# UNITED STATES SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

## FORM 8-K

### **CURRENT REPORT**

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 Date of Report (Date of earliest event reported): January 04, 2024

# Landos Biopharma, Inc.

(Exact name of Registrant as Specified in Its Charter)

Delaware (State or Other Jurisdiction of Incorporation) 001-39971 (Commission File Number) 81-5085535 (IRS Employer Identification No.)

P.O. Box 11239 Blacksburg, Virginia (Address of Principal Executive Offices)

24062 (Zip Code)

Registrant's Telephone Number, Including Area Code: 540 218-2232

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

□ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

□ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

D Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

D Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

	Trading	
Title of each class	Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.01 per share	LABP	The Nasdaq Stock Market LLC

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company  $\boxtimes$ 

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

#### Item 7.01 Regulation FD Disclosure.

On January 4, 2024, Landos Biopharma, Inc. (the "Company") updated its corporate presentation for use in meetings with investors, analysts and others. The presentation is available on the Company's website and is furnished as Exhibit 99.1 hereto.

The information in this Item 7.01 and Exhibit 99.1 hereto are being furnished and shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such a filing.

### Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit Number	Exhibit Description
99.1	Corporate Presentation, dated January 4, 2024.
104	Cover page Interactive Data File (embedded within the Inline XBRL document).

### SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

### Landos Biopharma, Inc.

Date: January 4, 2024

By: /s/ Gregory Oakes

Gregory Oakes President and Chief Executive Officer



Clinical stage biopharmaceutical company focused on developing first-in-class, oral therapeutics for autoimmune disease

### January 2024

Corporate Overview

### **Forward Looking Statements**

This presentation contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this presentation, including statements regarding our strategy, future operations, prospects, plans and objectives of management, are forward-looking statements. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "might," "plan," "predict," "project," "target," "potential," "will," "would," "could," "should," "continue," and similar expressions are intended to identify forward looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements are subject to a number of risks, uncertainties and assumptions. Risks regarding our business are described in detail in our Securities and Exchange Commission filings, including in our Annual Report on Form 10-K for the year ended December 31, 2022. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. The forward-looking statements contained in this presentation reflect our current views with respect to future events, and we assume no obligation to update any forward-looking statements except as required by applicable law.

This presentation includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties as well as our own estimates of potential market opportunities. All of the market data used in this prospectus involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such data. Industry publications and third party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. Our estimates of the potential market opportunities for our product candidates include several key assumptions based on our industry knowledge, industry publications, third-party research and other surveys, which may be based on a small sample size and may fail to accurately reflect market opportunities. While we believe that our internal assumptions are reasonable, no independent source has verified such assumptions.

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# Landos Biopharma is Singularly Focused on Advancing NX-13 Clinical Development in UC

### NX-13

#### Potentially transformative oral, oncedaily therapy for moderate to severe ulcerative colitis (UC)

- Immunometabolism addresses multiple causes of UC through novel, bimodal MOA targeting NLRX1
- Promising safety profile and early signals of clinical improvement in Phase 1b study
- NEXUS Phase 2 proof of concept trial initiated Q2 2023; Top-line results expected Q4 2024





NASDAQ: LABP



Experienced management team with significant gastroenterology, immunology and drug development expertise



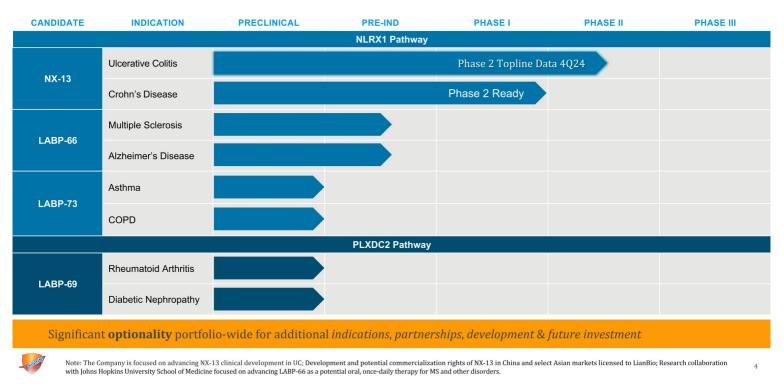
### Strong IP position Significant optionality portfolio-wide for

partnerships, development & investment



Capital efficient with sufficient cash to fund planned operations into first half of 2025

