

For immediate release

Investigational targeted oral peptide JNJ-2113 demonstrated positive results in moderate-to-severe plaque psoriasis in Phase 2b study published in *New England Journal of Medicine*

Data from FRONTIER 1, a Phase 2b clinical trial, show JNJ-2113, the first and only targeted oral peptide that selectively blocks the IL-23 receptor, achieved the primary and all secondary endpoints including PASI^a 100 and IGA^b 0 responses of 40.5 percent and 45.2 percent, respectively

Spring House, Pennsylvania (February 7, 2024) – Johnson & Johnson today announced publication in the [New England Journal of Medicine](#) (*NEJM*) of the Phase 2b FRONTIER 1 trial results for JNJ-2113.¹ JNJ-2113 is the first and only investigational targeted oral peptide inhibitor designed to block the IL-23 receptor.² IL-23 plays a critical role in pathogenic T-cell activation in moderate-to-severe plaque psoriasis (PsO) and underpins the inflammatory response in PsO and other dermatological and gastroenterological IL-23-mediated diseases.^{3,4} The FRONTIER 1 clinical trial achieved the primary and all secondary efficacy endpoints evaluating JNJ-2113 in adults with moderate-to-severe plaque PsO.¹

The primary endpoint of the study was a reduction from baseline of at least 75 percent in the Psoriasis Area and Severity Index score (PASI 75 response) at Week 16. Study results demonstrated a significant dose-response on PASI 75 at Week 16 for adult patients who received JNJ-2113 compared to patients treated with placebo, with 79 percent of patients achieving a PASI 75 response in the highest dose group tested of 100 mg twice-daily. The data were consistent with the secondary endpoints, with patients who received the highest dose of JNJ-2113 achieving PASI 100 of 40.5 percent and IGA 0 (clear skin) of 45.2 percent.¹

“The science behind advanced treatments for immune-mediated inflammatory diseases like PsO has advanced over the last few decades and patients desire treatment options that combine standard of care efficacy, an acceptable safety profile and flexible routes of administration,” said Robert Bissonnette, M.D., Chief Executive Officer and Medical Director at Innovaderm Research, Montreal, Canada.⁵ “The Phase 2b FRONTIER 1 data, as reported in *NEJM*, are very encouraging for the ongoing clinical development program and offer a reason to look forward to the continued research of investigational JNJ-2113 as an oral therapy that may offer an attractive and convenient treatment option for patients.”

Improvements were also consistent across Patient Reported Outcomes through Week 16.¹ Patients who were treated with JNJ-2113 demonstrated greater improvements from baseline in the severity of their disease-related symptoms by Week 16, as assessed by the Psoriasis Symptoms and Signs Diary (PSSD)^c.¹ Among patients with baseline Dermatology Life Quality Index (DLQI)^e scores greater than 1, significantly higher proportions of JNJ-2113-treated patients compared with placebo-treated patients achieved DLQI scores of 0/1 (no impact on quality of life) at Week 16.¹

In this phase 2 study, rates of adverse events (AEs) were generally similar between the JNJ-2113 and placebo groups.¹ The most common (≥5 percent of any treatment group) AEs were COVID-19 infection, nasopharyngitis, upper respiratory tract infection, diarrhea, headache, and cough.¹ No relationship between the JNJ-2113 dose group and the occurrence of AEs or serious AEs was observed.¹

Treatment with JNJ-2113 was also associated with lower serum levels of human beta-defensin 2 (hBD-2), relative to placebo, as early as Week 4.¹ The lowest hBD-2 level was observed with the 100 mg twice-daily dose, beginning by Week 8.¹ Lower levels of hBD-2 were observed with clinical response and indicate inhibition of the IL-17/IL-23 axis.^{5,6,7}

“The impacts of living with moderate-to-severe plaque PsO are felt across all aspects of life and many patients do not seek advanced treatments because they have concerns with injectables and prefer an oral therapeutic option,” said Lloyd Miller, M.D., Ph.D., Vice President, Immunodermatology Disease Area Leader, Johnson & Johnson. “We are encouraged by the study findings published in *NEJM*, including consistency across clinician and patient-reported outcomes and objective biomarkers. If approved, JNJ-2113 has the potential to improve both clinical and quality of life outcomes.”

