |



1) Poster presentation at the Keystone Symposia: Antibodies as Drugs: New Horizons in the Therapeutic Use of Engineered Antibodies: KPL-404, a CD40 antagonist, blocked antigen-specific antibody responses in an in vivo NHP model and demonstrated strong PK/PD correlation; 2) Elgueta, et al. Immunol Rev 2009, 229 (1), 152-172; 3) Peters, et al. Semin Immunol 2009, 21 (5) 293-300; TDAR, T-cell Dependent Antibody Response

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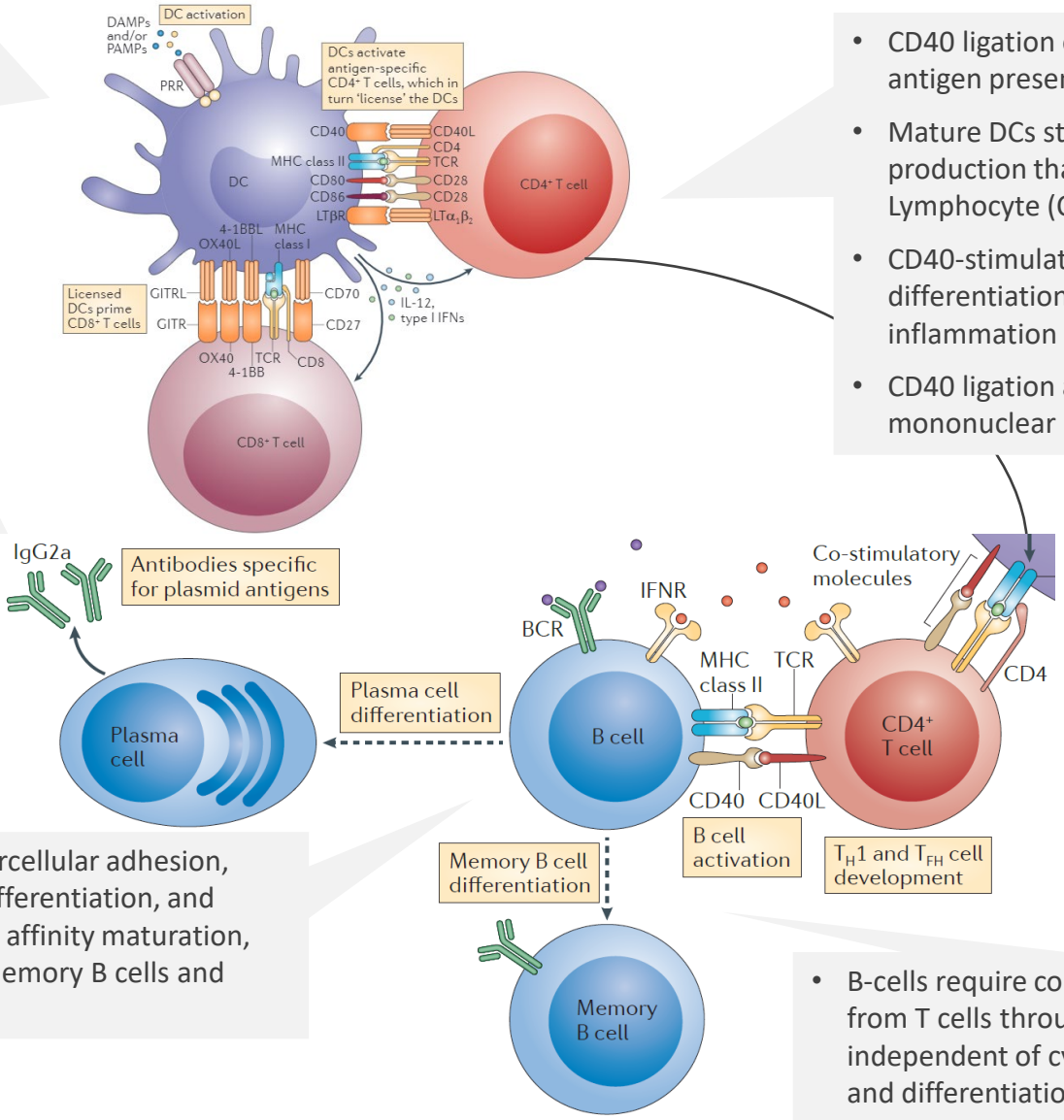
# CD40/CD40L is an Essential Immune Pathway for T-Cell Priming and T-Cell Dependent B-Cell Responses

- CD40 is expressed on the surface of dendritic cells, B-cells, antigen-presenting cells and non-immune cell types
- Its ligand, CD40L (CD154), is expressed by activated T-cells, platelets, and other cell types




- CD40 ligation on DCs induces cell maturation by promoting antigen presentation and enhancing their costimulatory activity
- Mature DCs stimulate activated T-cells to increase IL-2 production that facilitates T-helper cells (Th) and cytolytic T-Lymphocyte (CTL) expansion
- CD40-stimulated DCs also secrete cytokines favoring Th1 cell differentiation and promoting Th cell migration to sites of inflammation
- CD40 ligation also provides a pro-inflammatory signal within the mononuclear phagocyte system

- Humoral immunity is dependent on a thriving B cell population and activation by Th cells; blockade of CD40/CD40L interaction has been shown to completely ablate primary and secondary TDAR response

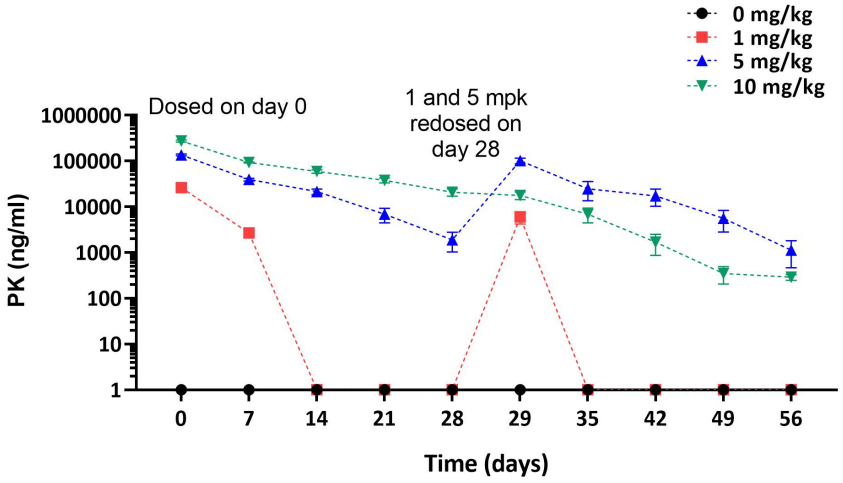
- CD40 engagement triggers B-cell intercellular adhesion, sustained proliferation, expansion, differentiation, and antibody isotype switching leading to affinity maturation, which is essential for generation of memory B cells and long-lived plasma cells

- B-cells require contact-dependent stimulus from T cells through CD40/CD40L interaction independent of cytokines to trigger growth and differentiation

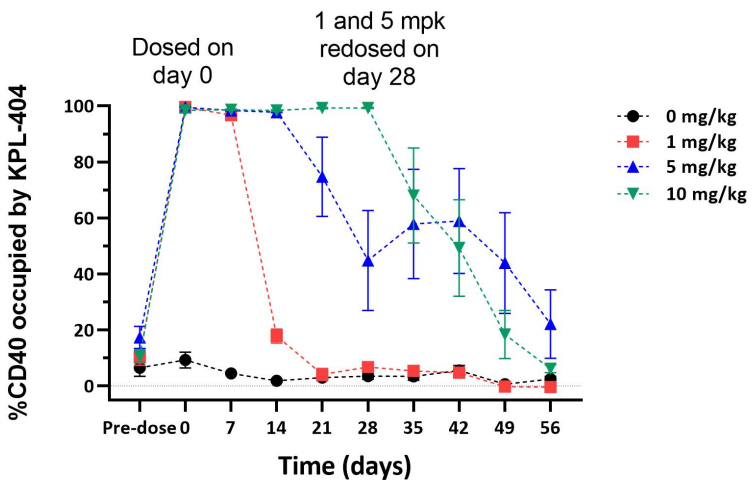
Sources: Elgueta et al., Immunol Rev, 2009; Peters et al., Semin Immunol, 2009; Kambayashi et al., Nature Reviews: Immunology, 14, 2014; Desmet et al., Nature Reviews: Immunology, 12, 2012

# KPL-404 Showed Encouraging Results in a Non-Human Primate Model of TDAR

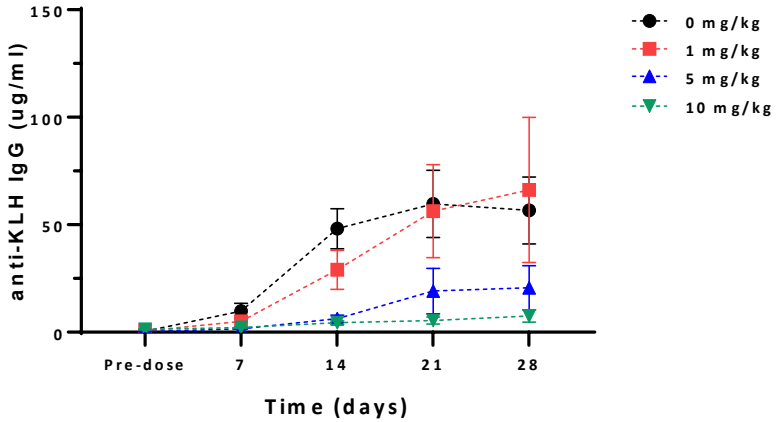
## Mean KPL-404 PK




## Mean KPL-404 Receptor Occupancy (RO)




## Mean KLH IgG




***Showed linear pharmacokinetic profile with low variability between non-human primate subjects (n=7)***

***KPL-404 achieved 100% receptor occupancy for 2 weeks in all animals at 5mg/kg and 4 weeks in all animals at 10mg/kg***

***Complete suppression of primary T-cell dependent antigen response correlated with 100% receptor occupancy***



Source = 1) Poster presentation at the Keystone Symposia: Antibodies as Drugs: New Horizons in the Therapeutic Use of Engineered Antibodies: KPL-404, a CD40 antagonist, blocked antigen-specific antibody responses in an in vivo NHP model and demonstrated strong PK/PD correlation; TDAR = T-cell dependent antibody response; KLH = keyhole limpet hemocyanin

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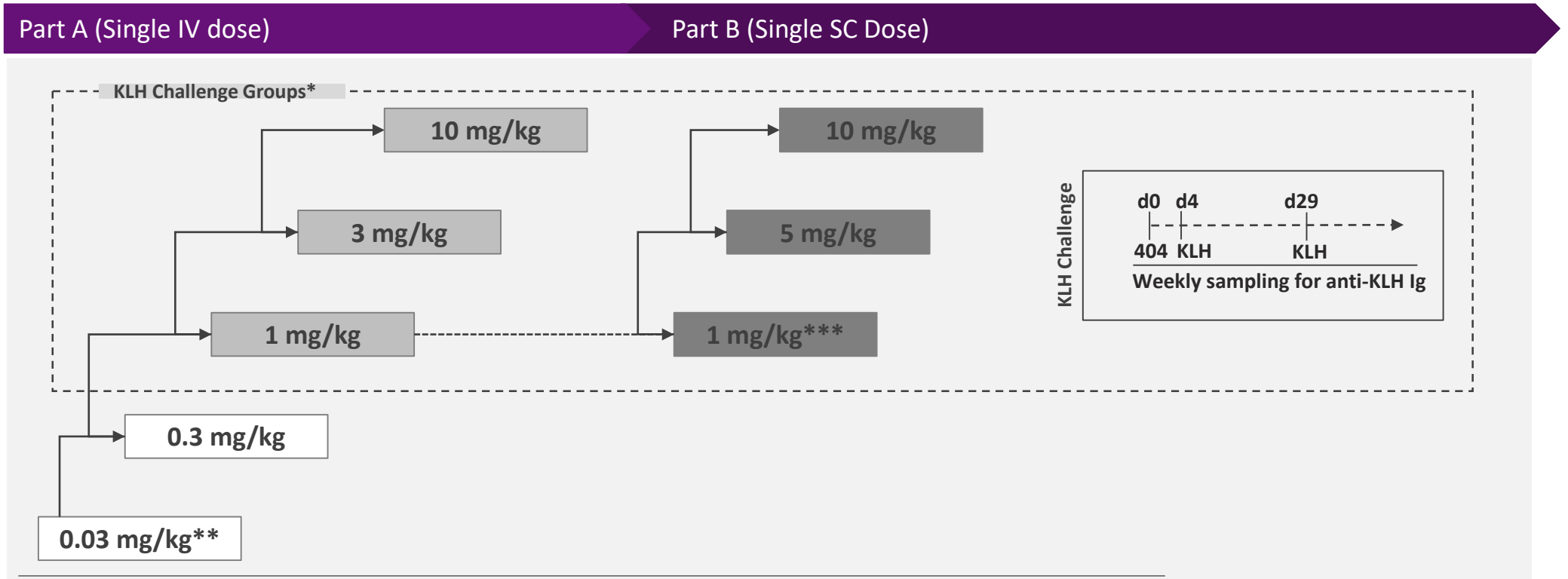
# KPL-404 Single-Ascending-Dose Phase 1 Study

First-in-human study to provide safety data and pharmacokinetics as well as receptor occupancy and TDAR

**Phase 1 SAD Study Design (n=60 NHV)**




- **Primary endpoints:** Safety and Tolerability
- **Secondary endpoints:** PK and ADA / CD40 RO in blood / Serum anti-KLH Ig levels
- **Exploratory endpoints:** Serum CXCL13 levels

**Notes**: Unless otherwise noted dose groups included 6 active/2 placebo subjects; *1° KLH challenge for all SAD dose groups except 0.03 and 0.3 mg/kg, 2° KLH re-challenge only in 1, 3, and 10 mg/kg IV; ** Cohort included 2 active and 2 placebo subjects; *** The 1 mg/kg SC dose arm will enroll after review of the 1 mg/kg IV SMC

SAD = single-ascending-dose; TDAR = T-cell dependent antibody response; KLH = keyhole limpet hemocyanin; RO = receptor occupancy; ADA = anti-drug antibodies

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**Immune-Modulating** Product Candidates

**Validated Mechanisms** or **Strong Biologic Rationale**

**Debilitating Diseases** with **Unmet Medical Need**

**~$279M** Proforma Cash Reserves* **Extend into 2H 2021**

Multiple **Clinical Data Readouts** Expected in **2H 2020**



*Our proforma cash reserves includes ~$204 million of cash, cash equivalents and short-term investments as of 3/31/2020 and ~$75 million of estimated net proceeds from our follow-on public offering, including underwriters' exercise of the overallotment option in full, and concurrent private placement as though we had closed on these financings in Q1 2020. As such our proforma cash reserves is not prepared in accordance with GAAP.

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*Every Second Counts!™*

# Appendix

*Every Second Counts!™*

# Appendix – Rilonacept

# Recurrent Pericarditis is a Debilitating Disease with No FDA-Approved Therapies

## Pericarditis is chest pain caused by pericardial inflammation

**Acute Pericarditis is diagnosed in patients with two of the following:**

- (1) Retrosternal, pleuritic chest pain (85-90% of cases), (2) Abnormal ECG (ST elevation or PR depression); (4) Pericardial effusion[1,2]

**Often Idiopathic Etiology**:

- Absent a clear sign of infection, it is assumed that most cases are post-viral, but are termed “idiopathic”

**Recurrent Pericarditis:**

- Diagnosed if there is recurrence after initial episode of acute pericarditis, with a symptom-free interval of > 4-6 weeks → First recurrence is followed by more recurrences between 20% - 30% of the time[1,2]

**Involvement of IL-1 in Idiopathic Recurrent Pericarditis:**

- IL-1 has been implicated by several case reports and the AIRTRIP Study in idiopathic pericarditis

## Recurrent pericarditis causes significant impairment of quality of life

**Recurrent Disease Creates Burden on QoL**:

- Although pericarditis is rarely life-threatening, patients may have significant impairment on quality of life due to chest pain:
  - Interference with sleep, as chest pain worsens while reclining
  - Lower productivity at work or school
  - Some patients may be on disability or close to it
  - Standard of care treatments have significant AEs

**Complications Are Rare but Severe:**

- Complications of pericarditis are rare (i.e., effusion, tamponade, constrictive pericarditis), but, when they occur, they can be life threatening and often require invasive therapy



1) Maish et al European Heart Journal 2004, 25, 587-610; 2) Alder et Al. European Heart Journal, 2015 ESC guidelines

# Summary of Adverse Events

## Pivotal Phase 3 Rilonacept Data

RHAPSODY

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Subjects with Any TEAEs | 69 (80.2) | 24 (80.0) | 13 (41.9) |
| Blood and lymphatic system disorders | 2 (2.3) | 0 | 0 |
| Eosinophilia | 1 (1.2) | 0 | 0 |
| Lymphadenopathy | 1 (1.2) | 0 | 0 |
| Cardiac disorders | 5 (5.8) | 0 | 2 (6.5) |
| Angina pectoris | 1 (1.2) | 0 | 0 |
| Aortic valve incompetence | 0 | 0 | 1 (3.2) |
| Atrial fibrillation | 1 (1.2) | 0 | 0 |
| Cardiac flutter | 0 | 0 | 1 (3.2) |
| Palpitations | 1 (1.2) | 0 | 0 |
| Sinus tachycardia | 1 (1.2) | 0 | 0 |
| Tachycardia | 1 (1.2) | 0 | 0 |
| Ventricular dyssynchrony | 1 (1.2) | 0 | 0 |
| Ear and labyrinth disorders | 1 (1.2) | 0 | 0 |
| Middle ear effusion | 0 | 0 | 0 |
| Vertigo | 1 (1.2) | 0 | 0 |
| Endocrine disorders | 0 | 1 (3.3) | 0 |
| Hypothyroidism | 0 | 1 (3.3) | 0 |
| Eye disorders | 1 (1.2) | 0 | 0 |
| Diplopia | 0 | 0 | 0 |
| Eye inflammation | 1 (1.2) | 0 | 0 |
| Gastrointestinal disorders | 14 (16.3) | 2 (6.7) | 2 (6.5) |

