



Acquisition of Prometheus Biosciences

April 17, 2023



Agenda



Rob Davis
Chairman & Chief
Executive Officer



Dr. Dean Li
President, Merck Research
Laboratories



Dr. Eliav Barr
SVP, Head of Global Clinical
Development & Chief Medical Officer



Chirfi Guindo
Chief Marketing Officer
Human Health



Caroline Litchfield
Chief Financial Officer

Strategic Rationale | Rob Davis

Scientific Overview | Dean Li

Clinical Profile | Eliav Barr

Commercial Opportunity | Chirfi Guindo

Financial Overview | Caroline Litchfield

Q&A

Important Information About the Transaction

Merck & Co., Inc. (“Merck”), through a subsidiary, has agreed to acquire Prometheus Biosciences, Inc. (“Prometheus Biosciences”). The acquisition is subject to Prometheus Biosciences’ shareholder approval. The closing of the transaction will be subject to certain conditions, including the expiration of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act and other customary conditions. A copy of the merger agreement pursuant to the transaction will be filed with the Securities and Exchange Commission (“SEC”) and will be publicly available.

In addition, Merck and Prometheus Biosciences file annual, quarterly and current reports and other information with the SEC, which are available to the public from commercial document-retrieval services and at the SEC’s website at www.sec.gov. Copies of the documents filed with the SEC by Merck may be obtained at no charge on Merck’s internet website at www.merck.com or by contacting Merck at 2025 E Scott Ave, Rahway, N.J. 07033 or (908) 423-1000. Copies of the documents filed with the SEC by Prometheus Biosciences may be obtained at no charge on Prometheus Biosciences’ internet website at www.prometheusbiosciences.com or by contacting Prometheus Biosciences at 3050 Science Park Rd, San Diego, C.A. 92037 or (858) 824-0895.

Forward-looking statement of Merck & Co., Inc., Rahway, N.J., USA

This presentation of Merck & Co., Inc., Rahway, N.J., USA (the “company”) includes “forward-looking statements” within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. These statements are based upon the current beliefs and expectations of the company’s management and are subject to significant risks and uncertainties. There can be no guarantees with respect to pipeline candidates that the candidates will receive the necessary regulatory approvals or that they will prove to be commercially successful. If underlying assumptions prove inaccurate or risks or uncertainties materialize, actual results may differ materially from those set forth in the forward-looking statements.

Risks and uncertainties include but are not limited to, general industry conditions and competition; general economic factors, including interest rate and currency exchange rate fluctuations; the impact of the global outbreak of novel coronavirus disease (COVID-19); the impact of pharmaceutical industry regulation and health care legislation in the United States and internationally; global trends toward health care cost containment; technological advances, new products and patents attained by competitors; challenges inherent in new product development, including obtaining regulatory approval; the company’s ability to accurately predict future market conditions; manufacturing difficulties or delays; financial instability of international economies and sovereign risk; dependence on the effectiveness of the company’s patents and other protections for innovative products; and the exposure to litigation, including patent litigation, and/or regulatory actions.

The company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the company’s Annual Report on Form 10-K for the year ended December 31, 2022 and the company’s other filings with the Securities and Exchange Commission (SEC) available at the SEC’s Internet site (www.sec.gov).



Strategic Rationale

Rob Davis

Chairman & Chief Executive Officer



Merck continues to advance science-led strategy through acquisition of Prometheus Biosciences



\$200 cash per Prometheus share, representing total transaction value of approximately \$10.8B, expected to close in 3Q 2023



Potentially **transformational, first-in-class, late-stage candidate**, in a disease area with **significant unmet medical need**



Opportunity to potentially **transform standard of care** for certain patients suffering from debilitating autoimmune diseases through **precision medicine** approach



Diversifies portfolio and enhances our **sustainable innovation engine**



Multi-billion dollar commercial opportunity with potential to **drive long-term revenue and earnings growth** well into the next decade



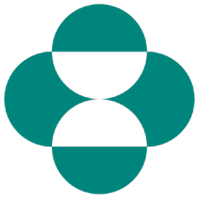
Scientific Overview

Dr. Dean Li

President, Merck Research Laboratories



Prometheus is well-aligned to Merck's R&D strategy



Translating breakthrough
science into
medicines and vaccines
that save and improve lives

