

Great Science Deep Compassion Real Impact

July 2018

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#### Forward-Looking Statements and Non-GAAP Financial Information

Certain statements set forth in this presentation constitute "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including, but not limited to, statements concerning; future financial and operating performance, business plans or prospects of the company: the continued growth of the long-acting injectable antipsychotic market and revenue from the company's commercial products, including VIVITROL® and ARISTADA®; improvements to and modernization of the treatment ecosystem for opioid dependence; the timing, funding, results and feasibility of clinical development activities, including the timing of the phase 3 data readout for ALKS 3831, the phase 1 data readout and timing of development activities for ALKS 4230, the timing of data from the EVOLVE-MS-2 head-to-head gastrointestinal study and the submission of a new drug application ("NDA") for BIIB098, and the timing of U.S. Food and Drug Administration ("FDA") review of the NDA for ALKS 5461: whether the studies conducted for ALKS 5461. ALKS 3831 and BIB098 will meet the FDA's requirements for approval and the company's expectations and timelines for regulatory interaction with the FDA and actions by the FDA relating to the NDA submission for ALKS 5461; expectations concerning the timing and results of commercial activities, including the expected timing of the launches of ARISTADA INITIO<sup>TM</sup> and ALKS 5461; the potential financial benefits that may be achieved under the license and collaboration agreement between the company and Biogen, including the therapeutic value and commercial potential, including blockbuster status, of the company's commercial products and development candidates, and patient access to such commercial products and development candidates. Although the company believes that such forward-looking statements are based on reasonable assumptions within the bounds of its knowledge of its business and operations, the forward-looking statements are neither promises nor guarantees and they are necessarily subject to a high degree of uncertainty and risk. Actual performance and results may differ materially from those expressed or implied in the forward-looking statements due to various risks, assumptions and uncertainties. These risks, assumptions and uncertainties include, among others: the unfavorable outcome of litigation, including so-called "Paragraph IV" litigation and other patent litigation, related to any of our products, which may lead to competition from generic drug manufacturers; data from clinical trials may be interpreted by the FDA in different ways than we interpret it; the FDA may not agree with our regulatory approval strategies or components of our filings for our products, including our clinical trial designs, conduct and methodologies and, for ALKS 5461, evidence of efficacy and adequacy of bridging to buprenorphine; clinical development activities may not be completed on time or at all; the results of our clinical development activities may not be positive, or predictive of real-world results or of results in subsequent clinical trials; regulatory submissions may not occur or be submitted in a timely manner; the company and its licensees may not be able to continue to successfully commercialize their products; there may be a reduction in payment rate or reimbursement for the company's products or an increase in the company's financial obligations to governmental payers; the FDA or regulatory authorities outside the U.S. may make adverse decisions regarding the company's products; the company's products may prove difficult to manufacture, be precluded from commercialization by the proprietary rights of third parties, or have unintended side effects, adverse reactions or incidents of misuse; and those risks, assumptions and uncertainties described under the heading "Risk Factors" in the company's most recent Annual Report on Form 10-K and in subsequent filings made by the company with the U.S. Securities and Exchange Commission ("SEC"), which are available on the SEC's website at www.sec.gov and on the company's website at www.alkermes.com in the "Investors—SEC filings" section. Existing and prospective investors are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. Except as required by law, the company disclaims any intention or responsibility for updating or revising any forward-looking statements contained in this presentation.

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**Distinctive CNS focus in psychiatry:** Developing innovative, patient-centered treatment options designed to address large, chronic diseases and major public health priorities



**Growing current commercial business:** Potential to generate >\$2B revenue into the 2020s; VIVITROL<sup>®</sup> and ARISTADA<sup>®</sup> growing with long patent lives



Late-stage pipeline with catalysts in 2018: Advancing our pipeline of novel potential blockbusters, driven by world-class research & development



**Strong organization built for scale:** Driving value by leveraging solid financial foundation and efficient operating structure



### Significant Newsflow Expected in 2018

#### **ARISTADA®: New initiation product approved**

✓ ARISTADA INITIO<sup>™</sup> approved June 29

#### ALKS 5461: Regulatory review underway

- NDA accepted for filing
- Advisory Committee Meeting (Expected Q4)