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Abdominal distension | 2 (2.3) | 0 | 0 |
| Abdominal pain | 0 | 0 | 1 (3.2) |
| Abdominal tenderness | 0 | 1 (3.3) | 0 |
| Aphthous ulcer | 0 | 1 (3.3) | 0 |
| Constipation | 1 (1.2) | 0 | 0 |
| Diarrhea | 5 (5.8) | 0 | 0 |
| Gastric ulcer | 1 (1.2) | 0 | 0 |
| Gastritis | 1 (1.2) | 0 | 0 |
| Gastrointestinal disorder | 1 (1.2) | 0 | 0 |
| Gastrooesophageal reflux disease | 1 (1.2) | 1 (3.3) | 0 |
| Gingival pain | 1 (1.2) | 0 | 0 |
| Haemorrhoids | 0 | 0 | 1 (3.2) |
| Ileus | 0 | 0 | 0 |
| Nausea | 2 (2.3) | 0 | 0 |
| Tongue ulceration | 0 | 1 (3.3) | 0 |
| Vomiting | 1 (1.2) | 0 | 0 |
| General disorders and administration site conditions | 30 (34.9) | 10 (33.3) | 1 (3.2) |
| Asthenia | 2 (2.3) | 0 | 0 |
| Chest discomfort | 1 (1.2) | 1 (3.3) | 0 |
| Chills | 1 (1.2) | 0 | 0 |
| Fatigue | 2 (2.3) | 2 (6.7) | 0 |
| Feeling abnormal | 1 (1.2) | 0 | 0 |



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# Summary of Adverse Events

## Pivotal Phase 3 Rilonacept Data

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Feeling hot | 2 (2.3) | 0 | 0 |
| Injection site bruising | 1 (1.2) | 0 | 0 |
| Injection site discolouration | 2 (2.3) | 0 | 0 |
| Injection site erythema | 18 (20.9) | 6 (20.0) | 0 |
| Injection site inflammation | 1 (1.2) | 0 | 0 |
| Injection site nodule | 1 (1.2) | 0 | 0 |
| Injection site pain | 4 (4.7) | 0 | 0 |
| Injection site pruritus | 5 (5.8) | 5 (16.7) | 0 |
| Injection site rash | 3 (3.5) | 0 | 0 |
| Injection site reaction | 2 (2.3) | 0 | 0 |
| Injection site swelling | 5 (5.8) | 1 (3.3) | 0 |
| Non-cardiac chest pain | 1 (1.2) | 3 (10.0) | 1 (3.2) |
| Oedema peripheral | 0 | 1 (3.3) | 0 |
| Pain | 1 (1.2) | 1 (3.3) | 0 |
| Pyrexia | 1 (1.2) | 0 | 0 |
| Immune system disorders | 1 (1.2) | 0 | 1 (3.2) |
| Drug hypersensitivity | 1 (1.2) | 0 | 0 |
| Hypersensitivity | 1 (1.2) | 0 | 0 |
| Seasonal allergy | 0 | 0 | 1 (3.2) |
| Infections and infestations | 14 (16.3) | 12 (40.0) | 3 (9.7) |
| Bronchitis | 0 | 1 (3.3) | 0 |
| Conjunctivitis | 0 | 1 (3.3) | 0 |

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Ear infection | 0 | 0 | 0 |
| Gastroenteritis | 0 | 0 | 1 (3.2) |
| Gastroenteritis viral | 0 | 0 | 0 |
| Gastrointestinal viral infection | 0 | 1 (3.3) | 1 (3.2) |
| Hordeolum | 1 (1.2) | 0 | 0 |
| Influenza | 1 (1.2) | 0 | 1 (3.2) |
| Nasopharyngitis | 6 (7.0) | 2 (6.7) | 0 |
| Oral herpes | 1 (1.2) | 1 (3.3) | 0 |
| Otitis media | 0 | 1 (3.3) | 0 |
| Pharyngitis | 1 (1.2) | 0 | 0 |
| Pharyngitis streptococcal | 0 | 0 | 0 |
| Rhinitis | 1 (1.2) | 0 | 0 |
| Sinusitis | 1 (1.2) | 3 (10.0) | 0 |
| Subcutaneous abscess | 1 (1.2) | 0 | 0 |
| Upper respiratory tract infection | 2 (2.3) | 1 (3.3) | 0 |
| Urinary tract infection | 1 (1.2) | 3 (10.0) | 0 |
| Vaginal infection | 0 | 1 (3.3) | 0 |
| Viral upper respiratory tract infection | 2 (2.3) | 1 (3.3) | 0 |
| Injury, poisoning and procedural complications | 6 (7.0) | 3 (10.0) | 1 (3.2) |
| Epicondylitis | 0 | 1 (3.3) | 0 |
| Fall | 2 (2.3) | 0 | 0 |
| Humerus fracture | 0 | 0 | 1 (3.2) |



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# Summary of Adverse Events

## Pivotal Phase 3 Rilonacept Data

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Joint injury | 0 | 1 (3.3) | 0 |
| Limb injury | 0 | 0 | 1 (3.2) |
| Muscle strain | 1 (1.2) | 0 | 0 |
| Post procedural contusion | 0 | 1 (3.3) | 0 |
| Post-traumatic pain | 2 (2.3) | 0 | 0 |
| Procedural dizziness | 1 (1.2) | 0 | 0 |
| Investigations | 12 (14.0) | 7 (23.3) | 0 |
| Bacterial test | 0 | 0 | 0 |
| Blood cholesterol increased | 0 | 1 (3.3) | 0 |
| Blood glucose decreased | 0 | 1 (3.3) | 0 |
| Blood glucose increased | 1 (1.2) | 0 | 0 |
| Blood pressure increased | 1 (1.2) | 1 (3.3) | 0 |
| Blood triglycerides increased | 0 | 1 (3.3) | 0 |
| Body temperature decreased | 1 (1.2) | 0 | 0 |
| C-reactive protein increased | 1 (1.2) | 2 (6.7) | 0 |
| Eosinophil count increased | 1 (1.2) | 0 | 0 |
| Haemoglobin decreased | 1 (1.2) | 0 | 0 |
| Heart rate increased | 1 (1.2) | 1 (3.3) | 0 |
| Hepatic enzyme increased | 1 (1.2) | 1 (3.3) | 0 |
| Heart density lipoprotein decreased | 1 (1.2) | 0 | 0 |
| Heart density lipoprotein increased | 0 | 3 (10.0) | 0 |
| Lipids increased | 0 | 2 (6.7) | 0 |
| Liver function test increased | 1 (1.2) | 0 | 0 |
| Low density lipoprotein increased | 1 (1.2) | 0 | 0 |
| Mean cell volume increased | 0 | 1 (3.3) | 0 |
| Smear cervix abnormal | 1 (1.2) | 0 | 0 |
| Weight increased | 1 (1.2) | 0 | 0 |
| Metabolism and nutrition disorders | 0 | 1 (3.3) | 0 |
| Hyperlipidaemia | 0 | 1 (3.3) | 0 |
| Musculoskeletal and connective tissue disorders | 26 (30.2) | 6 (20.0) | 4 (12.9) |
| Arthralgia | 8 (9.3) | 1 (3.3) | 0 |
| Arthritis | 0 | 1 (3.3) | 0 |
| Axillary mass | 0 | 1 (3.3) | 0 |
| Back pain | 3 (3.5) | 1 (3.3) | 0 |
| Groin pain | 1 (1.2) | 0 | 0 |
| Joint stiffness | 2 (2.3) | 0 | 0 |
| Musculoskeletal chest pain | 3 (3.5) | 1 (3.3) | 4 (12.9) |
| Musculoskeletal pain | 3 (3.5) | 0 | 0 |
| Myalgia | 9 (10.5) | 1 (3.3) | 0 |
| Neck pain | 1 (1.2) | 0 | 1 (3.2) |
| Osteoarthritis | 1 (1.2) | 0 | 0 |
| Pain in extremity | 1 (1.2) | 0 | 0 |
| Neoplasms benign, malignant and unspecified (incl cysts and polyps) | 1 (1.2) | 2 (6.7) | 0 |
| Acrochordon | 1 (1.2) | 0 | 0 |



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# Summary of Adverse Events

## Pivotal Phase 3 Rilonacept Data

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Lipoma | 0 | 1 (3.3) | 0 |
| Squamous cell carcinoma | 0 | 1 (3.3) | 0 |
| Nervous system disorders | 14 (16.3) | 2 (6.7) | 0 |
| Carpal tunnel syndrome | 1 (1.2) | 0 | 0 |
| Cerebrovascular accident | 1 (1.2) | 0 | 0 |
| Dizziness | 2 (2.3) | 1 (3.3) | 0 |
| Dysgeusia | 1 (1.2) | 0 | 0 |
| Head discomfort | 0 | 1 (3.3) | 0 |
| Headache | 7 (8.1) | 0 | 0 |
| Migraine | 1 (1.2) | 0 | 0 |
| Presyncope | 1 (1.2) | 0 | 0 |
| Somnolence | 1 (1.2) | 0 | 0 |
| Psychiatric disorders | 1 (1.2) | 0 | 1 (3.2) |
| Insomnia | 0 | 0 | 1 (3.2) |
| Sleep disorder | 1 (1.2) | 0 | 0 |
| Renal and urinary disorders | 0 | 1 (3.3) | 1 (3.2) |
| Nephrolithiasis | 0 | 1 (3.3) | 0 |
| Renal colic | 0 | 0 | 1 (3.2) |
| Reproductive system and breast disorders | 1 (1.2) | 1 (3.3) | 1 (3.2) |
| Ovarian cyst | 1 (1.2) | 0 | 0 |
| Uterine haemorrhage | 0 | 1 (3.3) | 0 |
| Uterine polyp | 0 | 0 | 1 (3.2) |

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Respiratory, thoracic and mediastinal disorders | 15 (17.4) | 7 (23.3) | 1 (3.2) |
| Alveolitis allergic | 1 (1.2) | 0 | 0 |
| Cough | 5 (5.8) | 1 (3.3) | 0 |
| Dysphonia | 0 | 1 (3.3) | 0 |
| Dyspnoea | 1 (1.2) | 1 (3.3) | 0 |
| Epistaxis | 1 (1.2) | 0 | 0 |
| Nasal congestion | 0 | 0 | 0 |
| Oropharyngeal pain | 1 (1.2) | 3 (10.0) | 0 |
| Pharyngeal hypoaesthesia | 1 (1.2) | 0 | 0 |
| Respiratory tract congestion | 2 (2.3) | 0 | 1 (3.2) |
| Rhinorrhoea | 1 (1.2) | 0 | 0 |
| Sinus congestion | 2 (2.3) | 2 (6.7) | 0 |
| Skin and subcutaneous tissue disorders | 11 (12.8) | 0 | 1 (3.2) |
| Acne | 1 (1.2) | 0 | 0 |
| Alopecia | 1 (1.2) | 0 | 0 |
| Angioedema | 1 (1.2) | 0 | 0 |
| Erythema | 2 (2.3) | 0 | 0 |
| Pruritus | 2 (2.3) | 0 | 0 |
| Pruritus generalised | 2 (2.3) | 0 | 1 (3.2) |
| Rash | 1 (1.2) | 0 | 0 |
| Rash macular | 3 (3.5) | 0 | 0 |
| Social circumstances | 0 | 1 (3.3) | 0 |



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# Summary of Adverse Events

## Pivotal Phase 3 Rilonacept Data

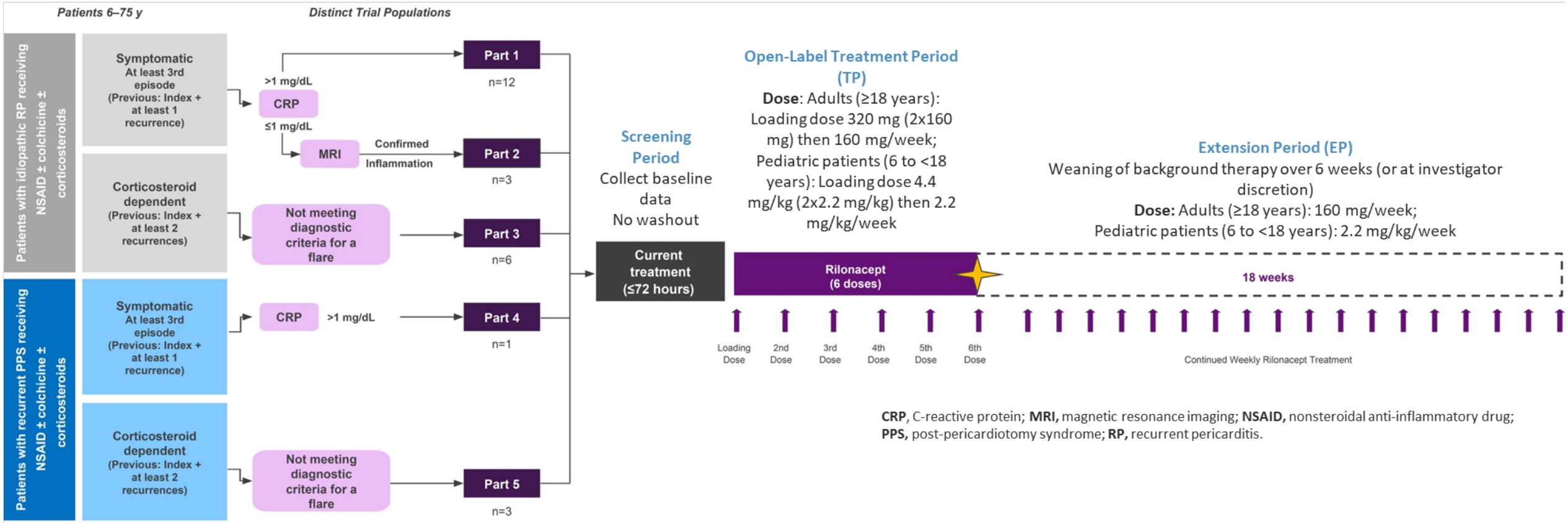
| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Menopause | 0 | 1 (3.3) | 0 |
| Vascular disorders | 2 (2.3) | 1 (3.3) | 1 (3.2) |
| Hypertension | 2 (2.3) | 1 (3.3) | 1 (3.2) |

| | Run-In Period | Randomized Withdrawal Period | |
|---|---|---|---|
| Category [1] | KPL-914 (N=86) n (%) | KPL-914 Including Bailout Rilonacept (N=30) n (%) | Placebo Only Before Bailout Rilonacept (N=31) n (%) |
| Subjects with Any Serious TEAE | 1 (1.2) | 1 (3.3) | 1 (3.2) |
| Cardiac disorders | 0 | 0 | 1 (3.2) |
| Cardiac flutter | 0 | 0 | 1 (3.2) |
| Gastrointestinal disorders | 0 | 0 | 0 |
| Ileus | 0 | 0 | 0 |
| General disorders and administration site conditions | 0 | 0 | 0 |
| Pyrexia | 0 | 0 | 0 |
| Neoplasms benign, malignant and unspecified (incl cysts and polyps) | 0 | 1 (3.3) | 0 |
| Squamous cell carcinoma | 0 | 1 (3.3) | 0 |
| Nervous system disorders | 1 (1.2) | 0 | 0 |
| Cerebrovascular accident | 1 (1.2) | 0 | 0 |



1) Subjects with multiple events are counted once in the same category; 2) A Treatment-emergent adverse events (TEAEs) are defined as AEs that start or increase in severity on or after the date of first dose and before 6 weeks after the last dose of study drug; 3) Each subject has only been represented with the maximum severity; 4) Related or possibly related or missing, as assessed by the investigator.; 5) Includes malignancy excluding basal cell carcinoma of the skin

# Open-Label Phase 2 Clinical Trial of Rilonacept in Pericarditis Populations




**CRP**, C-reactive protein; **MRI,** magnetic resonance imaging; **NSAID,** nonsteroidal anti-inflammatory drug; **PPS,** post-pericardiotomy syndrome; **RP,** recurrent pericarditis.