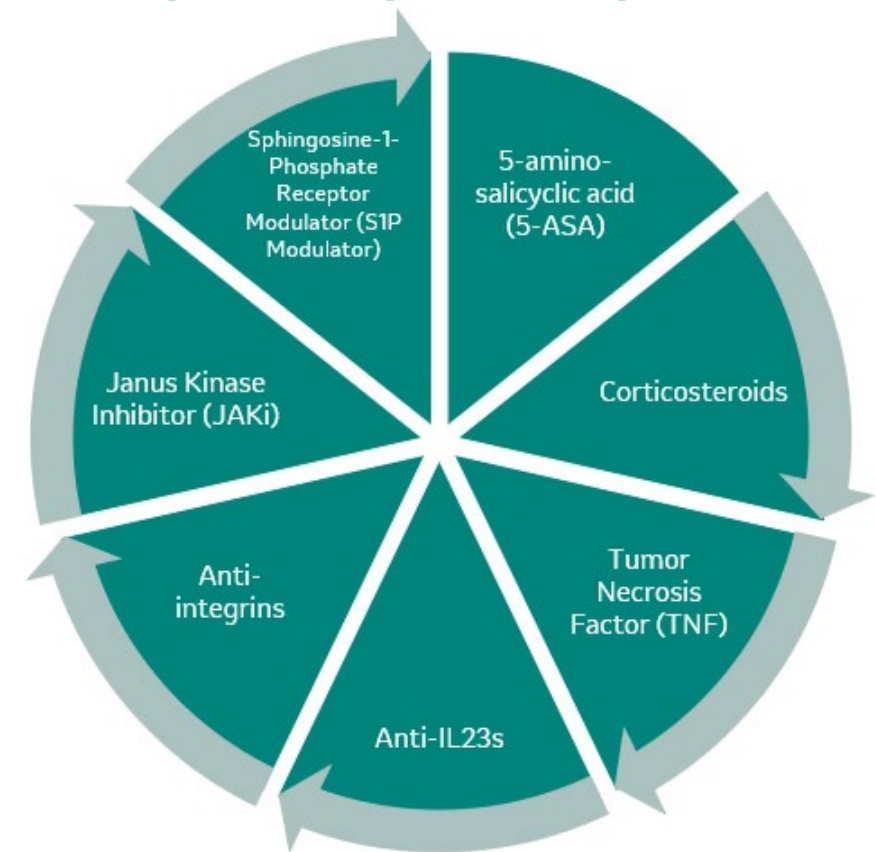
Prometheus augments and accelerates Merck's research efforts in immunology

- Advancing novel mechanisms
- Transforming standard of care
- Leveraging precision medicine

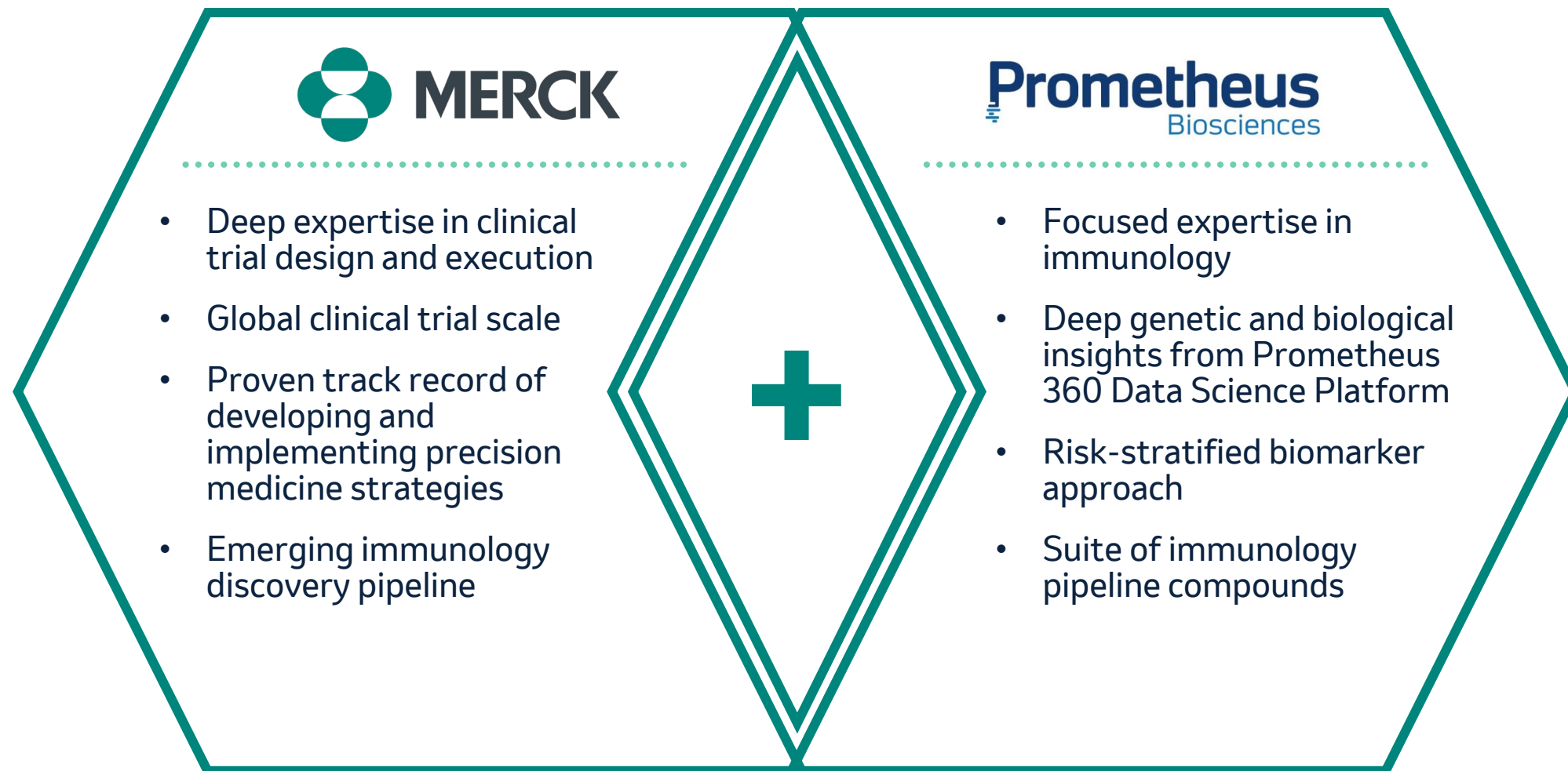
IBD is a devastating disease in need of new treatment options for patients

- Prevalence increasing globally
- Major quality of life impacts
- Elevated risk of colon cancer
- Increased risk of hospitalization
- Disease progression often leads to surgery