The pivotal Phase 3 ICONIC clinical development program of JNJ-2113 in adult and adolescent patients with moderate-to-severe plaque PsO was initiated with two studies in Q4 2023 – ICONIC-LEAD and ICONIC-TOTAL – pursuant to the license

and collaboration agreement between Protagonist Therapeutics, Inc. and Janssen Biotech, Inc.⁸ [ICONIC-LEAD](#) is a randomized controlled trial (RCT) to evaluate the safety and efficacy of JNJ-2113 compared with placebo in participants with moderate-to-severe plaque PsO, with the higher efficacy bar of PASI 90 and IGA score of 0 or 1 with at least a 2-grade improvement as co-primary endpoints.⁹ [ICONIC-TOTAL](#) is a RCT to evaluate the efficacy and safety of JNJ-2113 compared with placebo for the treatment of PsO in participants with at least moderate severity affecting special areas (e.g., scalp, genital, and/or palms of the hands and the soles of the feet) with overall IGA score of 0 or 1 with at least a 2-grade improvement as the primary endpoint.¹⁰ Other Phase 3 studies in the development program are expected to begin in Q1 2024, including [ICONIC-ADVANCE 1](#) and [ICONIC-ADVANCE 2](#), which will evaluate the safety and efficacy of JNJ-2113 compared with both placebo and deucravacitinib.¹¹

The findings from the [FRONTIER 1](#) clinical trial suggest the potential of JNJ-2113 across the spectrum of additional IL-23-mediated diseases.^{2,12} The Company has initiated the Phase 2b [ANTHEM-UC](#) study to evaluate the safety and effectiveness of JNJ-2113 compared with placebo in participants with moderately to severely active ulcerative colitis.¹²

Editor's Notes:

- a. The PASI score grades the amount of surface area on each body region that is covered by PsO plaques and the severity of plaque redness, thickness, and scaliness.¹³
- b. The IGA is a five-point scale with a severity ranging from 0 to 4, where 0 indicates clear, 2 is mild, 3 is moderate, and 4 indicates severe disease.¹
- c. The PSSD is a patient-reported instrument that assesses severity of six symptoms (itch, skin tightness, burning, stinging, and pain) and five signs (dryness, cracking, scaling, shedding/flaking, redness, and bleeding) of PsO. An improvement (reduction) of 40 points or more is considered clinically meaningful.¹
- d. Dr. Robert Bissonnette is a paid consultant for Johnson & Johnson. He has not been compensated for any media work.
- e. The DLQI measures impact of any skin disease on daily life, and assesses symptoms, feelings, daily activities, leisure, work/school, relationships/sex, and treatment effects.¹⁴

ABOUT FRONTIER 1 (NCT05223868)

The [FRONTIER 1](#) Phase 2b trial ([NCT05223868](#)) is a randomized, multicenter, double-blind, placebo-controlled clinical trial that evaluated three once-daily dosages and two twice-daily dosages of JNJ-2113 taken orally.^{1,15} It was designed to assess the efficacy and safety of JNJ-2113 in patients with moderate-to-severe plaque PsO.¹ A total of 255 participants were randomized into six treatment groups (placebo [n=43], 25 mg daily [n=43], 25 mg twice-daily [n=41], 50 mg daily [n=43], 100 mg daily [n=43], and 100 mg twice-daily [n=42]).¹ The total duration of the trial was up to 24 weeks, which included a four-week screening period, a 16-week treatment period and a four-week safety follow-up period.¹