# Landos Pipeline Focused on Novel, Immunometabolic Targets



# **Therapeutic Challenges Present Large Unmet Need for UC Patients**

### **Ulcerative Colitis**

Chronic colonic inflammation with rectal bleeding and diarrhea

Patients experience relapsing (flares) and remitting episodes of disease severity

### **Therapeutic Goals**

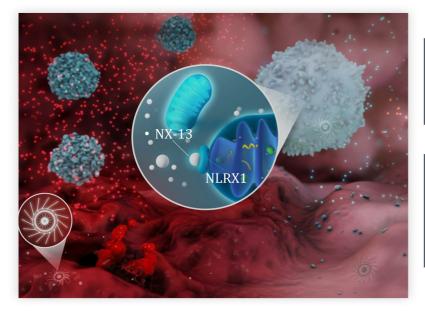
Induce and maintain steroid-free symptom relief Healing of colon lining Improved quality of life

**Therapeutic Challenges** 

Limited Efficacy: many patients do not respond or lose response to treatment Safety Risks: infections, cancer, blood clots or cardiac events



# NX-13 Unique Bimodal MOA Activates NLRX1 Pathway for Treatment of Ulcerative Colitis (UC)





Leber et al. J Immunology 2019

NLRX1: the NEXUS of Immunometabolism

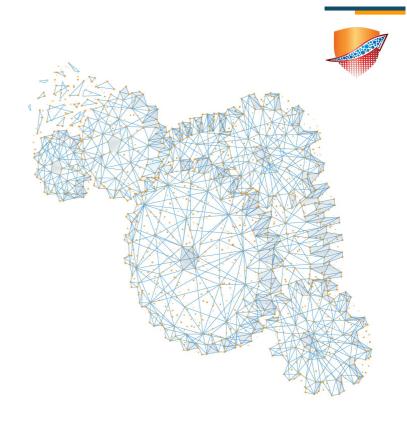
Mitochondrial-associated anti-inflammatory NOD-like receptor (NLR)

Direct metabolic role in mitochondria
Direct anti-inflammatory role as NLR

NX-13 is an oral, once-daily therapy being developed for moderate-to-severe UC

Novel NLRX1 agonist

Bimodal MOA aims to reduce reactive oxygen species intracellularly and inflammatory pathways extracellularly to reduce UC symptoms and flares



# Mechanism of Action



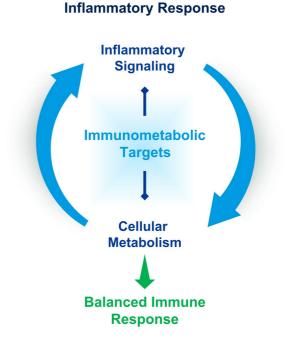
### Immunometabolism May Play a Critical Role in Breaking the Therapeutic Ceiling of Current Treatments

### Immunometabolism

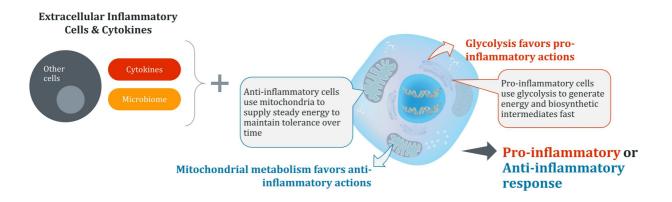
- Cellular metabolism is a central regulator of the activation and function of immune cells
- Dual effects to control both the intracellular metabolic environment and extracellular inflammatory response
  - Addresses the intracellular energy source and requirements of an immune response to shift how a cell responds to extracellular signals
  - Directly affects extracellular inflammatory signals

### Immunometabolic targets

work to restrict entry into the inflammatory cascade and inflammation cycle to maintain (restore) balance