Patients often cycle through existing therapies due to sub-optimal response and poor tolerability



Prometheus complements and accelerates Merck's immunology presence



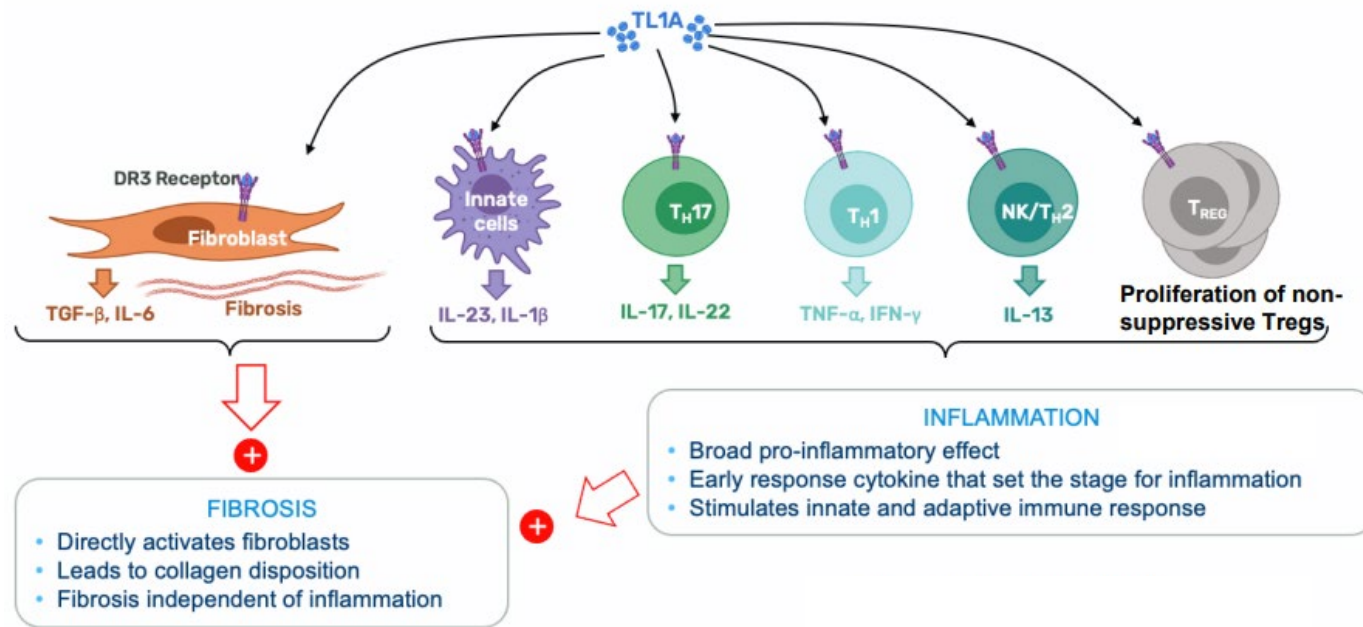
Clinical Profile

Dr. Eliav Barr

SVP, Head of Global Clinical Development
& Chief Medical Officer



PRA023 has potential to be the first and best TL1A inhibitor



- TL1A has **strong genetic association** to both UC and CD
- PRA023 is a **potential first and best-in-class TL1A** with a dual mechanism of action (anti-inflammatory and anti-fibrotic)
- In Phase 2a:
 - **Outstanding efficacy**
 - **Favorable safety and tolerability profile**
- **Precision approach** to treating IBD with a proprietary biomarker

ARTEMIS-UC Phase 2 study design

Cohort 1: Evaluation of efficacy in all comers

Key Inclusion Criteria

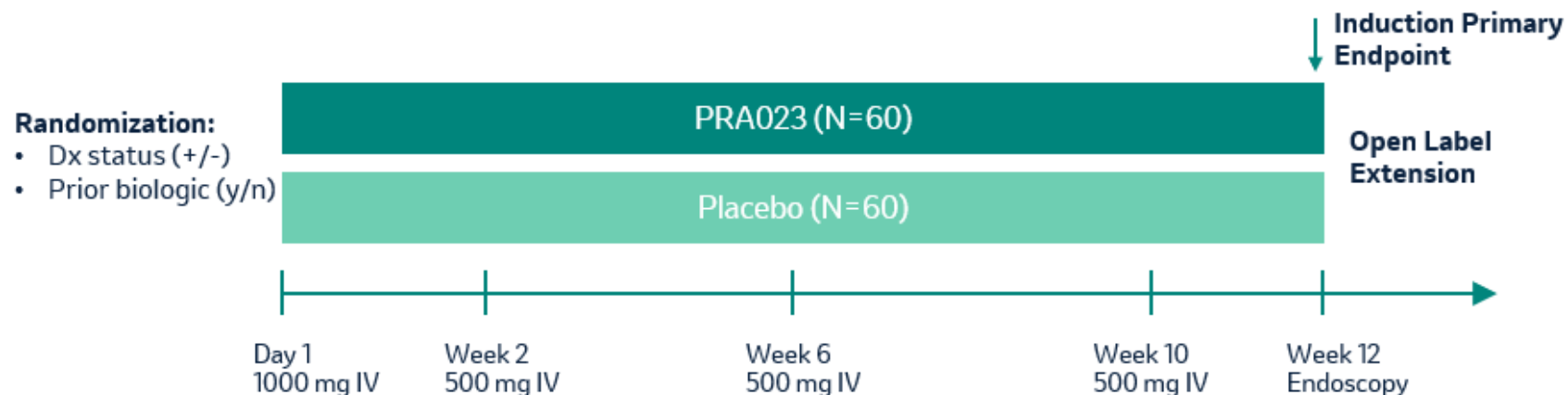
- Moderately to severely active UC
- No/insufficient response and/or intolerance to conventional or advanced therapy