The primary endpoint of the clinical trial was the proportion of patients achieving PASI 75 at 16 weeks.¹ Secondary endpoints at Week 16 included change from baseline in PASI total score, proportion of participants achieving PASI 90 and PASI 100 score, proportion of participants achieving an Investigator's Global Assessment (IGA) score of cleared (0) or minimal (1), change from baseline in Body Surface Area (BSA) at Week 16, change from baseline in Psoriasis Symptoms and Signs Diary (PSSD) symptoms scores, percentage of participants achieving PSSD symptoms score=0 among participants with a baseline symptom score ≥ 1 , proportion of participants achieving a Dermatology Life Quality Index (DLQI) of 0 or 1 among participants with baseline DLQI Score > 1 , change from baseline in Patient-Reported Outcomes Measurement Information System (PROMIS-29) domain score, proportion of participants who achieve ≥ 5 -point improvement from baseline in PROMIS-29 domain score, and number of participants with adverse events and serious adverse events up to 24 weeks.¹⁵

ABOUT PLAQUE PSORIASIS (PsO)

Plaque PsO is an immune-mediated disease resulting in overproduction of skin cells, which causes inflamed, scaly plaques that may be itchy or painful.¹⁶ It is estimated that eight million Americans and more than 125 million people worldwide live with the disease.¹⁵ Nearly one-quarter of all people with PsO have cases that are considered moderate-to-severe.¹⁷ Living with PsO can be a challenge and impact life beyond a person's physical health, including emotional health, relationships, and handling the stressors of life.¹⁸

ABOUT JNJ-77242113 (JNJ-2113)

JNJ-2113 was jointly discovered and is being developed pursuant to the license and collaboration agreement between Protagonist Therapeutics and Johnson & Johnson. Johnson & Johnson retains exclusive worldwide rights to develop JNJ-2113 in Phase 2 clinical trials and beyond, and to commercialize compounds derived from the research conducted pursuant to the agreement against a broad range of indications.^{19,20,21}

Investigational JNJ-2113 is the first targeted oral peptide designed to block the IL-23 receptor,² which underpins the inflammatory response in moderate-to-severe plaque PsO and other IL-23-mediated diseases.^{3,4} JNJ-2113 binds to the IL-23 receptor with single-digit picomolar affinity and demonstrated potent, selective inhibition of IL-23 signaling in human T cells.²² The license and collaboration agreement established between Protagonist and Janssen Biotech, Inc., in 2017 enabled the companies to work together to discover and develop next-generation compounds that ultimately led to JNJ-2113.²³

ABOUT JOHNSON & JOHNSON

At Johnson & Johnson, we believe health is everything. Our strength in healthcare innovation empowers us to build a world where complex diseases are prevented, treated, and cured, where treatments are smarter and less invasive, and solutions are personal. Through our expertise in Innovative Medicine and MedTech, we are uniquely positioned to innovate across the full spectrum of healthcare solutions today to deliver the breakthroughs of tomorrow, and profoundly impact health for humanity. Learn more at <https://www.jnj.com/> or at www.janssen.com/johnson-johnson-innovative-medicine. Follow us at [@JNJInnovMed](https://twitter.com/JNJInnovMed).

Janssen Research & Development, LLC is a Johnson & Johnson Company.