#### ALKS 3831: Data from second pivotal study

- ENLIGHTEN-2 weight study enrollment completion
- Metabolic study data presentation
- □ ENLIGHTEN-2 topline results (Q4)

#### BIIB098 (formerly ALKS 8700): NDA submission

- Receipt of \$50 million payment following initial data from EVOLVE-MS-2 gastrointestinal head-tohead study
- Planned NDA submission for treatment of MS (H2)

#### ALKS 4230: Clinical proof-of-concept

Dose escalation data and dose expansion initiation (H2)





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### Targeting Chronic Psychiatric Disorders Where Significant Unmet Patient Needs Remain



Sources: Substance Abuse and Mental Health Services Administration (SAMHSA). 2016 National Survey on Drug Use and Health (NSDUH) National Institutes of Health. *Schizophrenia*. Accessed Jan. 2, 2018 from <a href="https://report.nih.gov/nihfactsheets/ViewFactSheet.aspx?csid=67">https://report.nih.gov/nihfactsheets/ViewFactSheet.aspx?csid=67</a> Rush AJ, et al. *Am J. Psychiatry*. 2006, 163(11): 1905-1917 (STAR\*D Study). Decision Resources 2016



Focused on Diseases With Major Public Health Implications

## Mental health and substance use disorders are the leading cause of disease burden in the U.S.



Age standardized disability adjusted life years (DALYs) rate per 100,000 population, both sexes, 2015

Source: Institute for Health Metrics and Evaluation. Global Burden of Disease Study 2015 (GBD 2015). Available at: http://ghdx.healthdata.org/gbd-2015



Significant Disease Impact Beyond Patients





7

ENTOFIL



Courts







Payers

Hospitals



**^** 

Employers

Communities





- World-class science in opioid system modulation
  - Deep biology and chemistry expertise opens new potential opportunities in depression, schizophrenia, addiction and pain
- Advanced formulation and molecular design capabilities intended to address patients' real-world treatment challenges
  - Integrated co-formulations, innovative prodrugs, long-acting injectables
  - Designed for efficacy, ease-of-use and tolerability in chronic conditions
- Expertise in large-scale clinical development in challenging indications and populations
  - Global capabilities focused on high-quality clinical trial sites, investigators, study designs and execution







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# Vivitrol<sup>®</sup> (naltrexone for extended-release injectable suspension) 380 mg/vial



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## VIVITROL<sup>®</sup> for Opioid and Alcohol Dependence



#### VIVITROL is 1 of 3 FDA-approved treatment options for opioid dependence\*

\*To be used in conjunction with psychosocial support



### In 2016...

**11.5M** people misused prescription opioids<sup>2</sup>

**2.0M** people reported having Opioid Use Disorder<sup>2</sup>

50K people died from opioid overdose<sup>1</sup>

Fentanyl deaths increased **530%** in three years<sup>1</sup>

Opioid overdose deaths driving down U.S. life expectancy for **2**<sup>nd</sup> year in a row<sup>3</sup>

- 1. National Institute on Drug Abuse and Centers for Disease Control and Prevention. 2016 numbers are preliminary estimates. Opioids include opioid painkillers, fentanyl and other synthetic opioids (excl. methadone), and heroin
- 2. Substance Abuse and Mental Health Services Administration (SAMHSA). 2016 National Survey on Drug Use and Health (NSDUH)
- 3. Kochanek KD, Murphy SL, Xu JQ, Arias E. Mortality in the United States, 2016. NCHS Data Brief, no 293. Hyattsville, MD: National Center for Health Statistics. 2017

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## VIVITROL<sup>®</sup>: Expanding Accessibility, Awareness and Use

- Accessibility: Developing state and local ecosystems that encompass access and reimbursement, policy and treatment providers
- Awareness: Educating healthcare providers, public health officials, policymakers and employers:
  - Implementation of CARA<sup>1</sup> and 21st Century Cures funding provide opportunity to modernize treatment system
  - Expanding footprint of state programs: ~670 programs in 40 states
- Use: Room for growth with <4% market share in opioid dependence</p>
  - Concentrated prescribing: Top 5 states represent ~46% of net sales

\* Midpoint of 2018 financial guidance, provided by Alkermes plc in its Current Report on Form 8-K on Apr. 26, 2018, is effective only as of such date. The company expressly disclaims any obligation to update or reaffirm guidance, and this presentation is not a reaffirmation or update of previously provided historical guidance.