Primary Endpoint

- Clinical remission at week 12 by 3 component Modified Mayo Score

Secondary Endpoints (α -controlled)

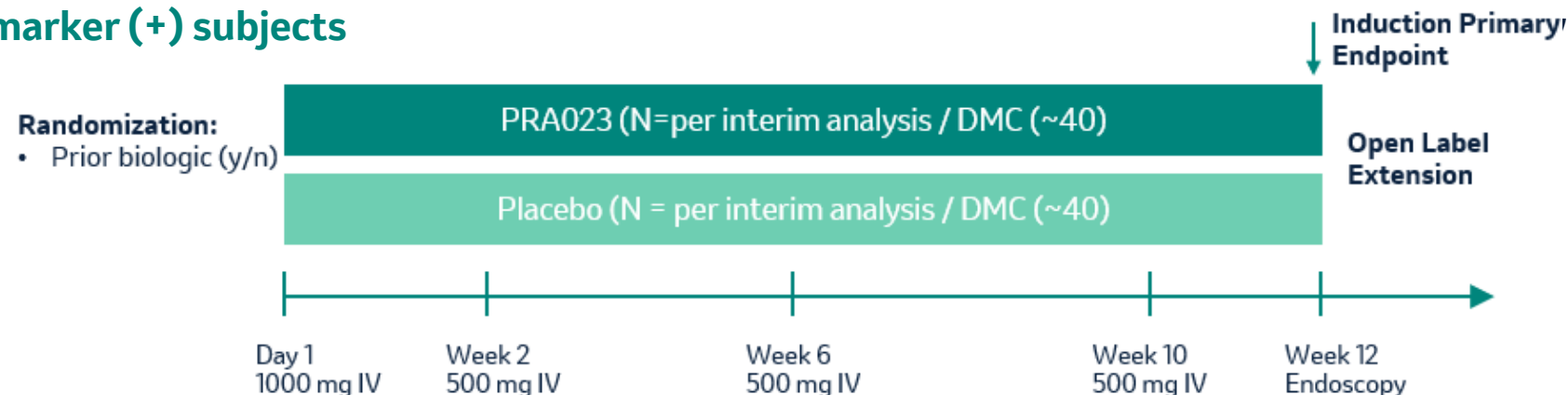
- Endoscopic improvement; clinical response; symptomatic remission; mucosal healing; histologic improvement; histologic-endoscopic mucosal improvement; IBDQ response



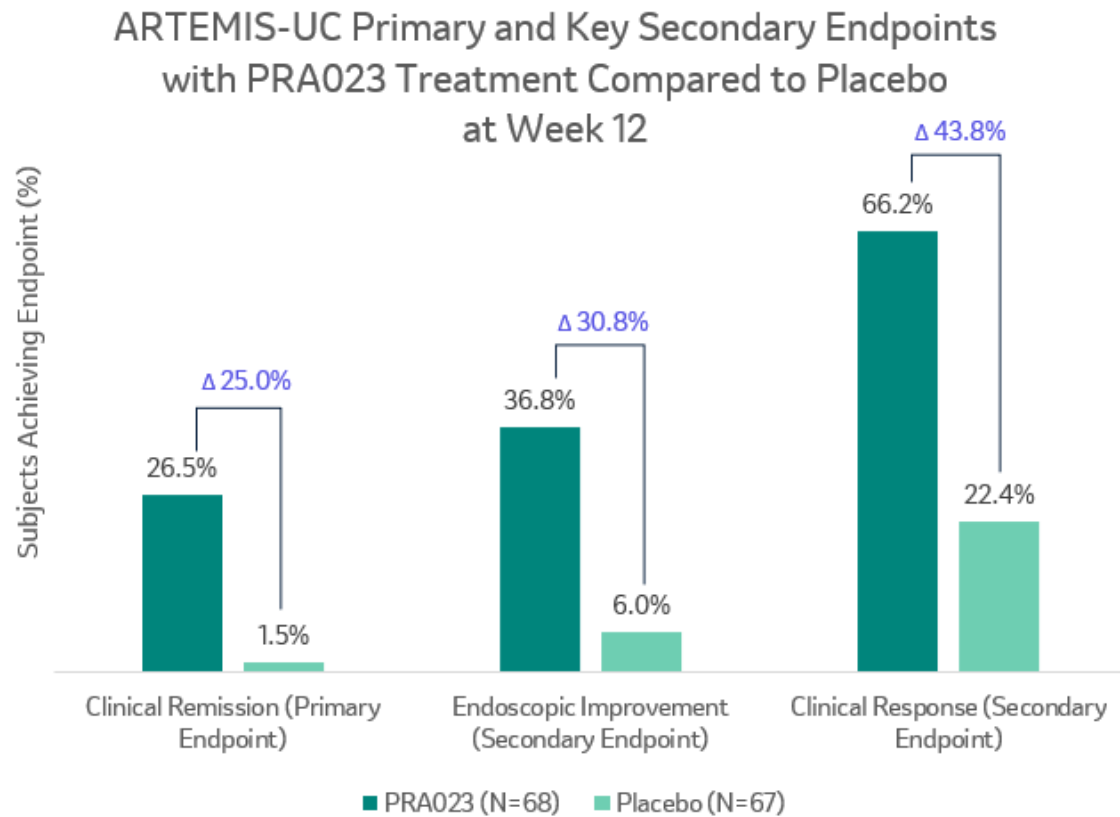
Cohort 2: Evaluation of efficacy in biomarker (+) subjects