# Immune Function is Intimately Tied to the Intracellular Environment of Processing & Using Energy



- The intracellular immunometabolic state (the processing & using of energy through glycolysis or mitochondrial metabolism) provides a baseline, and can affect cellular response as pro- or anti-inflammatory
- · Many proteins, molecules & substrates have dual action on cellular metabolism AND immune function
- The underlying intracellular (internal) immunometabolic environment can affect the response of multiple cells involved in UC and gut homeostasis (including T cells, antigen presenting cells, and epithelial cells)



O'Neill et al,. Nat Rev Immunol 2016; Chi, Cell & Mol Immuno 2022

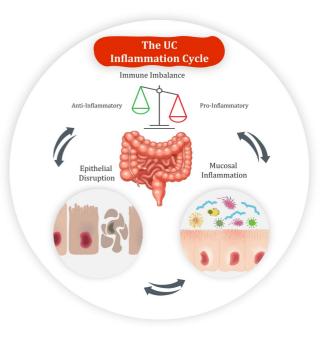
# The Role of Immunometabolism in Immunology & UC

# Immunometabolic response in inflammatory diseases in the immunology universe & UC:

- Abnormal or imbalanced immune activation of the response resulting in over abundance of pro-inflammatory cells & cytokines with lack of anti-inflammatory control.
- In UC, Pathogens cross the damaged epithelial barrier, activating immune response
- Immune activation is energetically costly, requiring the cell to use fast & inefficient glycolytic metabolism.

### Multiple Factors contribute to the UC Inflammation Cycle:

- Low grade Mucosal Inflammation and microbiome dysbiosis
- Epithelial Cell Damage and barrier disruption
- Broad Immune Activation favoring pro-inflammatory cells and cytokines





Global Data Report GDHC271PIDR, Ungaro, et al., Lancet 2017; Chi, Cell & Mol Immuno 2022

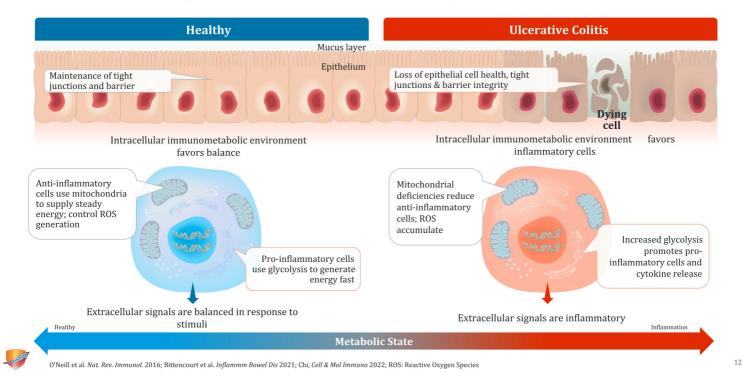
# Current Therapies Focus Exclusively on Extracellular Actions or Signals Falling Short of Effectively Treating a Multifactorial Disease Like UC

Dww Classes	МОА	Extracellula	Intracellular		
Drug Classes	MUA	Cytokines	Specific Cells	(Internal) Environment	
NX-13 Bimodal targeting (Immunometabolism)	Reduce intracellular reactive oxygen species (ROS) & extracellular immune response	$\checkmark$	$\checkmark$	$\checkmark$	
Anti-Inflammatory / Immunosuppressants	Reduce entire immune response	Х	Х		
Anti-TNFs, Anti-ILs	Block cytokine binding to immune cells	X			
Anti-integrins	Inhibit entrance of immune cells to the gut tissue from the circulation		Х		
S1PR modulators	Inhibit exit of immune cells from immune organs to circulation & gut		Х		
JAK Inhibitors	Block cytokine signaling (TNF, IL-17, IFN, etc)	Х	Х		

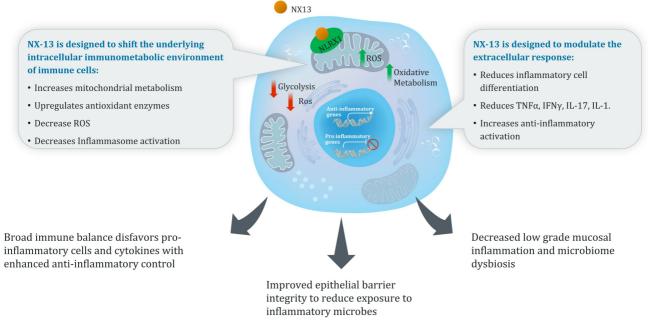


Global Data Report GDHC271PIDR; Chi, Cell & Mol Immuno 2022

### Bimodal Targeting of the Intracellular Environment & Extracellular Inflammatory Response Aims to Control Multiple Factors in the UC Inflammation Cycle