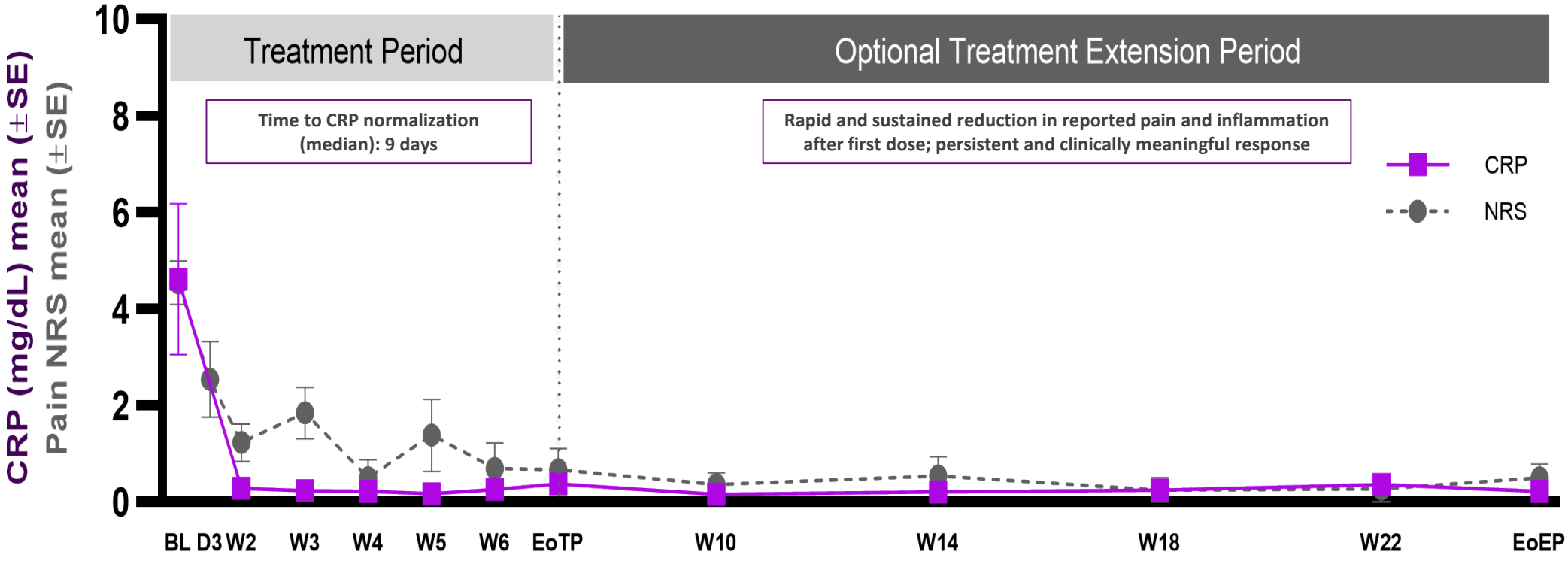


Rilonacept in Recurrent Pericarditis is for Investigational Use Only; Clinicaltrials.gov: NCT03980522
Klein A. Et al. Circulation. 2019;140:A12851 | AHA Scientific Sessions 2019: Poster SA1094

# Phase 2 Rilonacept Data

## Resolution of pericarditis episodes in symptomatic patients (parts 1 and 4)

**Symptomatic Recurrent Pericarditis Patients with Elevated CRP[1] (n=13)**




| | | BL | D3 | W2 | W3 | W4 | W5 | W6 | EoTP | W10 | W14 | W18 | W22 | EoEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CRP | # of Patients | 13 | | 11 | 13 | 8 | 12 | 7 | 12 | 11 | 10 | 7 | 11 | 12 |
| | CRP Mean | 4.62 | | 0.29 | 0.23 | 0.22 | 0.17 | 0.27 | 0.38 | 0.16 | 0.22 | 0.25 | 0.37 | 0.22 |
| Pain NRS | # of Patients | 13 | 11 | 13 | 13 | 8 | 13 | 10 | 9 | 11 | 11 | 8 | 11 | 12 |
| | Pain Mean | 4.5 | 2.5 | 1.2 | 1.8 | 0.5 | 1.4 | 0.7 | 0.7 | 0.4 | 0.5 | 0.3 | 0.3 | 0.5 |



1) Patients with elevated CRP and symptomatic disease (Parts 1 and 4) are most representative of real-world recurrent pericarditis. Inclusion and exclusion criteria for the ongoing Phase 3 study RHAPSODY align with this patient population (clinicaltrials.gov/NCT03737110). EoTP = end of treatment period; EoEP = end of extension period; CRP = C-Reactive Protein; NRS = Numeric Rating Scale

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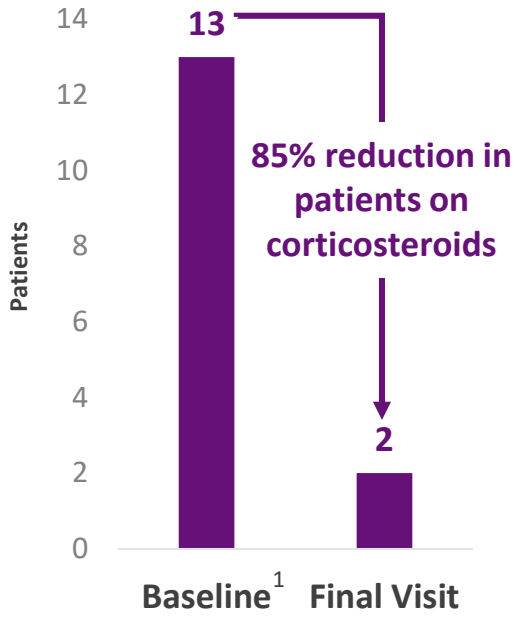
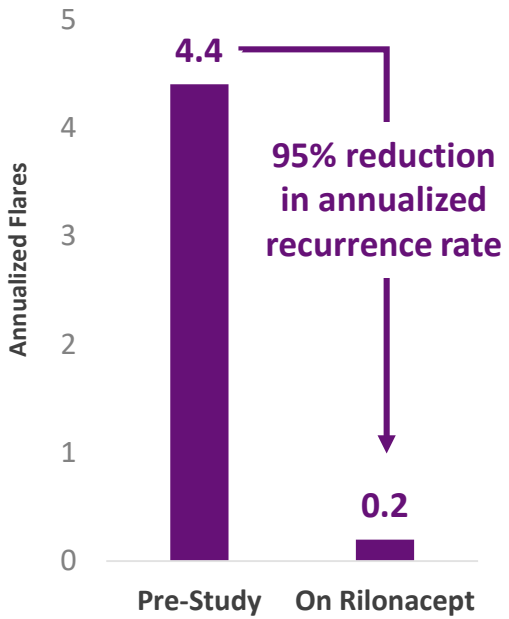
# Phase 2 Rilonacept Data

## Discontinuation of corticosteroids, decrease in incidence of pericarditis episodes while on treatment and improvement in quality of life scores

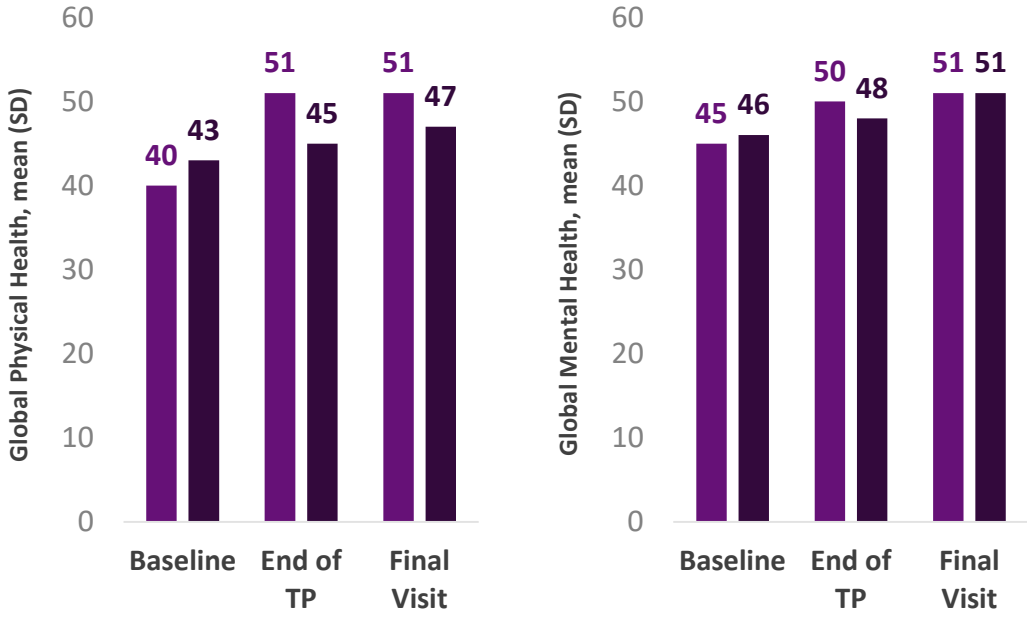
### Discontinuation of Corticosteroids Without Pericarditis Recurrence




### Decrease in Annualized Incidence of Pericarditis Episodes While on Treatment




### Improved Quality of Life Scores[2]




**Idiopathic or PPS:** Active[3] (n=16) CS-dependent[4] (n=9)



1) 15 recurrent pericarditis patients on corticosteroids at baseline enrolled in the 6-week base treatment period, and 13 continued into the optional 18-week extension treatment period and completed 24 weeks of treatment; 2) PROMIS® - Patient Reported Outcomes Measurement Information System. The higher the score, the better global health is. US national average score for Global Physical and Mental Health is 50 (SD 10); 3) Parts 1, 2, and 4; 4) Parts 3 and 5

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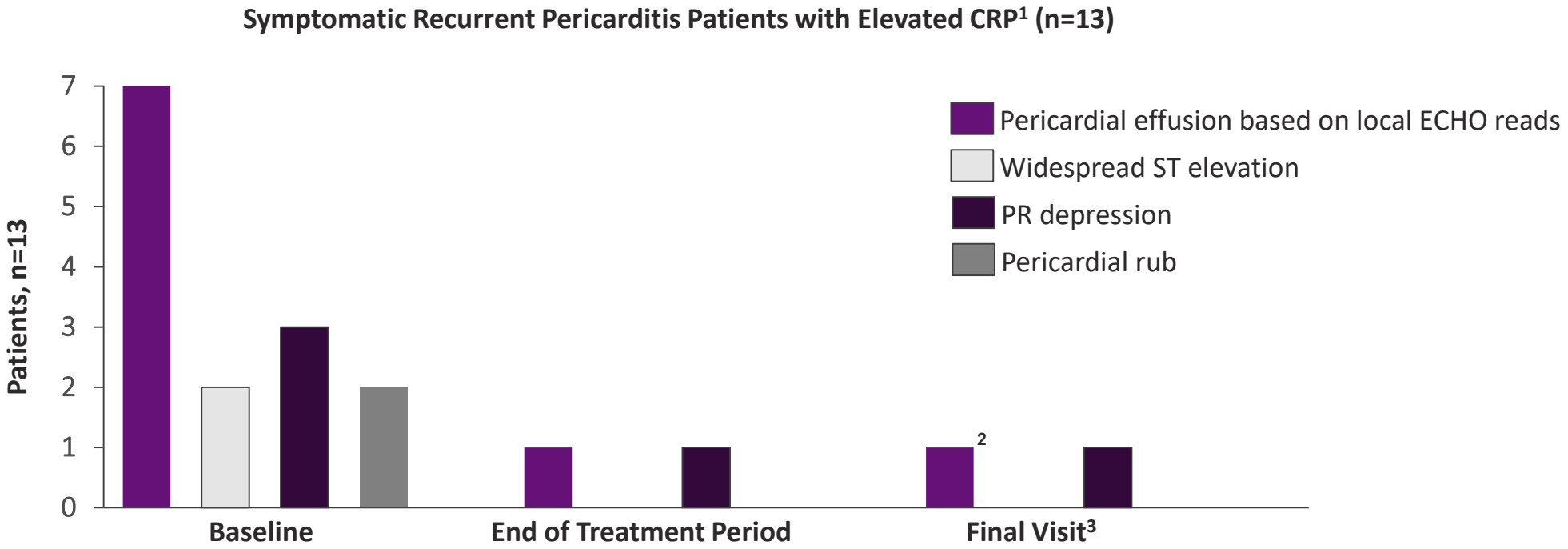
# Phase 2 Rilonacept Data

## Pericardial signs resolved or improved in all patients (parts 1 and 4)



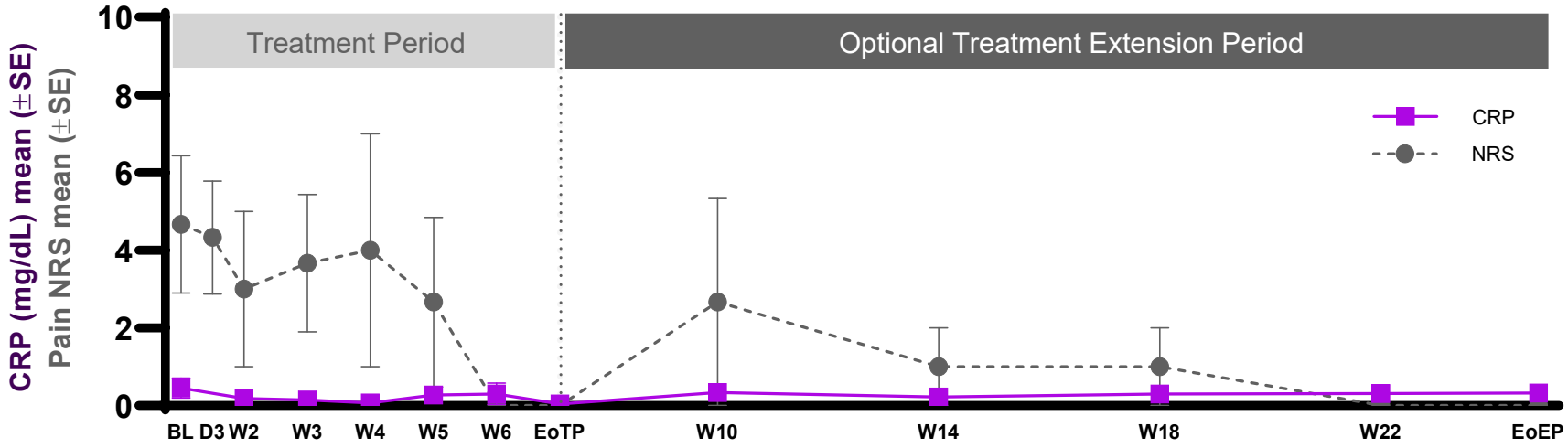



1) Patients with elevated CRP and symptomatic disease (Parts 1 and 4) are most representative of real-world recurrent pericarditis. Inclusion and exclusion criteria for the ongoing Phase 3 study RHAPSODY align with this patient population (clinicaltrials.gov/NCT03737110); 2) patient with effusion at baseline, no effusion at EoT Visit and trivial effusion (not pathological) at Final Visit; 3) n=12; one patient discontinued study drug in TP due to SAE; no effusion at baseline or EoT Visit; CRP = C-Reactive Protein

# Phase 2 Rilonacept Data

## Reduction in both reported pain and inflammation in symptomatic patients without elevated CRP and with MRI inflammation (Part 2)

**Symptomatic Recurrent Pericarditis Patients (CRP ≤1mg/dL + MRI inflammation) (n=3)**




| | | BL D3 W2 | W3 | W4 | W5 | W6 | EoTP | W10 | W14 | W18 | W22 | EoEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CRP | # of Patients | 3 | | 3 | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 3 |
| | CRP Mean | .46 | | .18 | .15 | 0.08 | .28 | .31 | .05 | .33 | .23 | .30 | .31 | .32 |
| Pain NRS | # of Patients | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| | Pain Mean | 4.7 | 4.3 | 3.0 | 3.7 | 4.0 | 2.7 | 0 | 0 | 2.7 | 1.0 | 1.0 | 0 | 0 |

EoTP = end of treatment period; EoEP = end of extension period; CRP = C-Reactive Protein; NRS = Numeric Rating Scale; MRI = magnetic resonance imaging

# Phase 2 Rilonacept Data

## Corticosteroid tapering in corticosteroid-dependent patients (Parts 3 and 5)

**Corticosteroid-Dependent Patients (Parts 3 and 5): Pericarditis Medications During TP and EP Combined**

| | Medications | | | | | |
|---|---|---|---|---|---|---|
| n/N (%) | At least 1 | Analgesics | Aspirin | NSAIDs | Colchicine | CS |
| **Dose stopped** | 7/8 (87.5) | 0/0 | 0/1 | 2/5 (40.0) | 1/7 (14.3) | 7/8 (87.5) |
| **Dose decreased** | 4/8 (50) | 0/0 | 1/1 (100) | 2/5 (40) | 1/7 (14.3) | 1/8 (12.5) |
| **Dose increased** | 0/8 | 0/0 | 0/1 | 0/5 | 0/7 | 0/8 |
| **Starting new** | 0/8 | 0/8 | 0/8 | 0/8 | 0/8 | 0/8 |

**CS,** corticosteroid; **NSAID**, nonsteroidal anti-inflammatory drugs



TP = treatment period; EP = extension period;
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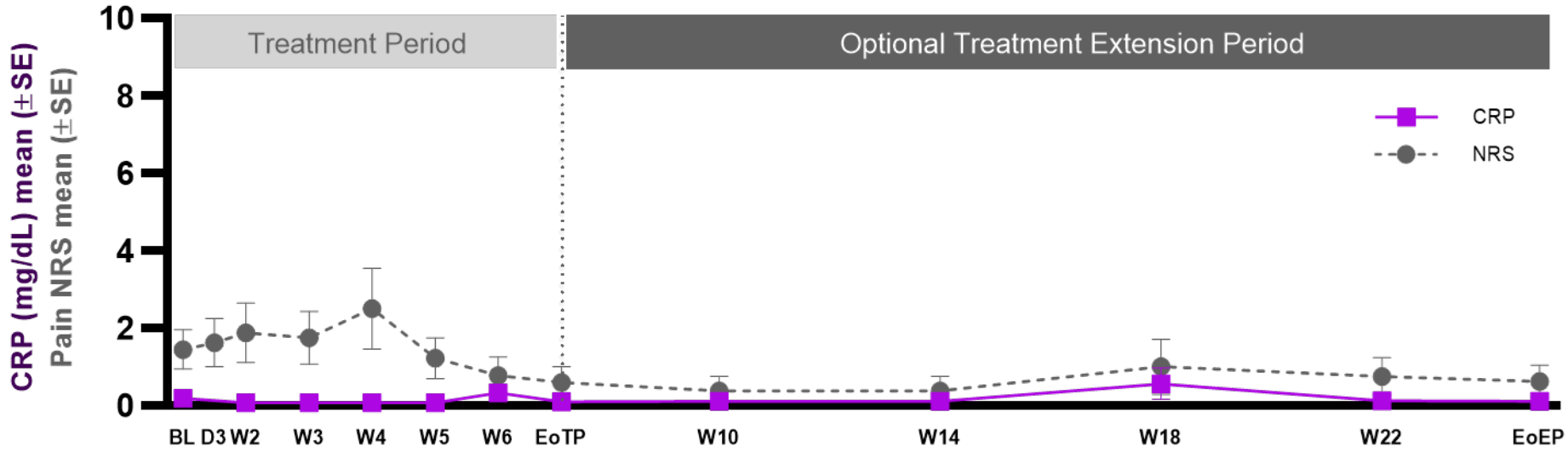
Klein A. Et al. Circulation. 2019;140:A12851 | AHA Scientific Sessions 2019: Poster SA1094