The company only provides guidance in a Regulation FD compliant manner.





<sup>1.</sup> Comprehensive Addiction and Recovery Act







- Powerful clinical data from two large, independent clinical trials published in JAMA Psychiatry and The Lancet
- Data demonstrated that VIVITROL and buprenorphine-naloxone, two pharmacologically distinct medications for opioid dependence, had similar clinical effectiveness and safety once patients initiated treatment<sup>1,2</sup>

#### 1. Lee, J.D.,. et al. Lancet. Published online Nov. 14, 2017.

2. Tanum, L. et al. JAMA Psychiatry. Published online Oct. 18, 2017.



#### Research

#### **JAMA Psychiatry**

Effectiveness of Injectable Extended-Release Naltrexone vs Daily Buprenorphine-Naloxone for Opioid Dependence A Randomized Clinical Noninferiority Trial

Lars Tanum, MD, DMSci; Kristin Klemmetsby Solli, MSc; Zill-e-Huma Latif, MD; Jūratė Šaltytė Benth, PhD; Arild Opheim, MSc; Kamni Sharma-Haase, MD; Peter Krajci, MD, PhD; Nikolaj Kunøe, MSc, PhD

Articles

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#### THE LANCET

Comparative effectiveness of extended-release naltrexone versus buprenorphine-naloxone for opioid relapse prevention (X:BOT): a multicentre, open-label, randomised controlled trial

Jachuro DLee, Edward V Nunes Jr, Patricia Novo, Ken Bachrach, Geniel Bailey, Snehel Bhartt, Sarah Farkas, Marc Fishman, Phoebe Gauthier, Candace CH odaglims, Jacquie King, Robert Lindblod, David Liu, Abigai G Matthway, Jeanine May, K Michaelle Peavy, Stephen Ross, Dagmar Salarar, Paul Schkolin, Bolas Shnuel-B Jumberg, Don Scabelion, Genteha Subramanian, John Rotrosen

#### Summary

Background Extended release naturecone (XR-NTX), an opioid antagonist, and sublingual buprenorphine naloxone (BUP-NX), a partial opioid agonist, are pharmacologically and conceptually distinct interventions to prevent opioid relapse. We aimed to estimate the difference in opioid relapse free survival between XR-NTX and BUP-NX.

See Online/Comment Methods We initiated this 24 week, open-label, randomised controlled, comparative effectiveness trial at eight US http://dx.doi.org/10.1016 community-based inpatient services and followed up participants as outpatients. Participants were 18 years or older, 50140-6736(17)32872-6 and had Diagnostic and Statistical Manual of Mental Disorders-5 opioid use disorder, and had used non-prescribed http://dx.doi.org/10.1016/ 50140-6736(17)32893-3 opioids in the past 30 days. We stratified participants by treatment site and opioid use severity and used a web-based Department of Population permuted block design with random equally weighted block sizes of four and six for randomisation (1:1) to receive Health (ID Lee MD) and XR-NTX or BUP-NX. XR-NTX was monthly intramuscular injections (Vivitrol; Alkermes) and BUP-NX was daily self-Department of Psychiatry administered buprenorphine-naloxone sublingual film (Suboxone; Indivior). The primary outcome was opioid (P.Novo MPH, S.Farkas MA relapse-free survival during 24 weeks of outpatient treatment. Relapse was 4 consecutive weeks of any non-study P Cauthier MPH S Ross MD Rotrosen MD), New York opioid use by urine toxicology or self-report, or 7 consecutive days of self-reported use. This trial is registered with University School of Medicine ClinicalTrials.gov, NCT02032433. New York, NV USA.







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ARISTADA<sup>®</sup>: Long-Acting Injectable for Treatment of Schizophrenia





\*New treatment regimen (ARISTADA INITIO + single 30 mg oral dose of aripiprazole) replaces need for concomitant three weeks of oral aripiprazole for initiation onto ARISTADA \*\*ARISTADA and ARISTADA INITIO both contain aripiprazole lauroxil; however, the two medications are not interchangeable because of differing pharmacokinetic profiles

## ARISTADA product family is designed to address the real-world needs of patients and providers in the community

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## Launching Into High-Growth U.S. LAI Atypical Antipsychotic Market



Source: Johnson & Johnson, Otsuka, Lundbeck and Alkermes quarterly reports.