# NX-13 Bimodal MOA Addresses Both Extracellular Signals and Intracellular Environment to Reduce UC Inflammation Cycle





Leber et al. J Immunology 2019; Leber et al. Front. Immuno 2018

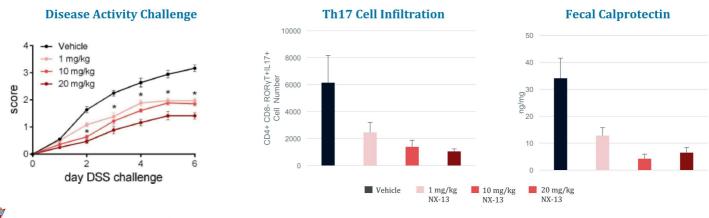




## Pre-Clinical Data Suggests NX-13 Potential to Broadly Reprogram Immune Response

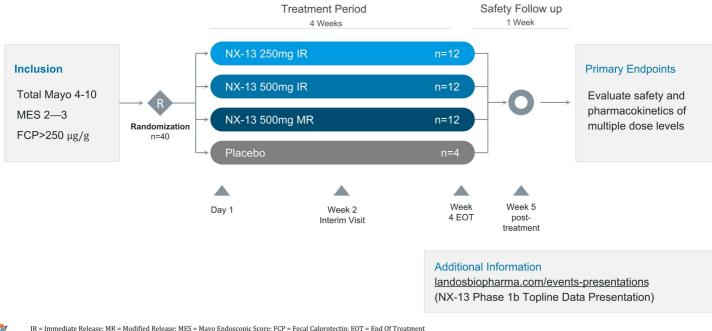
Reduced disease activity driven by robust anti-inflammatory immunometabolic mechanism\*

- Reduced overall Disease Activity in DSS colitis model across dose range
- Reduced Th17 cell infiltration as well as Th1 cells and neutrophils in the lamina propria
- Reduced Fecal Calprotectin and improved cytokine profile with reductions in array of inflammatory cytokines including IL-1, IL-17, IFNγ, IL-4, IL-15, TNFα
  - Results validated in pig model of acute colitis & human PBMC from UC patients



\*DSS colitis data shown. Similar data in the CD45RBhi adoptive transfer colitis & Mdr1a-/- colitis models. See Leber et al., J Immunol 15 December 2019; 203 (12): 3407–3415 for more information.

# Phase 1b Study Design of NX-13 in Active UC



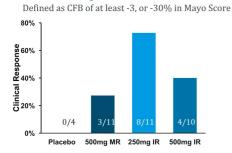
IR = Immediate Release; MR = Modified Release; MES = Mayo Endoscopic Score; FCP = Fecal Calprotectin; EOT = End Of Treatment Note: Study was not designed or powered for exploratory clinical endpoints therefore results are hypothesis-generating only

### Phase 1b Results: NX-13 Demonstrated Favorable Endoscopic and Histologic Responses with Reductions in Multiple Clinical Measures After 4 Weeks

**Patients receiving** NX-13 IR doses responded best:

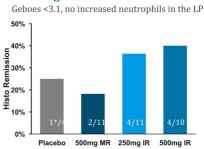
- Drug activity with IR formulation; study not designed for dose selection
- . 72% of 250mg group achieved clinical response; 40% of 500mg IR group achieved clinical response
- 36-40% endoscopic response after just 4 weeks treatment across IR dosage groups •
- 36-40% of patients receiving IR achieved histologic remission after 4 weeks of treatment