# Phase 2 Rilonacept Data

## Pericarditis pain scores and CRP in corticosteroid-dependent patients (Parts 3 and 5)

**NRS Scores (Pain) and CRP Levels Non-Active CS-Dependent Patients (n=9) During TP and Throughout EP (Parts 3 and 5)**




| | | BL | D3 | W2 | W3 | W4 | W5 | W6 | EoTP | W10 | W14 | W18 | W22 | EoEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CRP | # of Patients | 9 | | 8 | 9 | 5 | 9 | 5 | 9 | 7 | 8 | 4 | 8 | 8 |
| | CRP Mean | 0.19 | | 0.07 | 0.07 | 0.07 | 0.07 | 0.33 | 0.09 | 0.10 | 0.11 | 0.56 | 0.12 | 0.12 |
| Pain (NRS) | # of Patients | 9 | 8 | 8 | 8 | 4 | 9 | 9 | 5 | 8 | 8 | 4 | 8 | 8 |
| | Pain Mean | 1.4 | 1.6 | 1.9 | 1.8 | 2.5 | 1.2 | 0.8 | 0.6 | 0.4 | 0.4 | 1.0 | 0.8 | 0.6 |



TP = treatment period; EP = extension period; EoTP = end of treatment period; EoEP = end of extension period; CRP = C-Reactive Protein; NRS = Numeric Rating Scale
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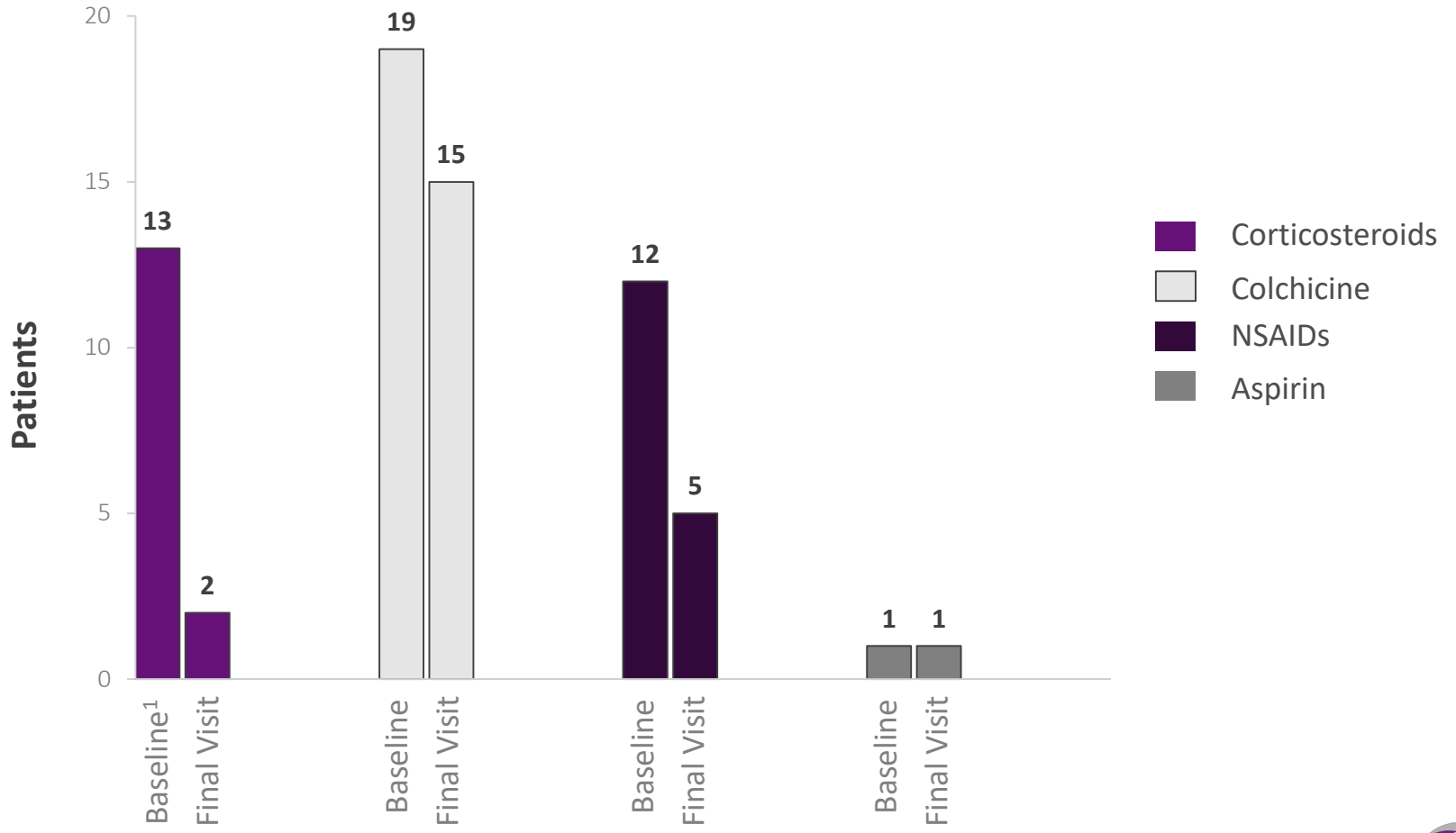
# Phase 2 Rilonacept Data

## All patients on corticosteroids (CS) at baseline who completed 24 weeks of treatment stopped or tapered CS during rilonacept treatment without experiencing a recurrence

No patients had pericarditis recurrence in investigators' judgement after stopping concomitant pericarditis medication while on rilonacept treatment






1) 15 recurrent pericarditis patients on corticosteroids at baseline enrolled in the 6-week base treatment period, and 13 continued into the optional 18-week extension treatment period and completed 24 weeks of treatment

# Phase 2 Rilonacept Data

Of 13 patients on corticosteroids (CS) at baseline who completed 24 weeks of treatment, 11 discontinued CS and the CS dose was successfully tapered in the remaining 2 patients

| | Idiopathic | | | PPS | | Idiopathic or PPS |
|---|---|---|---|---|---|---|
| Disease Status: | Active[1] | Active[2] | CS-dep[3] | Active[4] | CS-dep[5] | All[1-5] |
| CRP requirement (mg/dL): | >1 | ≤1 | N/A | >1 | N/A | N/A |
| N: | 12 | 3 | 6 | 1 | 3 | 25 |
| **Baseline** | | | | | | |
| Patients on prednisone[6], n | 4 | 2 | 6 | 0 | 3 | 15 |
| Mean dose (mg/day) | 8.4 | 40.0 | 8.9 | 0 | 7.7 | 12.7 |
| Min | 1.0 | 30.0 | 2.5 | 0 | 3.0 | 1.0 |
| Max | 12.5 | 50.0 | 30 | 0 | 15.0 | 50.0 |
| **Corticosteroid Changed During TP and EP Combined** | | | | | | |
| **Prednisone dose decreased[7,8]** | **0/3** | **1/2 (50.0)** | **1/5 (20.0)** | **0/0** | **0/3** | **2/13 (15.4)** |
| **Prednisone stopped[8][7,8]** | **3/3 (100)** | **1/2 (50.0)** | **4/5 (80.0)** | **0/0** | **3/3 (100)** | **11/13 (84.6)** |
| Prednisone dose increased[7] | 0/3 | 0/2 | 0/5 | 0/0 | 0/3 | 0/13 |
| Prednisone initiated[9] | 0/11 | 0/3 | 0/5 | 0/1 | 0/3 | 0/23 |

1) Part 1; 2) Part 2; 3) Part 3; 4) Part 4; 5) Part 5; 6) 2 patients on prednisone at baseline did not enter EP (one in Part 1 and in Part 3) 7) Refers to patients who entered the study on prednisone; 8) 1 patient decreased prednisone dose in TP, and 1 stopped prednisone in TP (both in Part 2); 9) Refers to all patients in EP; CRP= C-reactive protein; CS-dep = corticosteroid-dependent; PPS = post-pericardiotomy syndrome; TP = treatment period; EP = extension period

# Phase 2 Rilonacept Data

## Annualized incidence of pericarditis episodes decreased during rilonacept treatment in the study

| | Idiopathic | | | PPS | |
|---|---|---|---|---|---|
| Disease Status: | Active[1] | Active[2] | CS-dep[3] | Active[4] | CS-dep[5] |
| CRP requirement (mg/dL): | >1 | ≤1 | N/A | >1 | N/A |
| N: | 12 | 3 | 6 | 1 | 3 |
| **Prior to the study[6]** | | | | | |
| Pericarditis episodes per year, mean (SD) | 4.4 (4.68) | 2.0 (1.75) | 4.5 (2.58) | 1.3 (N/A) | 3.7 (3.02) |
| **During the study[7]** | | | | | |
| Patients with pericarditis episodes, n | 1[h] | 0 | 0 | 0 | 0 |
| Pericarditis episodes per year, mean (SD) | 0.18 (0.62) | 0 | 0 | 0 | 0 |



1) Part 1; 2) Part 2; 3) Part 3; 4) Part 4; 5) Part 5; 6) Episodes at enrollment include index, prior recurrences, and current episode; 7) Episodes during the study include recurrences during TP and EP combined. Pericarditis recurrence during the study was based on Investigator's judgement; [h]Patient had a mild pericarditis recurrence in TP, 5 days duration, with NRS pain increase from 0 to 2, CRP 0.10 mg/dL, not requiring addition of new medication to treat pericarditis; CRP = C-reactive protein; CS-dep = corticosteroid-dependent; PPS = post-pericardiotomy syndrome

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# Phase 2 Rilonacept Data

## Rilonacept treatment resulted in improvement of quality of life scores[1]

| | Idiopathic or PPS | |
|---|---|---|
| | Active[1] (n=16) | CS-dependent[2] (n=9) |
| **Global Physical Health, mean (SD)** | | |
| Baseline | 39.94 (8.941) | 43.3 (5.311) |
| End of TP | 51.35 (7.962) | 45.09 (4.057) |
| Final Visit | 51.32 (6.564) | 46.81 (9.266) |
| **Global Mental Health, mean (SD)** | | |
| Baseline | 44.5 (10.484) | 46.49 (7.767) |
| End of TP | 50.13 (11.325) | 47.91 (5.509) |
| Final Visit | 50.54 (10.995) | 50.66 (6.299) |



1) PROMIS® = Patient Reported Outcomes Measurement Information System. The higher the score, the better global health is. US national average score for Global Physical and Mental Health is 50 (SD 10); 1) Part 1, 2, and 4; 2) Part 3 and 5

# Case Study: Treatment/Retreatment of Recurrent Pericarditis with Rilonacept

- **Patient**
  - 50-year-old female with idiopathic pericarditis and 1 prior recurrence, enrolled in Part 1 during her third episode (pain NRS 6/10; CRP 8.85 mg/dL; pericardial effusion on echocardiography) while receiving colchicine 0.6 mg bid.
- **Pain and CRP Reduction During the Study**
  - Addition of rilonacept to colchicine background rapidly reduced pain (week 2 pain NRS 1/10; week 24 pain NRS 0/10), decreased CRP (week 2 CRP 0.66 mg/dL; week 24 CRP 0.09 mg/dL), and resolved pericardial effusion.
- **Safety**
  - Mild, transient injection site reactions occurred for 21 of 24 rilonacept injections; the patient also had reported mild AEs of heartburn, common cold, worsening of elevated LFTs, elevated cholesterol, elevated HDL, intermittent chest discomfort and elevated CK
- **After Completing the EP**
  - Approximately 8 weeks after rilonacept discontinuation, while continuing on colchicine 0.6 mg bid, the patient presented with pericarditis symptoms requiring addition of celecoxib 200 mg/day. Ten weeks later the patient developed frank pericarditis recurrence (pain NRS 7/10; CRP 23.1 mg/dL) and cardiac tamponade requiring pericardiocentesis. The patient was re-enrolled in the study.
- **Pain and CRP Normalized and Pericardial Effusion Resolved with Rilonacept Retreatment**
  - Rapid improvements in pain and CRP were observed after the first rilonacept administration (week 2 pain NRS 0/10; CRP 0.57 mg/dL). At the week 7 visit, NRS pain was 1/10, CRP was 0.09 mg/dL, and there was no evidence of pericardial effusion on echocardiography. At the last study evaluation available (1 month EP), NRS pain was 0/10 and CRP remained normal (0.08 mg/dL). At the Final Visit NRS pain was 0/10 and CRP remained normal (0.14 mg/dL).
- **Safety**
  - Mild, transient injection site reactions occurred in 17 out of 24 rilonacept administrations; the patient also developed mild AEs of hypokalemia, decreased WBC count, and increased lipids.



NRS = numeric rating scale; CRP = C-reactive protein; LFT= liver function test; CK = creatine kinase; HDL = high-density lipoprotein; WBC = white blood count

# Phase 2 Rilonacept Data

## Baseline demographics and clinical characteristics

### Baseline Demographics

| General Characteristics | All Patients (n=25) |
|---|---|
| Unique patients, n | 25 |
| Mean age (range), yrs | 42.8 (26-62) |
| Sex (male/female) | 10/15 |
| Race (white/African American) | 22/3 |
| Mean pericarditis episodes at enrollment[1] (range) | 4.3 (3-10) |
| Mean disease duration (range), yrs | 2.2 (0.2-7.9) |

1) Includes index, recurrent, and qualifying (if applicable) episodes

### Clinical Characteristics

| | Idiopathic RP | | | PPS | |
|---|---|---|---|---|---|
| Disease Status: | Active[a] | Active[b] | CS-dep[c] | Active[d] | CS-dep[e] |
| CRP requirement (mg/dL): | >1 | ≤1 | N/A | >1 | N/A |
| N: | 12 | 3 | 6 | 1 | 3 |
| Mean NRS[f] (SD) | 4.6 (1.7) | 4.7 (3.1) | 1.2 (0.8) | 4.0 (N/A) | 2.0 (2.7) |
| Mean CRP (SD), mg/dL | 4.9 (5.8) | 0.5 (0.4) | 0.2 (0.1) | 1.1 (N/A) | 0.1 (0.1) |

[a]Part 1; [b]Part 2; [c]Part 3; [d]Part 4; [e]Part 5; [f]11-point numeric scale, ranging from zero (0, no pain) to ten (10, pain as bad as possible); CRP, C-reactive protein; CS-dep, corticosteroid-dependent; NRS, numeric rating scale; PPS, post-pericardiotomy syndrome



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# Phase 2 Rilonacept Data

## Summary of adverse events

| | Idiopathic | | | PPS | | Idiopathic or PPS | | |
|---|---|---|---|---|---|---|---|---|
| Disease Status: | Active[1] | Active[2] | CS-dep[3] | Active[4] | CS-dep[5] | Active[1,2,4] | CS-dep[3.5] | All[1-5] |
| CRP requirement (mg/dL): | >1 | ≤1 | N/A | >1 | N/A | N/A | N/A | N/A |
| N: | 12 | 3 | 6 | 1 | 3 | 16 | 9 | 25 |
| **≥1 TEAE, n (%)** | 12 (100) | 3 (100) | 6 (100) | 1 (100) | 3 (100) | 16 (100) | 9 (100) | 25 (100) |
| **≥1 treatment-related TEAE, n (%)** | 9 (75) | 2 (66.7) | 3 (50) | 1 (100) | 2 (66.7) | 12 (75) | 5 (55.6) | 17 (68) |
| **≥1 serious TEAE, n (%)** | 2 (16.7) | 0 | 0 | 0 | 0 | 2 (12.5) | 0 | 2 (8) |
| **≥1 treatment-related serious TEAE, n (%)** | 1 (8.3) | 0 | 0 | 0 | 0 | 1 (6.3) | 0 | 1 (4) |
| **≥1 TEAE leading to treatment discontinuation, n (%)** | 1 (8.3) | 0 | 0 | 0 | 0 | 1 (6.3) | 0 | 1 (4) |
| **≥1 TEAE leading to death, n (%)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TEAEs by severity, n (%)** | | | | | | | | |
| **Mild** | 9 (75) | 3 (100) | 4 (66.7) | 1 (100) | 2 (66.7) | 13 (81.3) | 6 (66.7) | 19 (76) |
| **Moderate** | 2 (16.7) | 0 | 2 (33.3) | 0 | 0 | 2 (12.5) | 2 (22.2) | 4 (16) |
| **Severe** | 1 (8.3) | 0 | 0 | 0 | 1 (33.3) | 1 (6.3) | 1 (11.1) | 2 (8) |
| **Reactions at injection site[6], n (%)** | 5 (41.7) | 1 (33.3) | 3 (50) | 1 (100) | 2 (66.7) | 7 (43.8) | 5 (55.6) | 12 (48) |