### ARISTADA<sup>®</sup>: Differentiated Features Drive Adoption in Long-Acting Antipsychotic Market

- \$2.3B long-acting atypical antipsychotic U.S. market\*
- Growing ~21% 5-year CAGR\*
- Potential to be \$3-5B+ U.S. market in 2020

	First LAI in Category				
	RISPERDAL CONSTA®	ABILIFY MAINTENA®			
Molecule	Risperidone	Aripiprazole			
Product Presentation	Reconstituted	Reconstituted			
Duration(s)	Two-week	One-month			
Initiation Requirements	2 weeks daily oral	2 weeks daily oral			
Doses	3 main doses**	1 main dose**			

Market Growth Drivers <sup>±</sup>				
INVEGA SUSTENNA®	ARISTADA®			
Paliperidone	Aripiprazole Lauroxil			
Ready-to-use	Ready-to-use			
One-month and three-month <sup>†</sup>	One-month, six-week and two-month			
2 loading-dose injections	3 weeks daily oral or ARISTADA INITIO <sup>™</sup> regimen†			
5 doses	4 doses			

\* Johnson & Johnson, Otsuka, Lundbeck and Alkermes quarterly reports

\*\* Excluding low doses for poor metabolizers

± U.S. net sales increased \$247.0M and \$46.3M for INVEGA SUSTENNA/TRINZA® and ARISTADA, respectively, for the 12-months ended 12/31/17 vs. 12/31/16

<sup>†</sup> INVEGA TRINZA three-month dose

<sup>++</sup> ARISTADA INITIO + single 30 mg oral dose of aripiprazole replaces need for concomitant three weeks of oral aripiprazole for initiation of ARISTADA; ARISTADA INITIO approved by FDA on June 29, 2018



## U.S. LAI Market Could Exceed \$4B in 2020



Source: Johnson & Johnson, Otsuka, Lundbeck and Alkermes quarterly reports.



## ARISTADA<sup>®</sup>: Gaining Traction in the Long-Acting Atypical Antipsychotic Market

- Expanding differentiating features and data to drive broad uptake
  - ARISTADA INITIO<sup>™</sup> regimen makes ARISTADA the first and only LAI that can be fully dosed on day one\*
  - Study comparing ARISTADA and INVEGA SUSTENNA<sup>®</sup> initiated Q4 2017
- Expanding commercial presence in hospital setting in 2018
- Collaborating with policymakers and industry peers to improve treatment system for serious mental illness
- First quarter growth of approximately 62% compared to Q1 2017



\*ARISTADA INITIO + single 30 mg oral dose of aripiprazole replaces need for concomitant three weeks of oral aripiprazole for initiation of ARISTADA, with relevant levels of aripiprazole concentration reached within four days. ARISTADA INITIO approved by FDA on June 29, 2018







DEVELOPMENT CANDIDATES	PRE-CLINICAL	PHASE 1	PHASE 2	PHASE 3	FDA REVIEW
ALKS 5461 (Major Depressive Disorder)					
ALKS 3831 (Schizophrenia)					
<b>BIIB098</b> (Multiple Sclerosis)					
ALKS 4230 (Immuno-oncology)					



## ALKS 5461: Designed to Address Significant Unmet Needs of Patients With Major Depressive Disorder

## ALKS 5461 for the Adjunctive Treatment of Major Depressive Disorder (MDD)

- Innovative opioid system modulator
  - Administered once daily as a single, sublingual tablet
- Consistent antidepressant activity and safety profile demonstrated in clinical development program
- First potential new treatment option with differentiated MOA in 30 years
  - Designed to address compelling unmet needs of patients and clinicians



<sup>2.</sup> Decision Resources 2016



<sup>1.</sup> Rush AJ, et al. Am J. Psychiatry. 2006, 163(11): 1905-1917 (STAR\*D Study)

## Endogenous Opioid System Plays Important Role in Mood Regulation<sup>1</sup>

- Dysfunctional signaling in endogenous opioid system occurs in patients with MDD<sup>2</sup>
- Strong scientific rationale supporting opioid pathway as therapeutic target
- Achieving antidepressant effect may involve appropriate modulation of multiple opioid receptors<sup>3</sup>