Key Inclusion Criteria

- As in Cohort 1
- Must also be Dx+



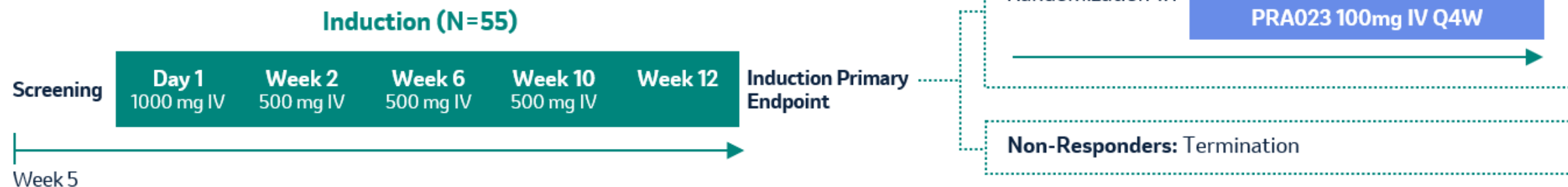
ARTEMIS-UC Phase 2 study showed strong efficacy across primary and secondary endpoints



- 12 weeks of PRA023 induction treatment led to statistically significant increases in clinical remission, endoscopic improvement and clinical response compared to placebo in patients with active UC
- 25.0% placebo-adjusted clinical remission ($p > 0.001$)
- 30.8% placebo-adjusted endoscopic improvement ($p > 0.001$)
- 43.8% placebo-adjusted clinical response ($p > 0.001$)
- No safety concerns identified

APOLLO-CD Phase 2a study design

Phase 2a, Multi-Center, Open-Label Study to Evaluate the Safety, Efficacy, and Pharmacokinetics of PRA023 in Subjects with Moderately to Severely Active Crohn's Disease



Key Inclusion Criteria

- Moderately to severely active CD by CDAI
- Endoscopically active disease by SES-CD (≥ 4 points for isolated ileal disease; otherwise, ≥ 6 points)
- No/insufficient response and/or intolerance to conventional or biologic therapy (capped biologic-exposed stratum at 70%)

Objectives

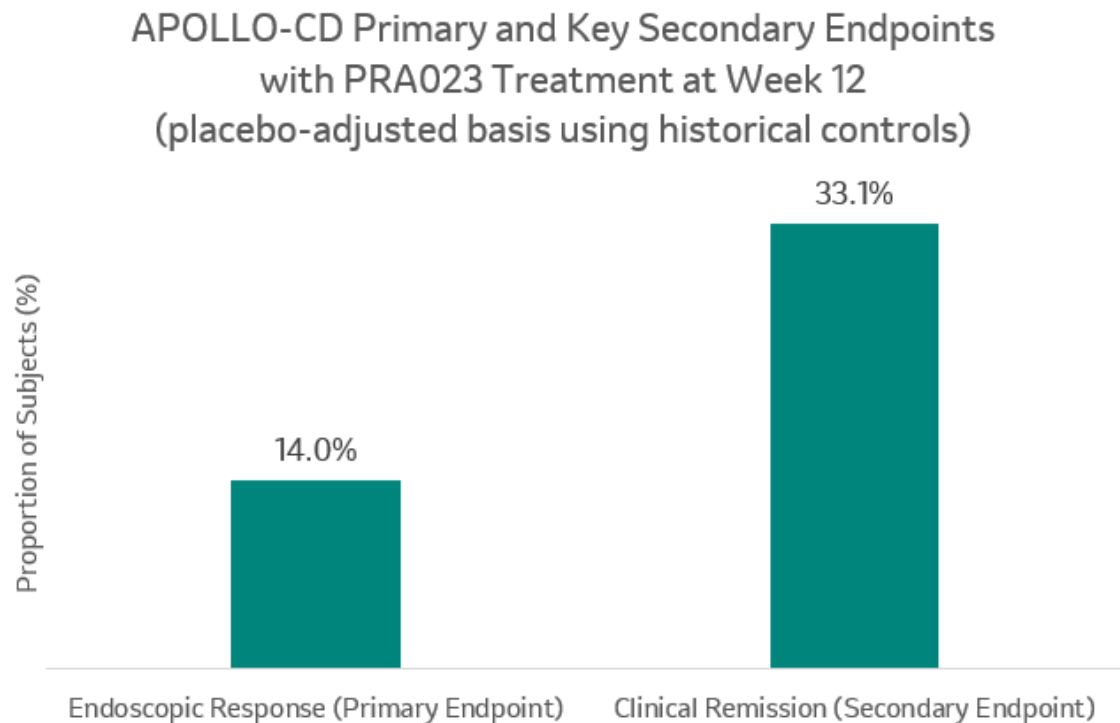
Primary:

- Safety and tolerability
- Endoscopic response at Week 12

Secondary:

- Clinical remission at Week 12
- Clinical response at Week 12
- Endoscopic and clinical improvement at Week 12
- Biomarker and clinical improvement at Week 12
- Normalization of C-reactive protein among subjects with elevated concentrations at baseline, at Week 12
- Normalization of fecal calprotectin among subjects with elevated concentrations at baseline, at Week 12