- There were 2 serious treatment-emergent AEs reported in Part 1, both of which resolved
  - 1 patient with subcutaneous abscess (possibly related to study drug) that resolved with medical management discontinued rilonacept treatment
  - 1 patient with atypical chest pain (not related to study drug) continued rilonacept treatment
- AEs observed with rilonacept treatment are consistent with the known safety profile of rilonacept
- The most common AEs were observed in the general disorders and administration site conditions (injection site reactions), infections and infestations, and musculoskeletal and connective tissue disorders classes



1) Part 1; 2) Part 2; 3) Part 3; 4) Part 4; 5) Part 5; 6) Includes injection site bruising, erythema, pain, reaction, joint warmth, and application site bruising and erythema; CRP = C-reactive protein; CS-dep = corticosteroid-dependent; PPS = post-pericardiotomy syndrome

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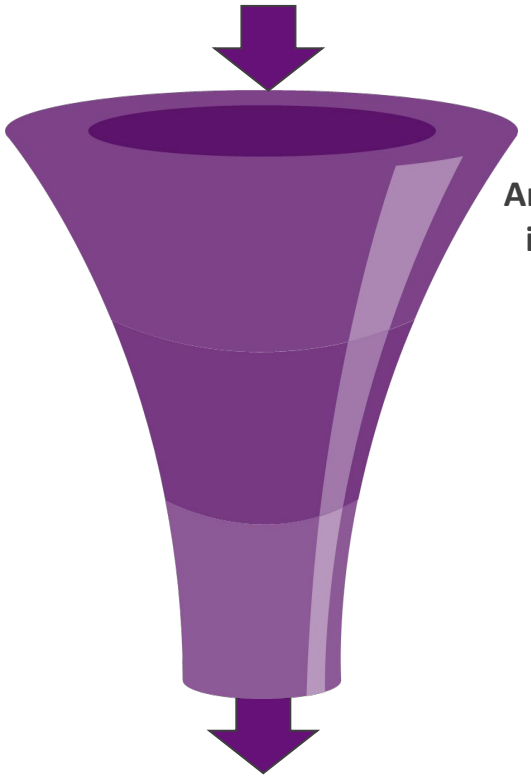
# Addressable U.S. Opportunity of Rilonacept Estimated to be ~14K Patients

~7K new patients with multiple recurrences enter target pool annually



**Annual pericarditis incidence ~117K**

**1st recurrence ~26K**

**Repeat Recurrences**

- **~7K new patients with repeat recurrences annually**
- **~14K total patients with repeat recurrences annually at any point**

| Year | -4 | -3 | -2 | -1 | 0 |
|---|---|---|---|---|---|
| Incident case of acute pericarditis (1st episode)[1] | 117K | 117K | 117K | 117K | 117K |
| Incidence of initial RP patients (1st recurrence)[2] | 26K | 26K | 26K | 26K | 26K |
| Ongoing recurrent from year-1[3] | | | | | 7K |
| Ongoing recurrent from year-2[3] | | | | 7K | 3.5K |
| Ongoing recurrent from year-3[3] | | | 7K | 3.5K | 1.8K |
| Ongoing recurrent from year-4[3] | | 7K | 3.5K | 1.8K | 0.9K |
| Ongoing recurrent from year-5[3] | 7K | 3.5K | 1.8K | 0.9K | 0.5K |
| Ongoing recurrent from year-6[3] | 3.5K | 1.8K | 0.9K | 0.5K | 0.2K |
| Ongoing recurrent from year-7[3] | 1.8K | 0.9K | 0.5K | 0.2K | 0.1k |

***Addressable Opportunity in U.S.***

1: Prevalence estimate from Imazio, et al. (2008); includes all etiologies (~80% idiopathic)
2: Mid point of 15-30% of initial recurrence rate published in ESC Guidelines given higher colchicine use today
3: Estimate for recurrence rate of subsequent recurrences from ESC Guidelines and Claims Analysis

*Every Second Counts!™*

# Appendix – Mavrilimumab

# GCA is a Serious Condition Characterized by Inflammation of Medium-to-Large Arteries

1

### Chronic inflammation of medium-to-large arteries

- GCA is characterized by inflammation of medium-to-large arteries with **predisposition for the cranial branches of the carotid artery** and is typically **found in patients over 50 years old**
- Due to the impact on the carotid arteries, GCA is **often characterized by temporal specific symptoms like headaches**, jaw claudication and scalp tenderness

2

### If left untreated, GCA can cause serious complications

- While the onset of symptoms tends to be subacute, patients can experience **acute events including permanent vision loss (~10-20% of patients)** and/or aneurysms/dissections (~1-6% of patients)
- Due to the threat of these more serious complications, giant cell arteritis is **considered a medical emergency**

3

### GCA variants associated with unique presentations

- **LV-GCA**, characterized by the involvement of the aorta and its major proximal branches, is estimated to be involved in anywhere from **~30-80% of patients**
- **~40-50%** of GCA patients **suffer from polymyalgia rheumatica**, a rheumatic disease characterized by widespread aching and stiffness; symptoms are relieved immediately upon starting on low-dose steroids

*"There is an urgency of treatment with these patients, compared to other conditions it's serious."*
– Rheumatologist

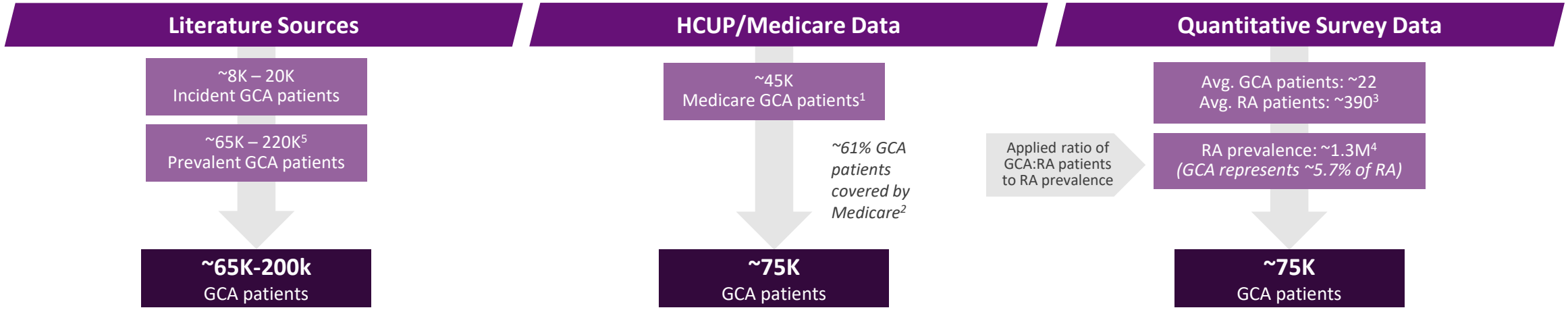
*"There are people out there that need to get this disease under control, but they never receive the correct treatment, this is life threatening!"*
– Rheumatologist

*"I hate steroids, the long –term side effects are sometimes worse than the disease but, I definitely don't want patients to go blind."*
– Rheumatologist



Sources: Medcape; Trinity Partners primary market research

# GCA U.S. Prevalence Estimated to be ~75-150k Patients




## Key Considerations to Market Sizing Approach

### Wide Range

**High geographic variation**

GCA prevalence estimates vary across geographies with Northern European populations showing the highest rates and Asian populations the lowest

**Weighted by US demographics**

Given the demographic breakdown of the US, prevalence of GCA is likely ~75-150k (less than that of purely Northern Europeans, but more than estimates from Asian countries)

### Under-Representation

**Represents Actively Managed Patients**

Medicare analysis does not capture GCA patients who were not actively managed within a given year; thus, the estimate from this analysis will exclude some remission patients or patients likely to relapse

### Under-Representation

**Represents patients actively seen by a Rheum**

Rheumatologists reported the number of GCA patients they manage. Patients who are not actively managed would likely be excluded from these estimates



Sources: 1.) Medicare analysis conducted 1/2018 2.) Trinity Partner's Quantitative Primary Market Research (n=74) 3.) Trinity Partner's Quantitative Primary Market Research (n=196) (includes data from screener portion of survey) 4.)Prevalence of rheumatoid arthritis in the United States adult population in healthcare claims databases, 2004-2014, Hunter et al. 2017, 5.) Crowson et. al, 2017

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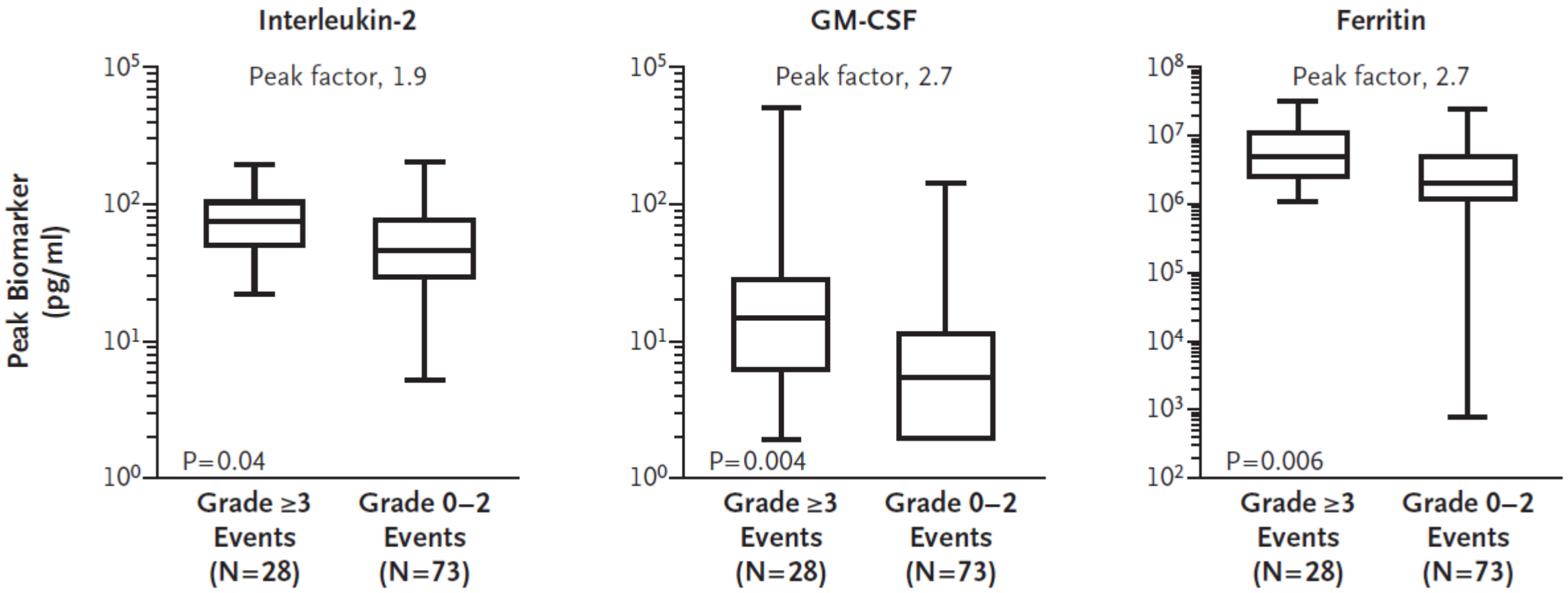
# In the ZUMA-1 Trial, Elevated GM-CSF was Most Significantly Associated With the Presence of Severe Neurologic Events in the Biomarkers Explored[1,2]






AUC = area under the curve
CRS = cytokine release syndrome
NE = neurologic events

1) Neelapu et al., Axicabtagene Ciloleucel CAR T-Cell Therapy in Refractory Large B-Cell Lymphoma, NEJM 2017

2) Peak cytokine levels were used in the comparison. These findings were also applicable to cumulative levels across first 28 days after axi-cel infusion (AUC). Adjusted *P* values are calculated from Holm's procedure after multiple testing using the Wilcoxon rank sum test.

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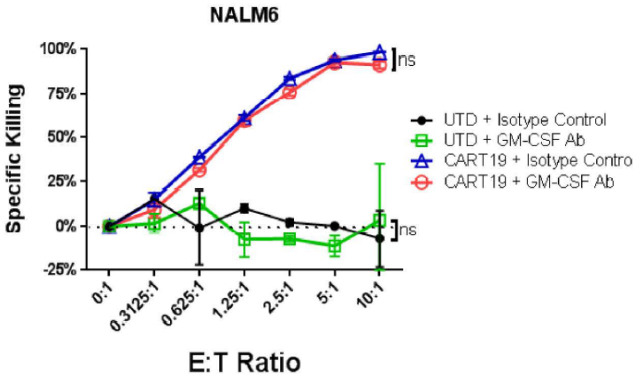
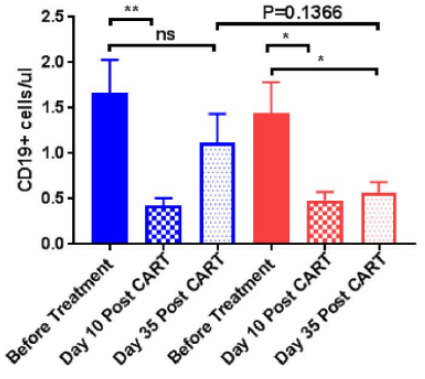
# Blockade of GM-CSF signaling attenuated both Cytokine Release Syndrome and Neurologic Events, as well as enhanced CAR T effector function in Preclinical Xenograft Models

## GM-CSF Blockade Shows No Negative Effect on CAR T Effector Function

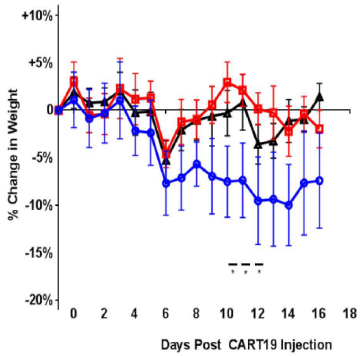


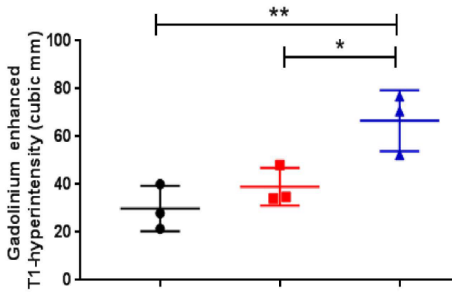

CART19 + anti-GM-CSF showed a more sustained anti-tumor effect than CART19 + control

## GM-CSF Blockade Attenuates CRS and Neurological Events

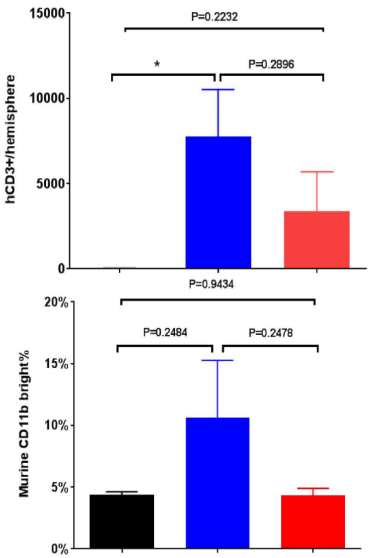
CRS as Measured by Weight Change

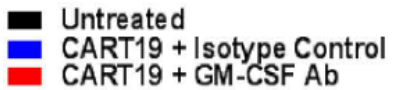



NRS as Measured by Neuroinflammation




NRS as Measured by Cellular Infiltrates



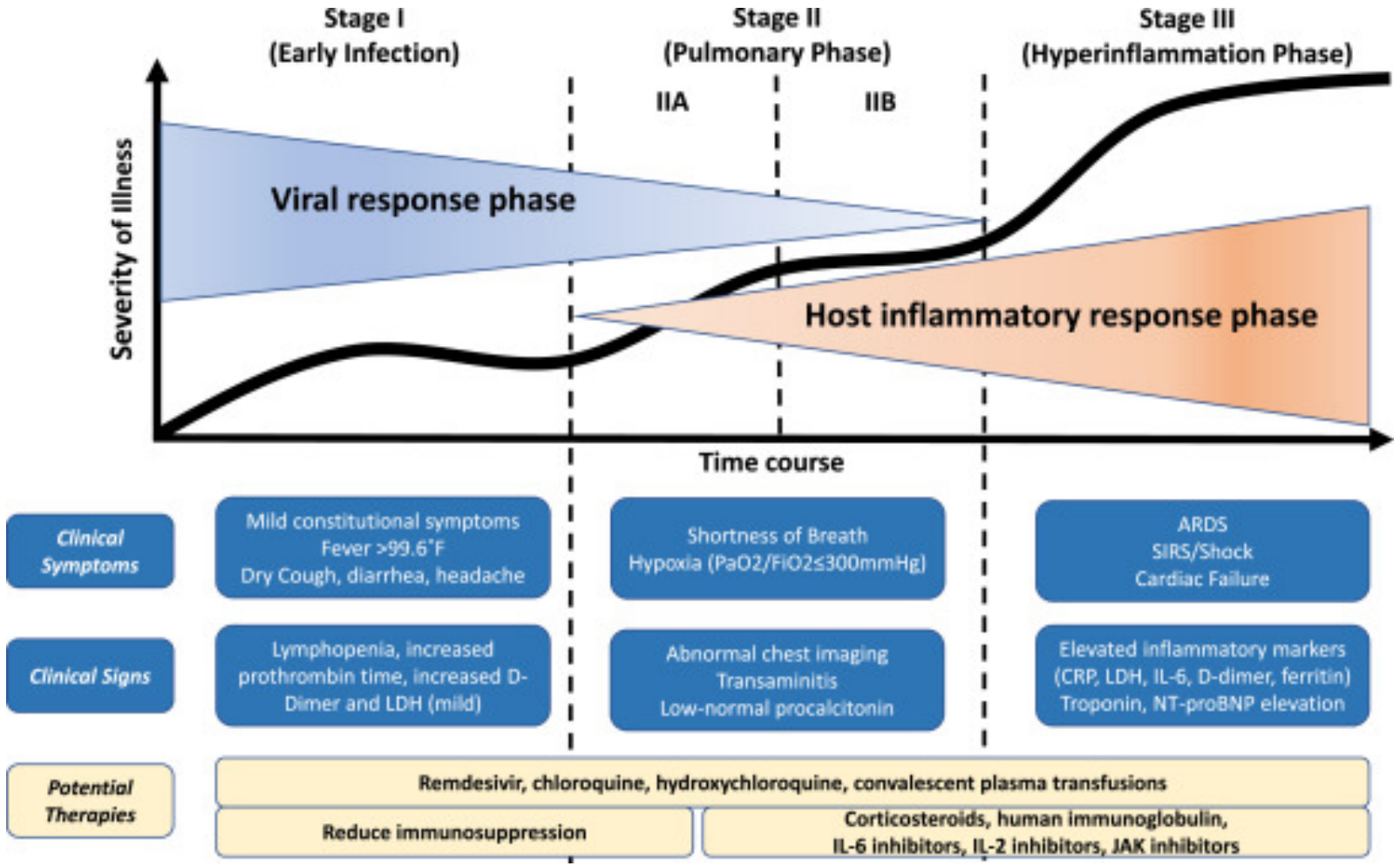




CART19 + anti-GM-CSF treated animals showed reduced CRS (as measured by % change in weight) and NE (as measured by reduction in T1 enhancement and infiltration of T-cells and macrophages)