#### **Clinical Response**



**Endoscopic Response** MES CFB of at least -1 50% 40% 8 30% oid 20% Endo 10% 0/4 0% 500mg IR Placebo 500mg MR 250mg IR

### **Histologic Remission**



\*Placebo patient started trial with Geboes <3.1  $\,$ 

Primary endpoints were safety and tolerability; Exploratory endpoints were efficacy and biomarkers; IR= Immediate Release; MR= modified release designed to dissolve at the terminal ileum; CFB = Change From Baseline; MES = Mayo Endoscopic Score; LP = Lamina Propria Note: Study was not designed or powered for exploratory clinical endpoints therefore results are hypothesis-generating only Peyrin-Biroulet et al, ECC0 2023; #P577, JCC 17(1), Feb 2023

# Phase 1b Results: Fast Onset of Action for NX-13 Supported Symptomatic Remission in **Rectal Bleeding & Stool Frequency**

250mg group had greatest reduction of Rectal Bleeding and Stool Frequency at 2 weeks, with further reduction at 4 weeks

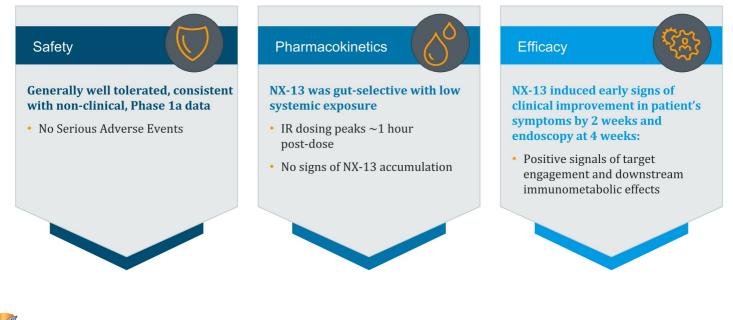
Majority of patients treated once daily with 250mg NX-13, saw complete resolution of BOTH rectal bleeding and stool frequency after 4 weeks of treatment

#### **Rectal Bleeding Change from Baseline Stool Frequency Change from Baseline** 20 40 0 \*\*\*\*\* 20 % change from Baseline % change from Baseline Placebo -20 NX-13 500 mg MR 0 NX-13 500 mg MR -20 -40 NX-13 500 mg IR NX-13 500 mg IR -60 -40 -60 -80 NX-13 250 mg IR NX-13 250 mg IR -100 -80 Week 2 Randomization Week 4 Randomization Week 2 Week 4

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## Phase 1b Results: NX-13 Was Well-Tolerated & Shows Promising Signs of Clinical Improvement in Active UC



Note: Study was not designed or powered for exploratory clinical endpoints\_therefore results are hypothesis-generating only

# NEXUS Phase 2 Proof of Concept Trial

	Goal	Evaluate safety, efficacy and pharmacokinetics of NX-13 in moderate to severe UC patients in 12-week induction trial	
	Timing	Initiated in Q2 2023; Expecting to report topline results in Q4 2024	
Additional Phase 2 Learnings Dose-Exposure-Response and PK/PD relationships (including site and MOA)			
B	Dosing	Oral, once daily treatment with either: 250 mg IR dose of NX-13   750 mg IR dose of NX-13   Placebo	
Key Desia Principle		Powered     Placebo Controlled     Dose-Ranging       Image: Controlled     Image: Controlled     Image: Controlled	
ClinicalTrials.gov Ide	ntifier: NCT05785715		20