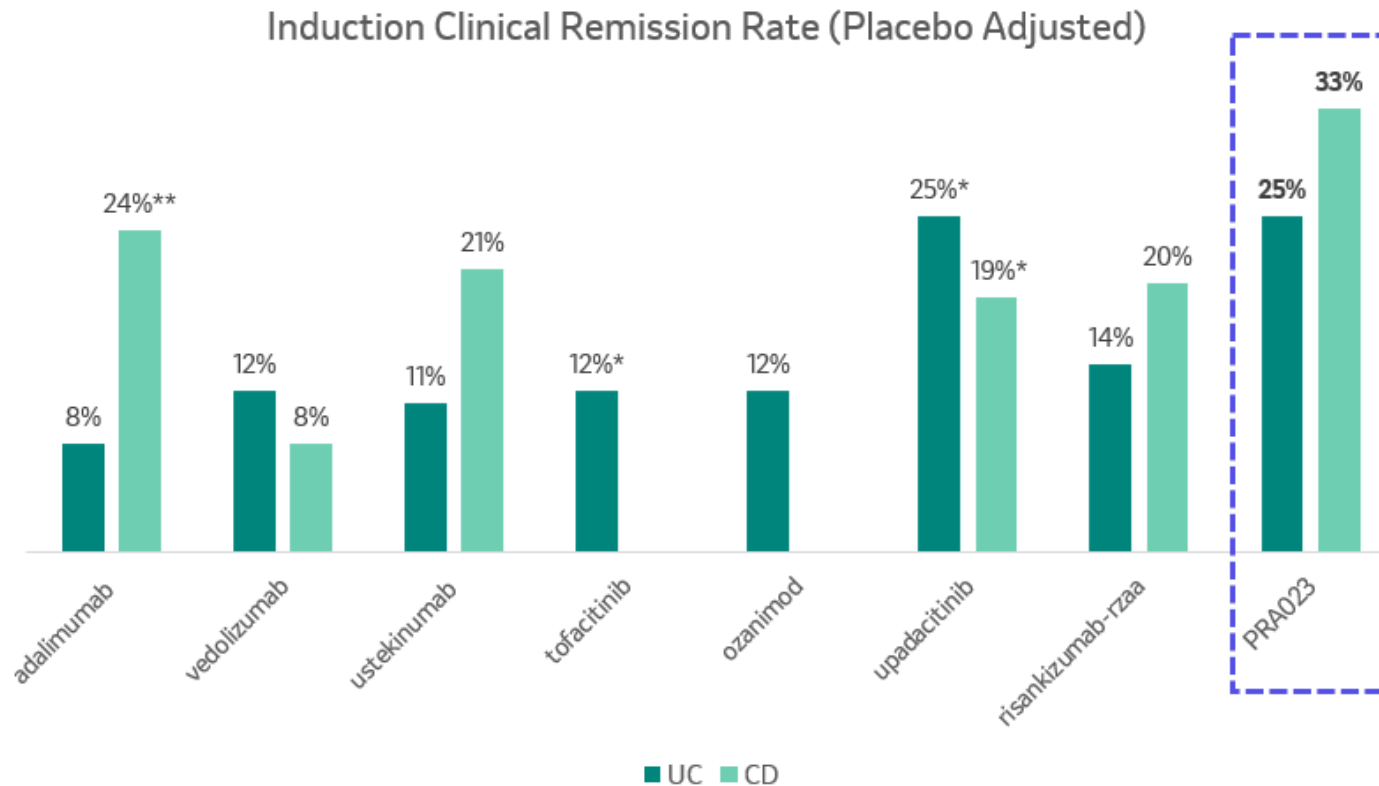
APOLLO-CD Phase 2a study showed strong efficacy across primary and secondary endpoints



- 12 weeks of PRA023 induction treatment led to statistically significant increases in clinical and endoscopic endpoints compared to historical placebo rates in patients with active CD
- 14.0% placebo-adjusted endoscopic improvement ($p=0.002$) in biomarker (+) population
- 33.1% placebo-adjusted clinical remission ($p<0.001$) in all comers population
- No safety concerns identified

26.0% of patients on PRA023 achieved endoscopic response ($p=0.002$ compared to 12% prespecified historical placebo rate)
49.1% of patients on PRA023 achieved clinical remission ($p<0.001$ compared to 16% prespecified historical placebo rate)

Phase 2 PRA023 data suggests UC and CD remission rates comparable or superior to available therapies, on a cross-trial comparison basis