CRS = cytokine release syndrome
NE = neurologic events
Neelapu et al., NEJM 2017; Sterner et al., Blood 2019

# Escalating Phases of Disease Progression with COVID-19




Source:
Hasan K. Siddiqi MD, MSCR , Mandeep R. Mehra MD, MSc , COVID-19 Illness in Native and Immunosuppressed States: A Clinical-Therapeutic Staging Proposal, Journal of Heart and Lung Transplantation (2020), doi: https://doi.org/10.1016/j.healun.2020.03.012



ARDS = Acute respiratory distress syndrome; CRP = C-reactive protein; IL = Interleukin; JAK = Janus Kinase; LDH=Lactate DeHydrogenase; SIRS = Systemic inflammatory response syndrome

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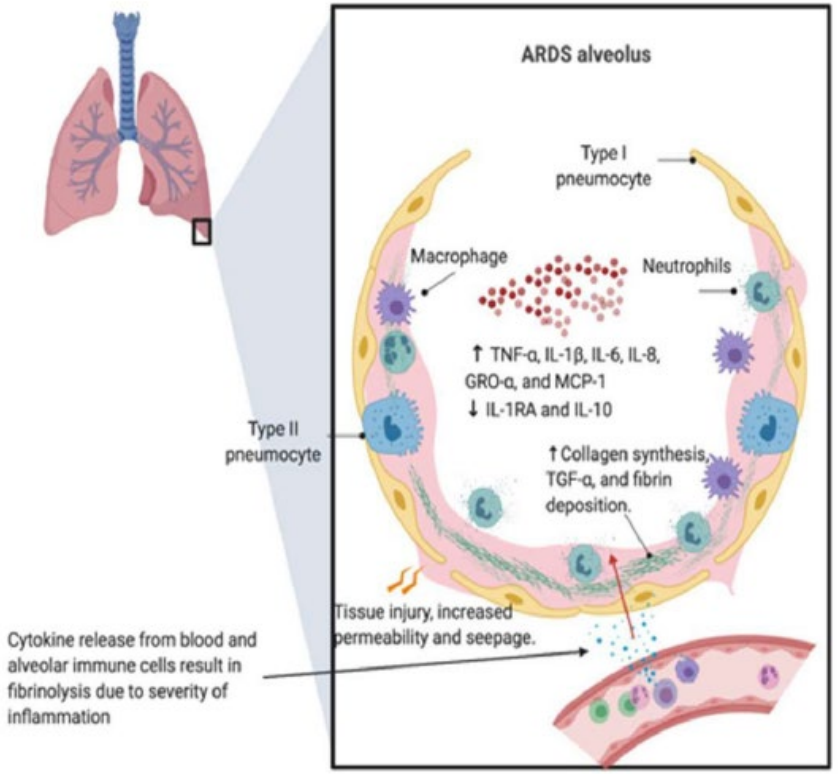
# Viral Infections Causing ARDS (i.e., influenza, H1N1, RSV, COVID-19, etc.) Have an *Inflammatory* Pathophysiology, Primarily Precipitated by Cytokine Storm

- Uncontrolled pro-inflammatory response, originating from the focal infected area, spreading through circulation and manifests as a **multiorgan failure** and **ARDS**
- Inflammation of the alveolar epithelial cells drives development of severe disease, destroying gas exchange and allowing **further viral exposure**
- Approach to treatment is **addressing host response** directly by targeting innate immune pathways that amplify inflammatory signals and contribute to epithelial damage




McGonagle, et al., Autoimmunity Reviews (2020), https://doi.org/10.1016/j.autrev.2020.102537

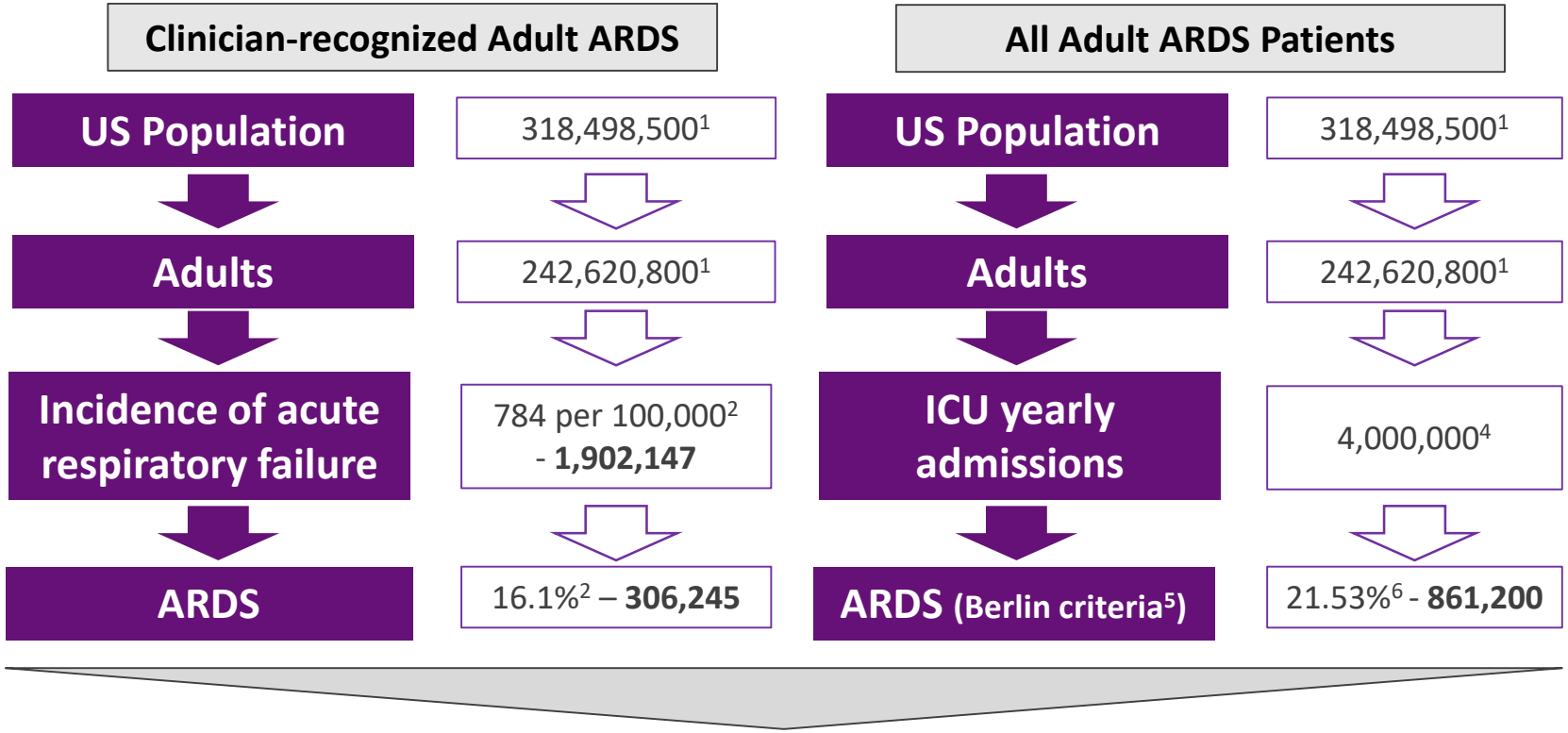
## Under-diagnosis of viral infections causing ARDS

- Viral infection is sufficient to cause severe pneumonia and ARDS, but it can also act in conjunction with or be followed by bacterial agents, (most commonly by S. aureus and S. pneumoniae)
- Clinicians fail to clinically diagnose influenza in **up to two-thirds** of patients with confirmed influenza



1) Kalil A.C and Thomas P.G. Critical Care (2019) 23:258
2) Guo XZ, Thomas PG,. Semin Immunopathol. 2017 July ; 39(5): 541–550. doi:10.1007/s00281-017-0636-y.
3) Zhang, et al. Clinical Immunology 214 (2020) 108393

# There are between 300k and 860k Cases of Adult ARDS in the U.S. Every Year; Significant Unmet Need Remains in These Populations




- Excludes ARDS associated with COVID-19
- Pediatric ARDS occurs less often
- Most common causes of ARDS are pneumonia (59%) and sepsis (16%)[3]
- 84.5% of ARDS cases require mechanical ventilation[7]
- Considerable mortality (~40%[8]) with no effective treatments outside mechanical ventilation

**~300,000 – 860,000 ARDS Cases Annually in US***


1) KFF's State Health Facts. Population Distribution by Age [Kaiser Family Foundation estimates based on the Census Bureau's American Community Survey, 2008-2018].
2) Stefan MS, Shieh MS, Pekow PS, et al. J Hosp Med. 2013;8(2):76–82. doi:10.1002/jhm.2004
3) Bellani G, Laffey JG, Pham T, et al JAMA. 2016;315(8):788–800. doi:10.1001/jama.2016.0291
4) Mullins PM, Goyal M, Pines JM. Acad Emerg Med. 2013;20(5):479–486. doi:10.1111/acem.12134
5) ARDS Definition Task Force. JAMA 20112;307(23):2526-2533.
6) Laffey JG, Madotto F, Bellani G, et al. Lancet Resp Med. 2017;5(8):627-638
7) Bellani G, Laffey JG, Pham T, et al Am J Respir Crit Care Med 2017:195(1):67–77
8) Calfee CS, Delucchi KL, Sinha P, et al. Lancet Respir Med. 2018;6(9):691–698. doi:10.1016/S2213-2600(18)30177-2


*There may be different ARDS phenotypes – some of which may not be ideal for GM-CSF inhibition. Further research is needed to understand which patient sub-types would best benefit from treatment with mavrilimumab



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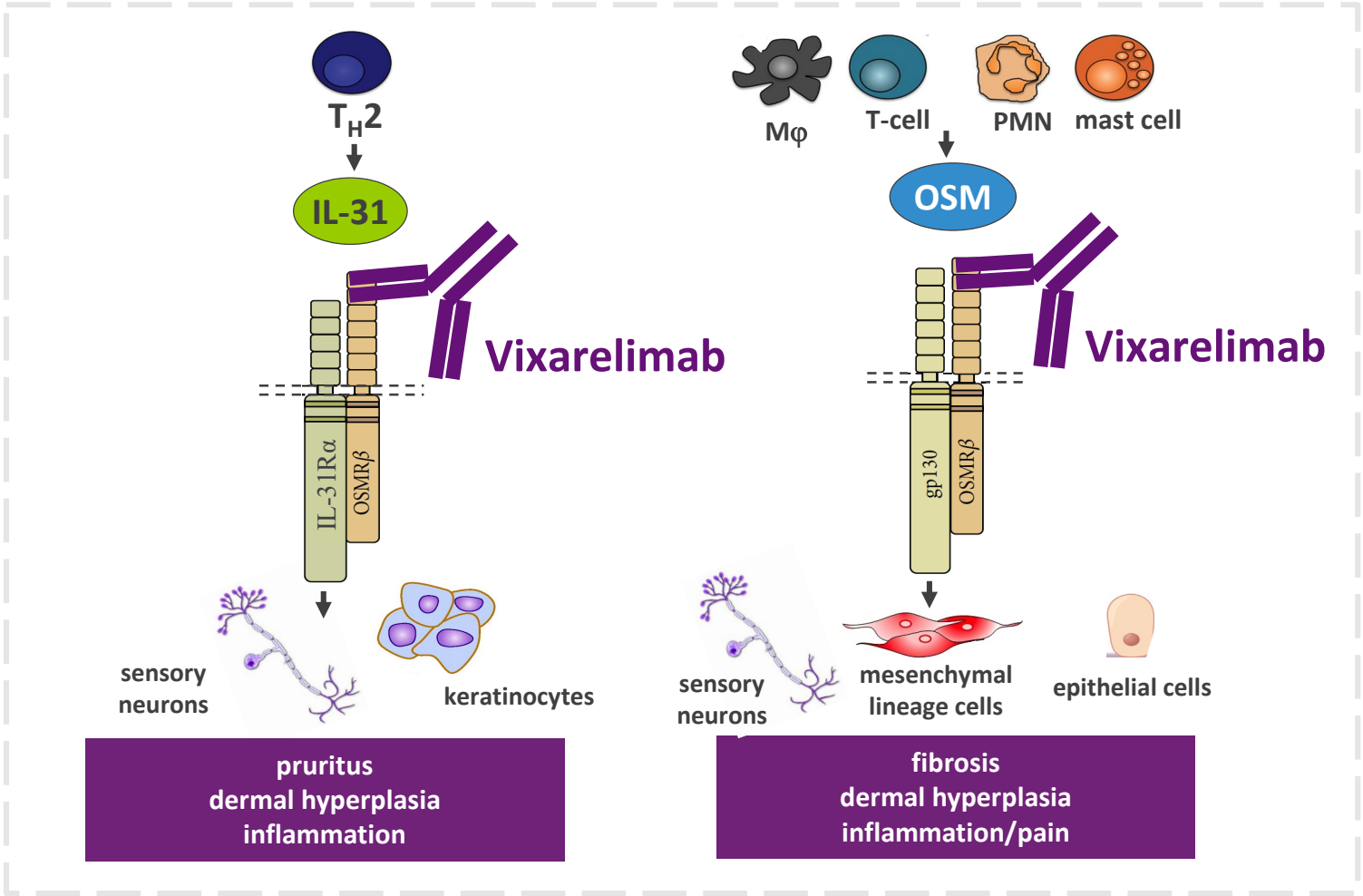
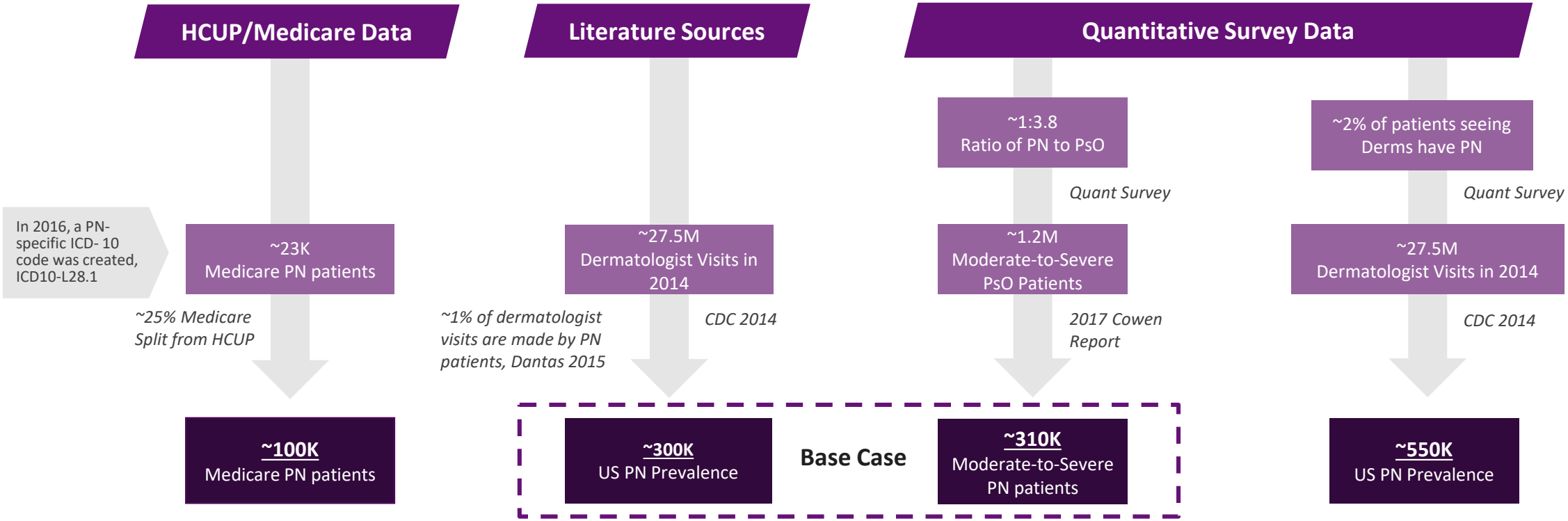
*Every Second Counts!™*