- 1. Stahl SM. Stahl's Essential Psychopharmacology Online. 2008. http://stahlonline.cambridge.org/essential\_4th.jsf. Accessed Jan. 1, 2018
- Kennedy SE, Koeppe RA, Young EA, Zubieta J-K. Dysregulation of endogenous opioid emotion regulation circuitry in major depression in women. Arch Gen Psychiatry. 2006;63(11):1199-1208

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3. Lutz P-E, Kieffer BL. Opioid receptors: distinct roles in mood disorders. Trends Neurosci. 2013;36(3):195-206

#### The Location of Opioid Receptors Overlaps With Brain Regions for Emotional Processing

Distribution of opioid receptors in the brain



Overlap between the human emotion circuit and the opioid receptor system in the brain



Nummenmaa L, Tuominen L, Br J Pharmacol 2017. doi:10.1111/bph.13812.

## ALKS 5461: Preparing for Potential Regulatory Approval and Launch

- NDA under review by FDA for adjunctive treatment of MDD in patients with inadequate response to standard antidepressant therapy
  - PDUFA target action date Jan. 31, 2019
  - Advisory Committee Meeting expected Q4 2018
  - Review will include discussion of efficacy and bridging strategy to buprenorphine
- Publication of data and scientific presentations at medical meetings throughout 2018
- Planning for potential commercial launch in 2019
  - Investment in manufacturing, senior leadership and necessary commercial infrastructure
    - Sales representatives expected to be hired following Advisory Committee





Standard Algorithm for Treatment-Resistant Depression (TRD)





## ALKS 5461: Novel Approach Designed to Address the Treatment Gap







## Consistent Antidepressant Activity Demonstrated Throughout FORWARD Pivotal Studies



FORWARD-5: Achieved prespecified primary endpoint for 2mg/2mg dose FORWARD-4: Missed primary endpoint at single time point. Post-hoc analyses show statistical efficacy for 2mg/2mg dose FORWARD-3: Negative study due to high placebo response

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### Safety and Tolerability Are Key Elements of Favorable Benefit / Risk Profile of ALKS 5461

- Data from FORWARD core efficacy studies demonstrate consistent safety and tolerability profile
  - High completion rate (85%)
  - Most common adverse events included nausea, constipation and dizziness
    - Generally mild, transient and occurring around treatment initiation
- Extensive dataset
  - >1,500 subjects participated in clinical efficacy program
  - >1,500 patients enrolled in long-term safety study
    - >700 patients have completed 12 months of treatment
- Consistent evidence of lack of abuse potential



## ALKS 3831: Blockbuster Opportunity in Schizophrenia



- Novel, oral, investigational antipsychotic designed to offer robust efficacy with a favorable weight and metabolic profile
  - Antipsychotic efficacy proven in phase 3 study
  - Beneficial weight effects demonstrated in phase 2 study
- Differentiated mechanism of action
  - ALKS 3831 extends pharmacologic activity of olanzapine to include opioid modulation
  - Central and peripheral effects on metabolism and weight gain



14.5M



atypical antipsychotic TRx for schizophrenia<sup>2</sup>

19%

olanzapine schizophrenia market share<sup>2</sup>



1. National Institutes of Health. Schizophrenia. Accessed Jan 1, 2018 from https://report.nih.gov/nihfactsheets/ViewFactSheet.aspx?csid=67

2. IMS NPA Audit MAT September 2017, Encuity Treatment Answers 2010-2014



### ALKS 3831: Retains Olanzapine's Pharmacology Driving Efficacy and Addresses Metabolic Issues Through a Different System

## Olanzapine Pharmacology $5HT_{2a}$ $5HT_{2c}$ Musc $\alpha_1$ $\alpha_2$ $H_1$ $D_1$ $D_2$ $D_4$

#### ALKS 3831 Pharmacology



Source: Bymaster FP, et al. Neuropsychopharmacology. 1996,14(2):87-96.