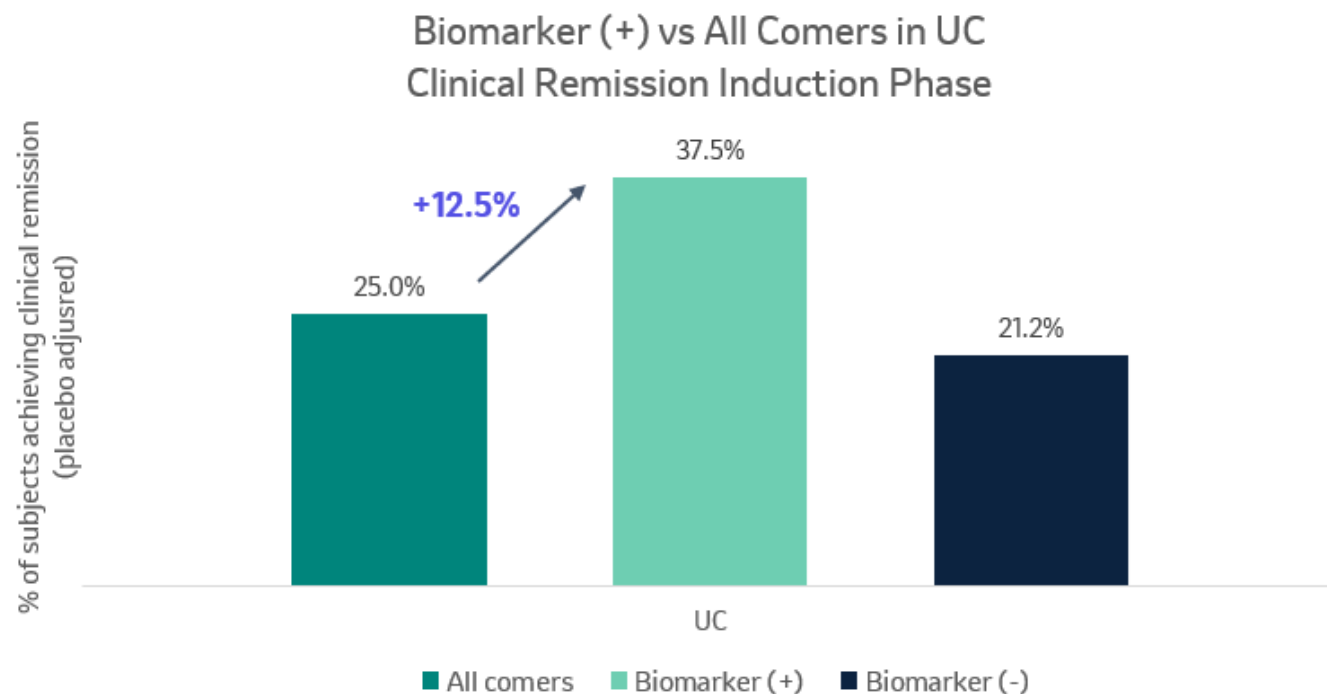
- Phase 2 PRA023 induction efficacy comparable or superior to leading approved agents
- Combination of safety and efficacy in UC and CD Phase 2 studies
- Safety profile in-line with safest approved agents on the market, whereas JAKi class has a black box warning for risk of fatal cardiovascular events

* JAKi class has a black box warning for risk of fatal cardiovascular events

** Tested in largely biologic-naïve patients, which can inflate efficacy numbers

Data from comparators come from respective Phase 3 trials - graphic is not meant to represent a head-to-head study

Interim analysis showed clinical remission in biomarker positive sub-population in UC



ARTEMIS-UC: n=135 (67 on PBO, 68 on active)

ARTEMIS-UC in biomarker (+): n=32 (16 on PBO, 16 on active)

UC biomarker (+) population performance:

- Biomarker (+) population prevalence was ~24%
- Interim data suggest it identifies a population with greater clinical remission rate by an additional 12.5%
- Cohort 2 data (patients must be biomarker (+)) expected 2Q 2023

Continued progress across PRA023 program

Maintenance Studies

- Maintenance portion of the Phase 2 ARTEMIS-UC and APOLLO-CD studies ongoing
- Early data to date are encouraging

Phase 3 Development Plans

- Productive End of Phase 2 meeting with FDA
- Look forward to initiating Phase 3 development program

Prometheus is highly complementary to and strengthens existing immunology portfolio and pipeline

	PRA023	PRA052	MK-6194
Status	Phase 2 complete	Phase 1 ongoing	Phase 1 ongoing
Mechanism of Action	anti-TL1A mAb	anti-CD30 ligand mAb	IL-2 mutein
Indication	Ulcerative Colitis, Crohn's Disease, SSc-ILD	Immune-Mediated Diseases	Vitiligo, Alopecia Areata, SLE, AtD
Timing	Plan to initiate Phase 3 UC trial by early 2024	Phase 1 data expected in 2023	Phase 2 expected to start in 2023

- Seeking to expand assets into **additional indications**
- Multiple **preclinical development assets** across both companies expected to enter the clinic in the coming years
- **Prometheus 360 Data Science Platform** enables link between genetics and biology for precision drug discovery and patient stratification



Commercial Opportunity

Chirfi Guindo

Chief Marketing Officer, Human Health



Significant unmet medical need remains in IBD

IBD is a chronic,
inflammatory and
debilitating condition

- **Approximately 2 million patients** in the U.S. have been **diagnosed with UC and CD**, of which **nearly 1 million have moderate to severe disease**
- UC and CD can be **devastating diseases** with adverse impacts on patients' physical, social and emotional well-being
- Physicians typically **cycle patients through multiple therapeutic classes** and are **challenged in identifying optimal treatments**
- Payers recognize the **need for more effective treatment options**

PRA023 represents a potentially meaningful and durable commercial opportunity

IBD Market Opportunity

- Immunology market is expected to **surpass \$140 billion by 2028¹**
- UC and CD market was **~\$23 billion in 2022**, and is expected to grow to **~\$28 billion by 2028¹**
- Opportunity for **market expansion** with introduction of new options that have potential to **improve short- and long-term clinical outcomes**

PRA023 Opportunity

- UC and CD indications each have potential for **multi-billion dollar peak sales**
- **Patent exclusivity** in the U.S. extends into **2040s**
- Potential for **additional indications** and other immune-mediated diseases