# Appendix – Vixarelimab (KPL-716)

# Vixarelimab Inhibits IL-31 & OSM Signaling Through OSMRβ but Avoids Inhibiting Signaling Critical to Hematopoiesis Through OSM/LIFR *in vitro* Studies



# Prurigo Nodularis U.S. Prevalence Estimated to be ~300K Patients



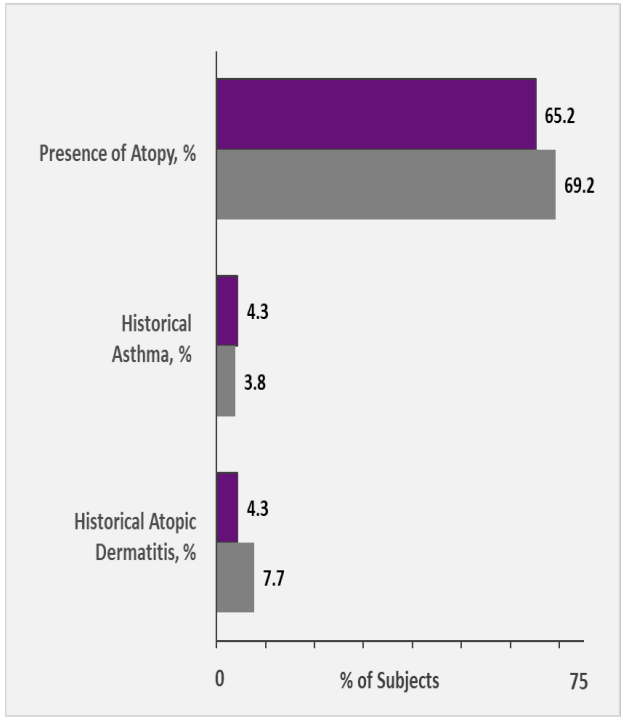



Sources: CDC 2014: National Ambulatory Medical Care Survey: 2014 State and National Summary Tables <https://www.cdc.gov/nchs/data/ahcd/namcs_summary/2014_namcs_web_tables.pdf>; Cowen and Company, Therapeutic Categories Outlook: Comprehensive Study September 2017; Primary Market Research; 3. Dantas, 2015, "Prevalence of dermatoses in dermatologic evaluation requests from patients admitted to a tertiary hospital for 10 years"

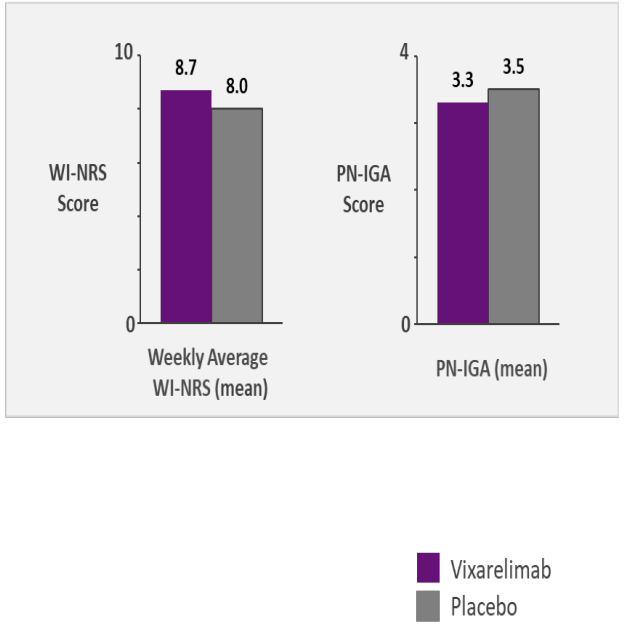
# Vixarelimab Phase 2a Study in Prurigo Nodularis: Baseline Characteristics

| General Characteristics* | Vixarelimab (n=23) | Placebo (n=26) | Total (n=49) |
|---|---|---|---|
| Age (Mean Years) | 52 | 64 | 58 |
| Sex (Male/Female) | 10/13 | 10/16 | 20/29 |
| Race | | | |
| White (n) | 65.2% (15) | 80.8% (21) | 73.5% (36) |
| Black or African American (n) | 21.7% (5) | 11.5% (3) | 16.3% (8) |
| Asian (n) | 8.7% (2) | 0 | 4.1% (2) |
| American Indian or Alaska Native (n) | 0 | 3.8% (1) | 2.0% (1) |
| Multiple (n) | 4.3% (1) | 0 | 2.0% (1) |
| Other (n) | 0 | 3.8% (1) | 2.0% (1) |

Clinical Findings at Baseline: History of Atopy




Clinical Findings at Baseline: WI-NRS & PN-IGA






*mITT Analysis Set

# Vixarelimab was Well-Tolerated in Prurigo Nodularis Phase 2a Study

| Summary of Adverse Events | Vixarelimab (n=23) | Placebo (n=26) |
|---|---|---|
| Any AE (n) | 82.6% (19) | 65.4% (17) |
| TEAE (n) | 82.6% (19) | 65.4% (17) |
| Drug-Related TEAE (n) | 39.1% (9) | 30.8% (8) |
| Serious TEAE | 0 | 0 |
| Drug-Related Serious TEAE | 0 | 0 |
| TEAE Leading to Treatment Discontinuation | 0 | 0 |
| Drug-Related TEAE Leading to Treatment Discontinuation | 0 | 0 |
| Serious TEAE Leading to Treatment Discontinuation | 0 | 0 |
| Drug-Related Serious TEAE Leading to Treatment Discontinuation | 0 | 0 |
| TEAE Leading to Death | 0 | 0 |



AE = adverse event
TEAE = treatment emergent adverse event

# Vixarelimab was Well-Tolerated in Prurigo Nodularis Phase 2a Study

| System Organ Class Preferred Term | Vixarelimab (n=23) | Placebo (n=26) |
|---|---|---|
| Infections and Infestations (n) | 30.4% (7) | 46.2% (12) |
| Upper Respiratory Tract Infection (n) | 17.4% (4) | 3.8% (1) |
| Nasopharyngitis (n) | 4.3% (1) | 7.7% (2) |
| Gastroenteritis Viral (n) | 4.3% (1) | 0 |
| Influenza (n) | 4.3% (1) | 0 |
| Postoperative Wound Infection (n) | 4.3% (1) | 0 |
| Subcutaneous Abscess (n) | 4.3% (1) | 0 |
| Urinary Tract Infection (n) | 0 | 11.5% (3) |
| Bronchitis (n) | 0 | 3.8% (1) |
| Cellulitis (n) | 0 | 3.8% (1) |
| Eczema Impetiginous (n) | 0 | 3.8% (1) |
| Herpes Simplex (n) | 0 | 3.8% (1) |
| Otis Media (n) | 0 | 3.8% (1) |
| Skin Infection (n) | 0 | 3.8% (1) |
| Tooth Abscess (n) | 0 | 3.8% (1) |



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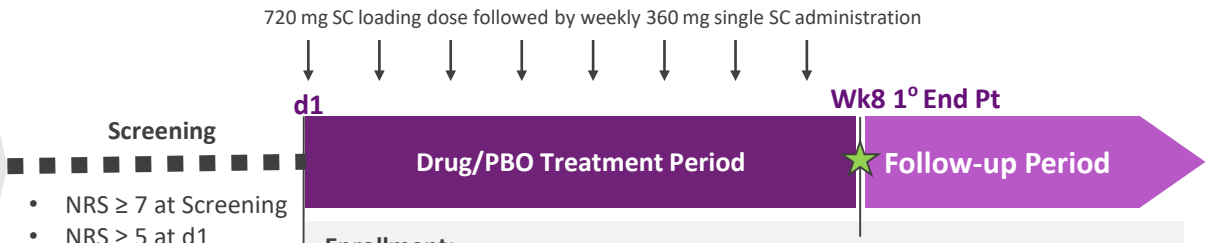
# Vixarelimab Exploratory Phase 2 Study in Diseases Characterized by Chronic Pruritus

## Pilot Study Rationale

1. Investigate presence of IL-31 & OSM signature in multiple diseases characterized by chronic pruritus
2. In diseases where IL-31 is present (based on post-hoc biopsy analysis) → link inhibition of IL-31 with vixarelimab to clinical response
3. Diseases where IL-31 is NOT present (based on post-hoc biopsy analysis) → Investigate whether blocking OSMRβ has any effect

| | |
|---|---|
| **Chronic Idiopathic Urticaria (CIU)** | **US Prevalence:** ~2-3 M[1,2]<br>**Pruritus Burden:** ~1-in-3 experience pruritus refractory to conventional therapies; ~15-20% treated with Xolair continue to experience pruritus[3] |
| **Chronic Idiopathic Pruritus (CIP)** | **US Prevalence:** Treating physicians report ~1 CIP patient for every 3 atopic dermatitis patients[3,4,]<br>**Pruritus Burden:** ~50% experience symptoms lasting for >1-yr; ~1-in-3 treated patients experience refractory pruritus[3] |
| **Lichen Planus (LP)** | **US Prevalence:** ~0.5 M+[5]<br>**Pruritus Burden:** ~1-in-3 treated patients experience refractory pruritus[3] |
| **Lichen Simplex Chronicus (LSC)** | **US Prevalence:** Treating physicians report ~1 LSC patient for every PN patient[3] (~0.3 M addressable in the US)[6,7]<br>**Pruritus Burden:** ~40% of treated patients experience refractory pruritus[3] |
| **Plaque Psoriasis** | **US Prevalence:** ~12 M[8,9]<br>**Pruritus Burden:** ~2-3 M patients in US with moderate-to-severe pruritus[9] |

## Subject Experience in Each Disease Cohort




- NRS ≥ 7 at Screening
- NRS ≥ 5 at d1
- Bloodwork
- Drug washout
- Biopsy

**Enrollment:**
- Up to 16 active and 10 placebo subjects per independent disease cohort

**Measures:**
- Daily e-diary NRS worst itch (past 24 hours) & other measures of pruritus
- Primary and secondary endpoints at week 8

Note: US prevalence figures are estimates based on references which may include only a single EU country and/or based on primary market research where physicians were asked to relate the estimated number of patients they treat with the target disease in relation to another disease they treat where the prevalence estimates are more well known



1) Gaig et al., Epidemiology of urticaria in Spain, J Investig Allergol Clin Immunol. 2004 | 2) Saini, Chronic Spontaneous Urticaria, Immunology & Allergy Clinics, 2014 | 3) Kiniksa survey data (n=83 dermatologists, n=38 allergists) | 4) Weisshaar et al., European Guideline on Chronic Pruritus; Acta Derm Venereol 2012 | 5) Cleach & Chosidow, Lichen Planus, NEJM 2012 | 6) Dantas, 2015, Prevalence of dermatoses in dermatologic evaluation requests from patients admitted to a tertiary hospital for 10 years, An Bras Dermatol. 2015 | 7) HCUP/Medicare Data 2012/2013 | 8) Michalek et al., A systematic review of worldwide epidemiology of psoriasis, J Eur Acad Dermatol Venereol. 2017 | 9) Menlo Tx Company Presentation June 2018

# Vixarelimab Exploratory Phase 2 Study in Diseases Characterized by Chronic Pruritus

## Plaque psoriasis cohort achieved statistically significant reduction in weekly-average WI-NRS at Week 8

**Enrolled patients experiencing moderate-to-severe pruritus and assigned them to one of the following cohorts based upon their diagnosis: plaque psoriasis, chronic idiopathic pruritus, lichen simplex chronicus, chronic idiopathic urticaria, or lichen planus**

- Each cohort was evaluated as an independently randomized sub-study. Patients were randomized and received a loading dose of vixarelimab 720 mg or placebo subcutaneous (SC) followed by vixarelimab 360 mg or placebo SC weekly for 8 weeks.

**Primary Efficacy Endpoint:** percent change versus baseline in weekly-average WI-NRS at Week 8

**Topline Observations:**

- The plaque psoriasis cohort achieved a statistically significant reduction in weekly-average WI-NRS at Week 8. Least squares (LS)-mean change from baseline (mean WI-NRS score of 8.4) in weekly-average WI-NRS at Week 8 was -66.5% (n=14) in vixarelimab recipients compared to -29.0% (n=7) in placebo recipients (LS-mean difference -37.5%; p=0.012).
- In the chronic idiopathic pruritus cohort, the LS-mean change from baseline (mean WI-NRS score of 8.1) in weekly-average WI-NRS at Week 8 was -52.4% (n=14) in vixarelimab recipients compared to -48.8% (n=9) in placebo recipients (LS-mean difference -3.6%; p=0.813).
- The lichen simplex chronicus (n=4), chronic idiopathic urticaria (n=4) and lichen planus (n=3) cohorts showed encouraging efficacy results as measured by percent change from baseline in weekly-average WI-NRS at Week 8. Comparative summary statistics were not performed due to the small number of patients enrolled in each cohort.
- Vixarelimab was well-tolerated, and no dose-limiting adverse events were recorded.



WI-NRS = Worst-Itch Numeric Rating Scale

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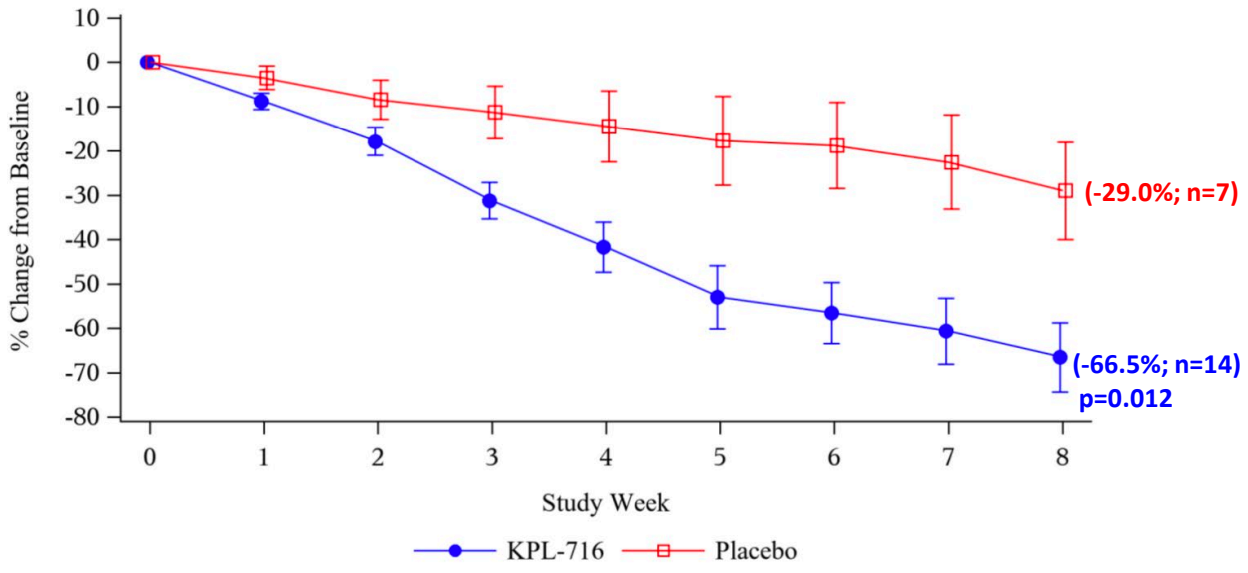
# Vixarelimab Exploratory Phase 2 Study in Diseases Characterized by Chronic Pruritus: Reduction in Weekly-Average WI-NRS at Week 8

Plaque psoriasis cohort achieved statistically significant reduction in weekly-average WI-NRS at Week 8