## NEXUS Phase 2 Proof of Concept Study Design: NX-13 in Moderate to Severe UC

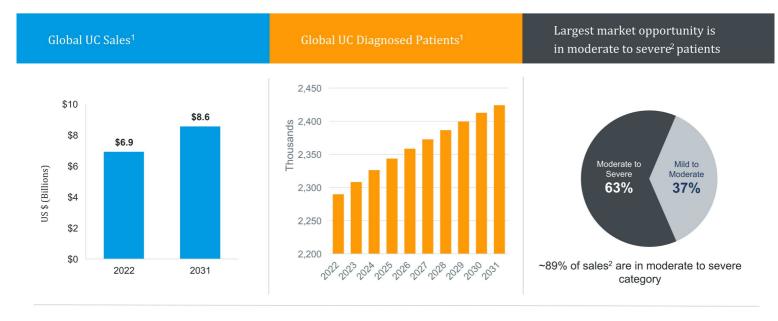




# Market & NX-13 Positioning



# **Attractive & Growing Market Opportunity in UC**



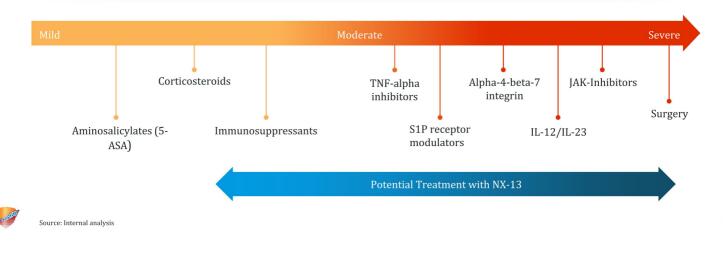


<sup>1</sup> November 2022 Clarivate UC Disease Landscape & Forecast; <sup>2</sup> April 2023 Global Data Ulcerative Colitis: Eight-Market Drug Forecast & Market Analysis 2021-2031; Severe category includes fulminant

# NX-13 Poised for Broad Utilization in Both Early & Late-Stage Disease

### Potential benefits may help transform the current treatment paradigm:

- Gut selective allowing target engagement with the GI tract
- Novel, first-in-class MOA with convenient, oral, once-daily dosing
- MOA may allow for improved efficacy, greater mucosal healing, and safety for long-term use
- No on-target toxicities associated with NLRX1, with adverse event incidence in Phase 1a & 1b similar to placebo



# Landos Pipeline Focused on Novel, Immunometabolic Targets



# **Future NLRX1 & PLXDC2 Indications & Programs Provide Compelling Growth Potential Beyond NX-13 in UC**

	Ulcerative Colitis	Crohn's Disease	Asthma <sup>1</sup>	Multiple Sclerosis <sup>2</sup>	Rheumatoid Arthritis
<b>WW Annual Sales</b> ³ 2022- <b>≫</b> 2031 (in billions)	~\$6.9 <b>→</b> ~\$8.6	~\$18.2 <b>→</b> ~\$19.1	~\$15.6 <b>→</b> ~\$20.8	~\$17.2 → ~\$21.7	~\$33.5 → ~\$33.1
<b>US Diagnosed Population</b> <sup>3</sup> (in millions)	~1.0	~.91	~3.9	~.48	~3.6
Landos Asset	NX-13		LABP-73	LABP-66	LABP-69
Target Pathway NLRX1			PLXDC2		

Potential Areas of Future Development Include Eosinophilic Esophagitis, Dermatology & Neuroscience



<sup>1</sup> Moderate to Severe only; <sup>2</sup> Relapsing-Remitting MS only; <sup>3</sup> Clarivate UC Disease Landscape & Forecast 2023

# **Experienced Management Team in Immunology & Drug Development**



### **Top-Tier Advisory Teams**

### **Board of Directors**

### **Scientific & Steering Committee**

GREGORY OAKES President & Chief Executive Officer

CHRIS GARABEDIAN Chairman Xontogeny, Perceptive Advisors

ROGER ADSETT Chief Operating Officer of Insmed, Inc.

ALKA BATYCKY, PH.D. Director

FRED CALLORI Xontogeny, Perceptive Advisors

TIAGO GIRÃO CFO of Televant Therapeutics

TIM M. MAYLEBEN Director



JEAN-FREDERIC COLOMBEL, MD Icahn School of Medicine at Mount Sinai

GEERT D'HAENS, MD, PHD Amsterdam UMC, University of Amsterdam

SILVIO DANESE, MD, PHD IRCCS San Raffaele Hospital, Vita-Salute San Raffaele University

MARLA DUBINSKY, MD Icahn School of Medicine at Mount Sinai

BRIAN G. FEAGAN, MD, FRCPC Western University, Ontario, Canada

**REMO PANACCIONE, MD, FRCPC** University of Calgary LAURENT PEYRIN-BIROULET, MD, PHD Nancy University Hospital, University of Lorraine