Financial Overview

Caroline Litchfield
Chief Financial Officer



Financial overview of the Prometheus Biosciences acquisition

Transaction Details	• Merck has agreed to acquire all outstanding shares of Prometheus Biosciences for a purchase price of \$200 per share • Total transaction value of ~\$10.8 billion (~\$10.3 billion net of ~\$650 million of cash and investments, as well as other transaction costs) • Flexibility to finance the transaction through cash, commercial paper or opportunistic new debt issuance • Expected to close in 3Q 2023, subject to Prometheus shareholder approval and regulatory approvals
Financial Impact	• Important potential growth driver through the next decade • Expected to negatively impact EPS by ~\$0.25 in the first 12 months, representing costs associated with the investment in pipeline assets and assumed cost of financing • Expected to be accounted for as an asset acquisition, resulting in the net purchase price increasing 2023 research and development expense by ~\$10.3 billion or ~\$4.00 per share, included in GAAP and non-GAAP results • Not expected to impact credit rating
Capital Allocation Priorities	• Retain significant capacity within strong investment-grade credit rating to pursue additional business development deals • Remain committed to funding and growing dividend over time • Continue to expect modest share repurchases
Royalty Structure	• Low-to-mid single digit royalty on future sales owed to Cedars-Sinai

Q&A



Rob Davis
Chairman & Chief
Executive Officer



Dr. Dean Li
President,
Merck Research
Laboratories



Dr. Eliav Barr
SVP, Head of Global
Clinical Development
& Chief Medical Officer



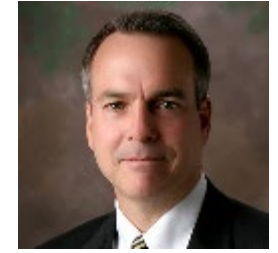
Chirfi Guindo
Chief Marketing
Officer,
Human Health



Caroline Litchfield
Chief Financial
Officer



Dr. Aileen Pangan
VP, Late-Stage
Immunology



Peter Dannenbaum
VP, Investor Relations

Appendix

Eliav Barr, M.D.

Senior Vice President

Head of Global Clinical Development, Chief Medical Officer

Eliav Barr is senior vice president and head of Global Clinical Development and Chief Medical Officer at Merck Research Laboratories (MRL). He leads all late-stage clinical development for Merck's human health portfolio and pipeline.

Prior to his current role, Eliav led MRL's Global Medical Affairs organization expanding Merck's scientific engagement and implementation efforts in oncology, vaccines and infectious diseases. Since joining Merck in 1995, Eliav has held positions of increasing responsibility including leadership roles in oncology and infectious diseases clinical development. He was also previously Therapeutic Area Head for Infectious Diseases and managed product development teams in Oncology and Infectious Disease.

Eliav is a cardiologist by training. He received his undergraduate degree from Penn State University and his medical degree from Thomas Jefferson University. He completed his Internal Medicine residency and Cardiology Fellowship at Johns Hopkins University, and subsequently pursued post-doctoral training at the University of Michigan. Prior to joining Merck, he held a faculty position at the University of Chicago.



Chirfi Guindo

Chief Marketing Officer, Human Health

Chirfi Guindo is chief marketing officer for Merck. He is responsible for leading the development and implementation of the company's long-term strategy for the Human Health portfolio spanning oncology, vaccines, pharmaceutical and pipeline products.

Prior to this role, Chirfi was executive vice president and head of global product strategy and commercialization at Biogen.

Before joining Biogen in 2017, Chirfi spent more than 25 years with Merck in positions of increasing responsibility in finance, sales, commercial and marketing. During his time with Merck, he led global marketing for Merck's HIV portfolio, and also led the company's Human Health businesses in Canada, the Netherlands and South Africa. Chirfi has been recognized for developing strong talent and forging innovative public-private partnerships that expand access to Merck medicines, while elevating the profile of Merck as a patient-focused company.

Chirfi is a graduate of Ecole Centrale de Paris (France) with a degree in engineering and has a master's of Business Administration from New York University's Stern School of Business.



Aileen Pangan, M.D.

Vice President Late-Stage Immunology

Aileen L. Pangan, M.D. is vice president of Global Clinical Development of Late-Stage Immunology.

Aileen is a rheumatologist with 17 years of experience leading cross-functional teams through design and execution of clinical trials. She joined Merck from AbbVie, where she held positions of increasing responsibility, including as Executive Medical Director, Immunology Clinical Development, where she led the development teams for HUMIRA and RINVOQ through regulatory approval and commercialization. In this role, she also chaired the integrated Evidence Strategy Team, whose remit was to develop and provide oversight of an integrated evidence plan to maximize asset value and provided strategic guidance in dossier preparation and leadership in regulatory agency interactions for Rheumatoid Arthritis (RA), Psoriatic Arthritis (PsA), Ankylosing Spondylitis (AS) and Atopic Dermatitis (AD), and Ulcerative Colitis (UC).

Prior to working at AbbVie, Aileen was an Assistant Professor of Medicine, Rheumatology at the Loyola University Medical Center. She obtained her B.S. and M.D. at the Philippines College of Medicine, Manila, Philippines, completed her residency in Internal Medicine at the Rush University Medical Center in Chicago and was a Clinical and Research Fellow in Rheumatology at Massachusetts General Hospital/Harvard Medical School.



Acronyms

AtD = Atopic dermatitis

CD = Crohn's disease

IBD = Inflammatory bowel disease

JAKi = Janus kinase inhibitor

mAb = Monoclonal antibody

PBO = Placebo

PCD = Primary completion date

SLE = Systemic lupus erythematosus

SNP = Single nucleotide polymorphism

SSc-ILD = Systemic sclerosis-associated interstitial lung disease

TL1A = Tumor necrosis factor-like ligand 1A

UC = Ulcerative colitis