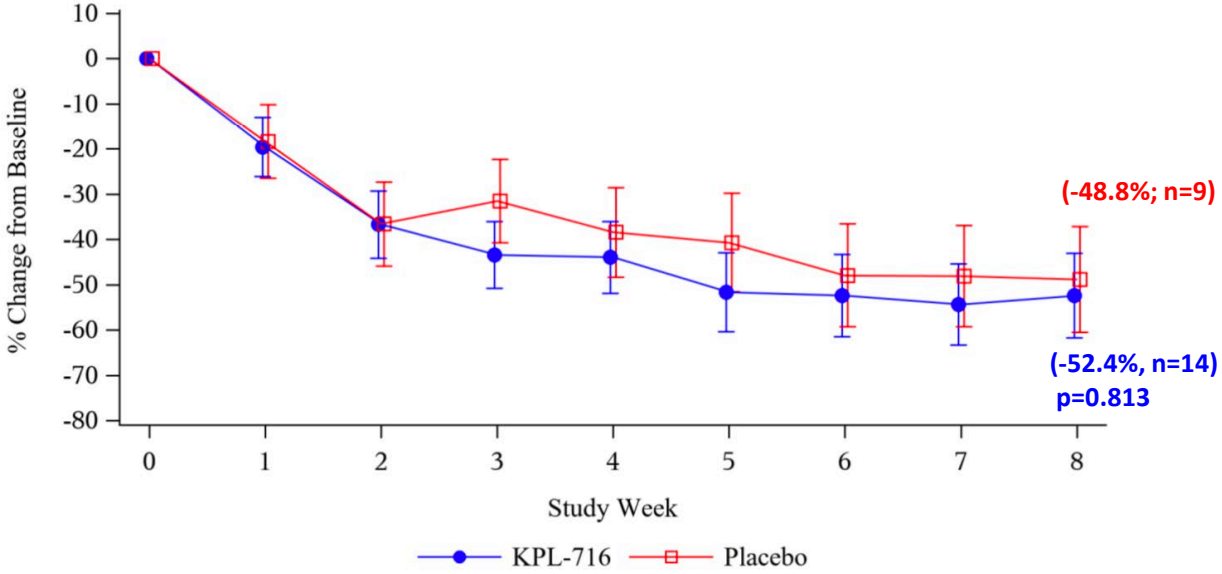
## Plaque Psoriasis

**LS-Mean % Change in Weekly Average WI-NRS**




## Chronic Idiopathic Pruritus

**LS-Mean % Change in Weekly Average WI-NRS**



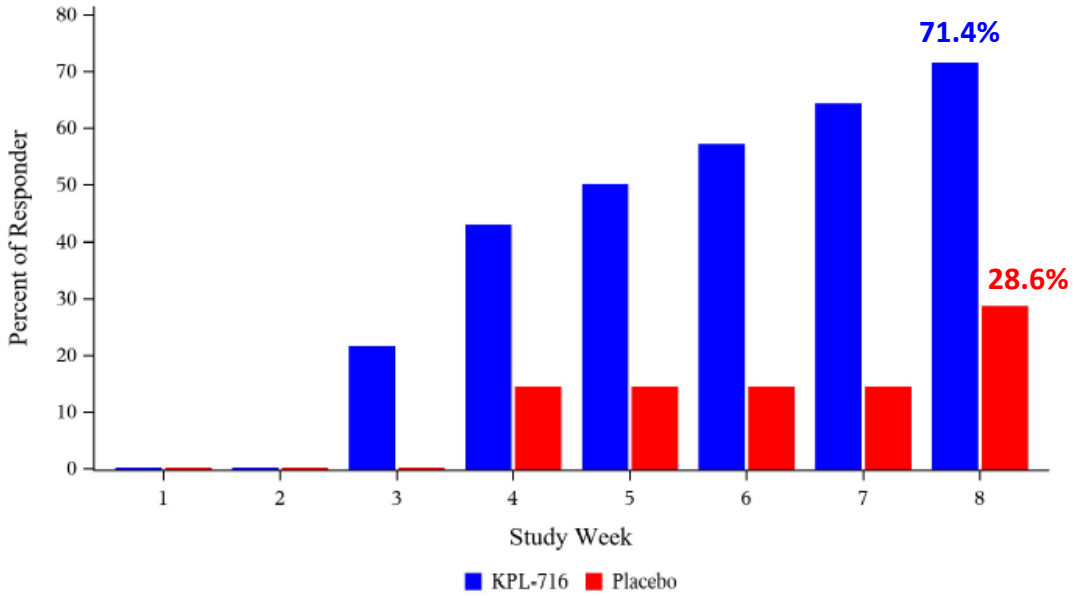



Vixarelimab = KPL-716
WI-NRS = Worst-Itch Numeric Rating Scale
Data as of May 2020

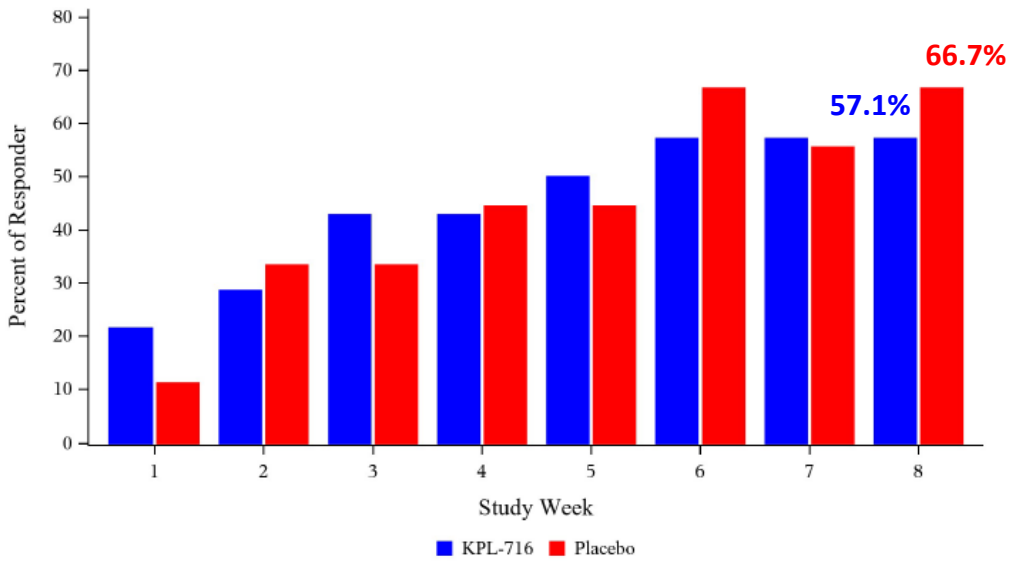
# Vixarelimab Exploratory Phase 2 Study in Diseases Characterized by Chronic Pruritus: ≥ 4-Point Weekly-Average WI-NRS Reduction at Week 8

71.4% of vixarelimab recipients in plaque psoriasis cohort showed a clinically meaningful ≥ 4-point reduction

## Plaque Psoriasis




## Chronic Idiopathic Pruritus



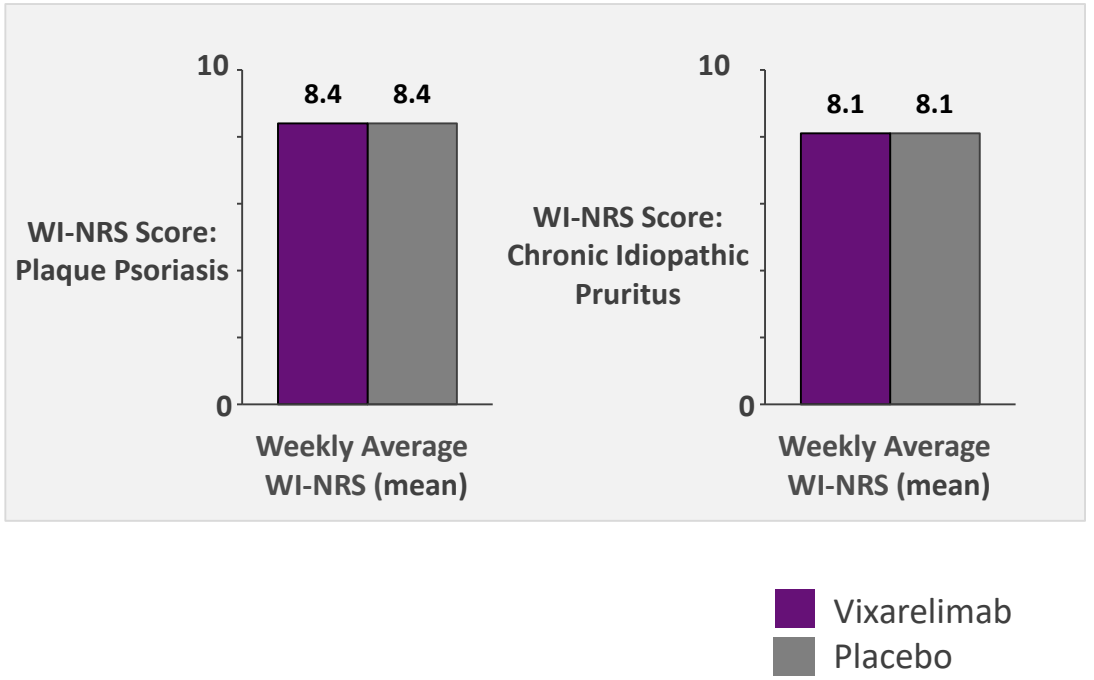

Vixarelimab = KPL-716
WI-NRS = Worst-Itch Numeric Rating Scale
Data as of May 2020

# Vixarelimab Exploratory Phase 2 Study in Diseases Characterized by Chronic Pruritus: Baseline Characteristics

| General Characteristics* Plaque Psoriasis | Vixarelimab (n=14) | Placebo (n=7) | Total (n=21) |
|---|---|---|---|
| Age (Mean Years) | 49 | 53 | 50 |
| Sex (Male/Female) | 5/9 | 3/4 | 8/13 |
| Race | | | |
| White (n) | 92.9% (13) | 85.7% (6) | 90.5% (19) |
| Black or African American (n) | 7.1% (1) | 14.3% (1) | 9.5% (2) |

| General Characteristics* Chronic Idiopathic Pruritus | Vixarelimab (n=14) | Placebo (n=9) | Total (n=23) |
|---|---|---|---|
| Age (Mean Years) | 57 | 58 | 57 |
| Sex (Male/Female) | 4/10 | 1/8 | 5/18 |
| Race | | | |
| White (n) | 78.6% (11) | 77.8% (7) | 78.3% (18) |
| Black or African American (n) | 14.3% (2) | 22.2% (2) | 17.4% (4) |
| Asian (n) | 7.1% (1) | 0 | 4.3% (1) |

## Clinical Findings at Baseline: WI-NRS






*mITT Analysis Set

# Vixarelimab was Well-Tolerated in Exploratory Phase 2 Trial

| | Plaque Psoriasis Cohort | | Chronic Idiopathic Pruritus Cohort | |
|---|---|---|---|---|
| **Summary of Adverse Events** | **Vixarelimab (n=14)** | **Placebo (n=7)** | **Vixarelimab (n=14)** | **Placebo (n=9)** |
| Any AE (n) | 42.9% (6) | 14.3% (1) | 28.6% (4) | 22.2% (2) |
| TEAE (n) | 42.9% (6) | 14.3% (1) | 28.6% (4) | 22.2% (2) |
| Drug-Related TEAE (n) | 7.1% (1) | 0 | 7.1% (1) | 11.1% (1) |
| Serious TEAE | 0 | 0 | 7.1% (1) | 0 |
| Drug-Related Serious TEAE | 0 | 0 | 7.1% (1) | 0 |
| TEAE Leading to Treatment Discontinuation | 0 | 0 | 7.1% (1) | 0 |
| Drug-Related TEAE Leading to Treatment Discontinuation | 0 | 0 | 7.1% (1) | 0 |
| Serious TEAE Leading to Treatment Discontinuation | 0 | 0 | 7.1% (1) | 0 |
| Drug-Related Serious TEAE Leading to Treatment Discontinuation | 0 | 0 | 7.1% (1) | 0 |
| TEAE Leading to Death | 0 | 0 | 0 | 0 |



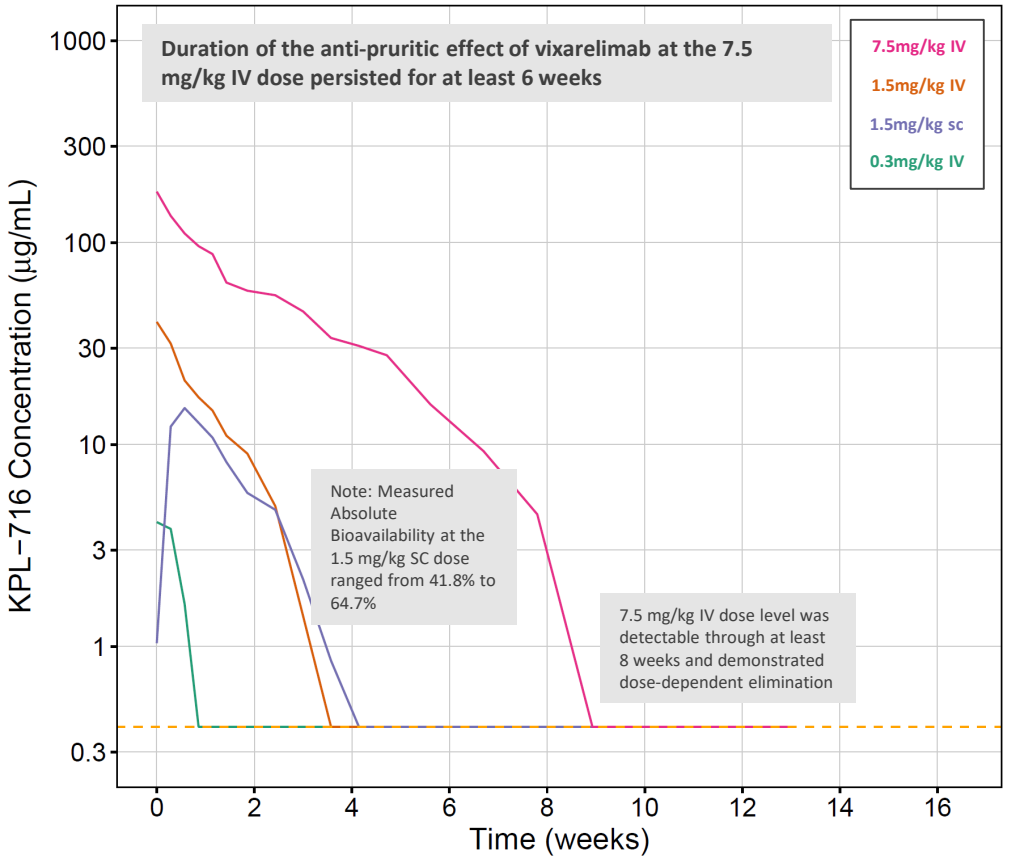
AE = adverse event
TEAE = treatment emergent adverse event

# Vixarelimab was Well-Tolerated in Prurigo Nodularis Phase 2a Study

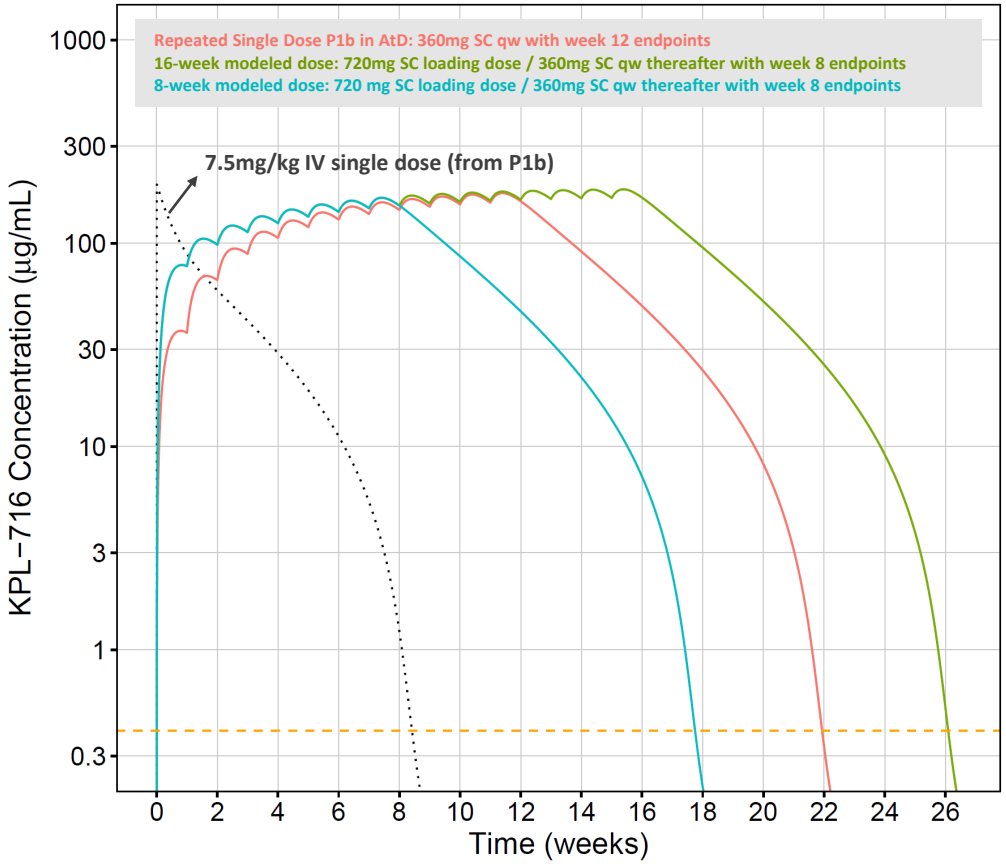
| System Organ Class Preferred Term | Vixarelimab (n=23) | Placebo (n=26) |
|---|---|---|
| Skin and Subcutaneous Tissue Disorders | 26.1% (6) | 15.4% (4) |
| Eczema Nummular | 4.3% (1) | 3.8% (1) |
| Pruritus | 4.3% (1) | 3.8% (1) |
| Dermatitis Allergic | 4.3% (1) | 0 |
| Idiopathic Angioedema | 4.3% (1) | 0 |
| Night Sweats | 4.3% (1) | 0 |
| Urticaria | 4.3% (1) | 0 |
| Skin Burning Sensation | 0 | 7.7% (2) |
| Neurodermatitis | 0 | 3.8% (1) |

# PK/PD Model: Weekly SC Dosing Provided Sufficient/High Exposures for POC Studies and Alternate Dosing Regimens in Future Dose-Finding Studies (e.g., q2w and/or qm)

## Measured Vixarelimab PK From P1b Single Dose




## Phase 1b data used to build predictive PK/dosing model for multiple-dose studies (RSD, PN, Chronic Pruritic Diseases)




Note: Model based upon Absolute Bioavailability of 65% at the 360 mg SC dose



PK = pharmacokinetic; PD = pharmacodynamic; POC = proof of concept; SC = subcutaneous

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*Every Second Counts!™*