FLORIAN REIDER, MD Cleveland Clinic

STEFAN SCHREIBER, MD UKSH-Campus Kiel

BRITTA SIEGMUND, MD, PHD Charité – Universitätsmedizin, Berlin

BRAM VERSTOCKT, MD, PHD University Hospitals Leuven, KU Leuven

ANDRES YARUR, MD Cedars Sinai Medical Center

## Landos Biopharma is Singularly Focused on Advancing NX-13 Clinical Development in UC

### NX-13

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NASDAQ: LABP



Experienced management team with significant gastroenterology, immunology and drug development expertise



### Strong IP position Significant optionality portfolio-wide for

partnerships, development & investment



Capital efficient with sufficient cash to fund planned operations into first half of 2025



# **Appendix: Key Publications**

- (11/23) The Safety, Tolerability, Pharmacokinetics and Clinical Efficacy of the NLRX1 agonist NX-13 in Active Ulcerative Colitis: Results of a Phase 1b Study. Journal of Crohn's and Colitis, e-published ahead of print
- (10/23) The Nucleotide-Binding Oligomerization Domain, Leucine Rich Repeat Containing X1 (NLRX1) Agonist NX-13 Demonstrates Rapid Symptomatic and Biomarkers Improvement in Ulcerative Colitis: Results In a Phase 1b Study. <u>UEG Week Journal Abstracts 2023; Poster Presentations – United European Gastroenterology Journal (11) S8 (Publication</u> <u>OP078 / p76</u>]
- (10/23) Symptomatic Relief Is Correlated with Early Endoscopic Response to the Nucleotide-Binding Oligomerization Domain, Leucine Rich Repeat Containing X1 (NLRX1) Agonist NX-13 In Ulcerative Colitis: Results in a Phase 1b Study. <u>UEG Week Journal Abstracts 2023; Poster Presentations – United European Gastroenterology Journal (11) S8</u> (Publication OP104 / p103)
- (10/23) Target Engagement And Pharmacodynamic Molecular Mechanism Evaluation In A Phase 1b Study of the Nucleotide-binding Oligomerization Domain, Leucine Rich Repeat Containing X1 (NLRX1) Agonist NX-13 in Ulcerative Colitis. <u>UEG Week Journal Abstracts 2023; Poster Presentations – United European Gastroenterology Journal (11) S8</u> (Publication PP785 / p975)
- (2/23) A Phase 1b Study to Evaluate Safety, Tolerability, Pharmacokinetics and Clinical Efficacy of the Nucleotide-binding oligomerization domain, Leucine rich Repeat containing X1 (NLRX1) agonist NX-13 in Ulcerative Colitis. Journal of Crohn's and Colitis, Volume 17, Issue Supplement 1 (Publication P577)
- (10/21) Safety and Tolerability of NX-13 in a Randomized, Double-Blind Placebo Controlled Phase I Study in Normal Healthy Volunteers. <u>UEG Week 2021 Poster Presentations</u> <u>United European Gastroenterology Journal (9) S8 (Publication P0480)</u>
- (11/19) Activation of NLRX1 by NX-13 Alleviates Inflammatory Bowel Disease through Immunometabolic Mechanisms in CD4+ T Cells. <u>The Journal of Immunology (November 6, 2019)</u>
- (6/19) Exploratory studies with NX-13: oral toxicity and pharmacokinetics in rodents of an orally active, gut-restricted first-in-class therapeutic for IBD that targets NLRX1. Drug and Chemical Toxicology (June 10, 2019)
- (5/19) Preclinical Efficacy and Safety of NX-13: A Novel NIrx1-Targeting Immunometabolic Therapeutic for Crohn's Disease and Ulcerative Colitis. AGA Journals (May 2019)
- (2/18) NLRX1 Modulates Immunometabolic Mechanisms Controlling the Host-Gut Microbiota Interactions during Inflammatory Bowel Disease. Front Immunol (February 2018)
- (3/17) NLRX1 Regulates Effector and Metabolic Functions of CD4+ T Cells. | Immunol (March 2017)
- (5/21) PLXDC2 activation by PX-69 ameliorates rheumatoid arthritis through activation of novel immunometabolic mechanisms. J Immunol (May 1, 2021)