CAUTIONS CONCERNING FORWARD-LOOKING STATEMENTS

This press release contains “forward-looking statements” as defined in the Private Securities Litigation Reform Act of 1995 regarding JNJ-2113. The reader is cautioned not to rely on these forward-looking statements. These statements are based on current expectations of future events. If underlying assumptions prove inaccurate or known or unknown risks or uncertainties materialize, actual results could vary materially from the expectations and projections of Janssen Research & Development, LLC and/or Johnson & Johnson. Risks and uncertainties include, but are not limited to: challenges and uncertainties inherent in product research and development, including the uncertainty of clinical success and of obtaining regulatory approvals; uncertainty of commercial success; manufacturing difficulties and delays; competition, including technological advances, new products and patents attained by competitors; challenges to patents; product efficacy or safety concerns resulting in product recalls or regulatory action; changes in behavior and spending patterns of purchasers of health care products and services; changes to applicable laws and regulations, including global health care reforms; and trends toward health care cost containment. A further list and descriptions of these risks, uncertainties and other factors can be found in Johnson & Johnson’s Annual Report on Form 10-K for the fiscal year ended January 1, 2023, including in the sections captioned “Cautionary Note Regarding Forward-Looking Statements” and “Item 1A. Risk Factors,” and in Johnson & Johnson’s subsequent Quarterly Reports on Form 10-Q and other filings with the Securities and Exchange Commission. Copies of these filings are available online at www.sec.gov, www.jnj.com or on request from Johnson & Johnson. Neither Janssen Research & Development, LLC nor Johnson & Johnson undertakes to update any forward-looking statement as a result of new information or future events or developments.

© Johnson & Johnson, Inc. 2024. All rights reserved.

#

1. Bissonnette R, et al. An oral interleukin-23–receptor antagonist peptide for plaque psoriasis. *N Engl J Med*. 2024;390:510-21. DOI: 10.1056/NEJMoa2308713.
2. Bissonnette R, et al. Data presentation. A phase 2, randomized, placebo-controlled, dose-ranging study of oral JNJ-77242113 for the treatment of moderate-to-severe plaque psoriasis: FRONTIER 1. Presented at WCD 2023, July 3-8.
3. Razawy W, et al. The role of IL-23 receptor signaling in inflammation-mediated erosive autoimmune arthritis and bone remodeling. *Eur J Immunol*. 2018 Feb; 48(2): 220–229.
4. Tang C, et al. Interleukin-23: as a drug target for autoimmune inflammatory diseases. *Immunology*. 2012 Feb; 135(2): 112–124.
5. Kolbinger F, et al. β-Defensin 2 is a responsive biomarker of IL-17A-driven skin pathology in patients with psoriasis. *J Allergy Clin Immunol* 2017;139:923-32.
6. Morita A, et al. Assessment of serum biomarkers in patients with plaque psoriasis on secukinumab. *J Dermatol* 2020;47:452-7.
7. Jansen PA, et al. β-Defensin-2 protein is a serum biomarker for disease activity in psoriasis and reaches biologically relevant concentrations in lesional skin. *PLoS One*. 2009 Mar; 4(3): e4725. doi: 10.1371/journal.pone.0004725. PMID: 19266104; PMCID: PMC2649503.
8. Protagonist Therapeutics. Press release. Protagonist announces advancement of JNJ-2113 across multiple indications. Available at: <https://www.accesswire.com/791174/protagonist-announces-advancement-of-jnj-2113-across-multiple-indications>. Accessed February 2024.
9. Clinicaltrials.gov. A study of JNJ-2113 in adolescent and adult participants with moderate-to-severe plaque psoriasis (ICONIC-LEAD). Identifier NCT06095115. <https://classic.clinicaltrials.gov/ct2/show/NCT06095115>. Accessed January 2024.
10. Clinicaltrials.gov. A study of JNJ-2113 for the treatment of participants with plaque psoriasis involving special areas (scalp, genital, and/or palms of the hands and the soles of the feet) (ICONIC-TOTAL). Identifier NCT06095102. <https://classic.clinicaltrials.gov/ct2/show/NCT06095102>. Accessed January 2024.
11. Protagonist Therapeutics. Press release. Protagonist announces two new phase 3 ICONIC studies in psoriasis evaluating JNJ-2113 in head-to-head comparisons with deucravacitinib. Available at: <https://www.accesswire.com/810075/protagonist-announces-two-new-phase-3-ionic-studies-in-psoriasis-evaluating-jnj-2113-in-head-to-head-comparisons-with-deucravacitinib>. Accessed February 2024.
12. Clinicaltrials.gov. A study of JNJ-2113 in participants with moderately-to-severely active ulcerative colitis (ANTHEM-UC). Identifier NCT06049017. <https://classic.clinicaltrials.gov/ct2/show/NCT06049017>. Accessed January 2024.
13. Thompson Jr, D. How the Psoriasis Area and Severity Index works. *Everyday Health*. Available at: <https://www.everydayhealth.com/psoriasis/living-with/how-the-pasi-index-works>. Accessed January 2024.
14. Finlay AY, et al. Dermatology Life Quality Index (DLQI)--a simple practical measure for routine clinical use. *Clin Exp Dermatol*. 1994 May;19(3):210-6. doi: 10.1111/j.1365-2230.1994.tb01167.x. PMID: 8033378.
15. Clinicaltrials.gov. A study of JNJ-2113 in participants with moderate-to-severe plaque psoriasis (FRONTIER 1). Identifier NCT05223868. <https://clinicaltrials.gov/ct2/show/NCT05223868>. Accessed January 2024. EU Clinical Trials Register. A study of JNJ-2113 in participants with moderate-to-severe plaque psoriasis (FRONTIER 1). EudraCT 2021-003700-41. <https://www.clinicaltrialsregister.eu/ctr-search/trial/2021-003700-41/ES>. Accessed January 2024.
16. National Psoriasis Foundation. About psoriasis. Available at: <https://www.psoriasis.org/about-psoriasis>. Accessed January 2024.
17. National Psoriasis Foundation. Psoriasis statistics. Available at: <https://www.psoriasis.org/content/statistics>. Accessed January 2024.
18. National Psoriasis Foundation. Life with psoriasis. Available at: <https://www.psoriasis.org/life-with-psoriasis/>. Accessed January 2024.

19. Protagonist Therapeutics. Press release. Protagonist Therapeutics announces amendment of agreement with Janssen Biotech for the continued development and commercialization of IL-23 antagonists. Available at: <https://www.prnewswire.com/news-releases/protagonist-therapeutics-announces-amendment-of-agreement-with-janssen-biotech-for-the-continued-development-and-commercialization-of-il-23-antagonists-301343621.html>. Accessed January 2024.
20. Protagonist Therapeutics. Press release. Protagonist Reports positive results from Phase 1 and pre-clinical studies of oral Interleukin-23 receptor antagonist JNJ-2113. Available at: <https://www.prnewswire.com/news-releases/protagonist-reports-positive-results-from-phase-1-and-pre-clinical-studies-of-oral-interleukin-23-receptor-antagonist-jnj-2113-301823039.html>. Accessed January 2024.
21. Protagonist Therapeutics. Press release. Protagonist Therapeutics announces positive topline results for Phase 2b FRONTIER 1 clinical trial of oral IL-23 receptor antagonist JNJ-2113 (PN-235) in psoriasis. Available at: <https://www.prnewswire.com/news-releases/protagonist-therapeutics-announces-positive-topline-results-for-phase-2b-frontier-1-clinical-trial-of-oral-il-23-receptor-antagonist-jnj-2113-pn-235-in-psoriasis-301764181.html>. Accessed January 2024.
22. Pinter A, et al. Data Presentation. JNJ-77242113 Treatment Induces a Strong Systemic Pharmacodynamic Response Versus Placebo in Serum Samples of Patients with Plaque Psoriasis: Results from the Phase 2, FRONTIER 1 Study. Presented at EADV 2023, October 11-14.
23. Johnson & Johnson. Press release. Janssen enters into worldwide exclusive license and collaboration agreement with Protagonist Therapeutics, Inc. for the oral Interleukin-23 receptor antagonist drug candidate for the treatment of Inflammatory Bowel Disease. Available at: <https://www.jnj.com/media-center/press-releases/janssen-enters-into-worldwide-exclusive-license-and-collaboration-agreement-with-protagonist-therapeutics-inc-for-the-oral-interleukin-23-receptor-antagonist-drug-candidate-for-the-treatment-of-inflammatory-bowel-disease>. Accessed January 2024.