## Olanzapine Associated With Substantial and Clinically Significant Weight Gain

#### From Olanzapine Label:

#### 5.6 Weight Gain

Potential consequences of weight gain should be considered prior to starting olanzapine. Patients receiving olanzapine should receive regular monitoring of weight [see Patient Counseling Information (17.6)]. <u>Olanzapine Monotherapy in Adults</u> — In an analysis of 13 placebo-controlled olanzapine monotherapy studies, olanzapine-treated patients gained an average of 2.6 kg (5.7 lb) compared to an average 0.3 kg (0.6 lb) weight loss in placebo-treated patients with a median exposure of 6 weeks; 22.2% of olanzapine-treated patients gained at least 7% of their baseline weight, compared to 3% of placebo-treated patients, with a median exposure to event of 8 weeks; 4.2% of olanzapine-treated patients gained at least 15% of their baseline weight, compared to 0.3% of placebo-treated patients,

The percentages of patients who gained at least 7%, 15%, or 25% of their baseline body weight with long-term exposure (≥48 weeks) were 64%, 32%, and 12%, respectively.

Table 6. Weight Gain with Olanzaphie Ose in Adults								
6 Weeks (N=7465)	6 Months (N=4162)	12 Months (N=1345)	24 Months (N=474)	36 Months (N=147)				
(%)	(%)	(%)	(%)	(%)				
26.2	24.3	20.8	23.2	17.0				
57.0	36.0	26.0	23.4	25.2				
14.9	24.6	24.2	24.1	18.4				
1.8	10.9	14.9	11.4	17.0				
0.1	3.1	8.6	9.3	11.6				
0	0.9	3.3	5.1	4.1				
0	0.2	1.4	2.3	4.8				
0	0.1	0.8	1.2	2				
	6 Weeks (N=7465) (%) 26.2 57.0 14.9 1.8	6 Weeks (N=7465) 6 Months (N=4162)   (%) (%)   26.2 24.3   57.0 36.0   14.9 24.6   1.8 10.9   0.1 3.1   0 0.9   0 0.2	6 Weeks (N=7465) 6 Months (N=4162) 12 Months (N=1345)   (%) (%) (%)   26.2 24.3 20.8   57.0 36.0 26.0   14.9 24.6 24.2   1.8 10.9 14.9   0.1 3.1 8.6   0 0.9 3.3   0 0.2 1.4	6 Weeks (N=7465) 6 Months (N=4162) 12 Months (N=1345) 24 Months (N=474)   (%) (%) (%) (%) (%) (N=474)   26.2 24.3 20.8 23.2   57.0 36.0 26.0 23.4   14.9 24.6 24.2 24.1   1.8 10.9 14.9 11.4   0.1 3.1 8.6 9.3   0 0.9 3.3 5.1   0 0.2 1.4 2.3				

#### Table 6: Weight Gain with Olanzapine Use in Adults

Source: ZYPREXA® prescribing information. Table 6 includes data on adult weight gain with olanzapine pooled from 86 clinical trials.

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## ALKS 3831 Arrested Weight Gain in Phase 2 Study



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## ALKS 3831 Phase 2 Study, Stage 2: Sustained Effect on Weight





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#### Four-Week Efficacy Study

- Antipsychotic efficacy vs. placebo
- 403 patients with acute schizophrenia
- ALKS 3831 demonstrated statistically significant reductions from baseline in PANSS scores, compared to placebo (p<0.001)</li>
- Olanzapine achieved similar improvements from baseline PANSS scores, compared to placebo (p=0.004)

#### Six-Month Weight Study

- Weight change vs. olanzapine in ~540 patients with stable schizophrenia
- Co-primary endpoints
  - Percent change from baseline in body weight
  - Proportion of subjects with ≥ 10% weight gain
- Enrollment complete
- Topline results expected Q4 2018

#### NDA submission planned in H1 2019



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## BIIB098: A Novel Entrant in a Growing Multiple Sclerosis Market

- Novel, oral, twice-daily, investigational molecule designed to metabolize into monomethyl fumarate (MMF) with differentiated features vs. TECFIDERA<sup>®</sup>
  - Potential for improved gastrointestinal tolerability
  - Administered in advanced oral, micro pellet, controlled-release dosage form
  - Composition of matter patent extends into 2033
- Planned NDA submission in H2 2018

#### Biogen License and Collaboration Agreement

- Granted Biogen an exclusive, worldwide license to commercialize BIIB098
- Mid-teens percentage royalty to Alkermes on worldwide net sales
- Clinical and regulatory milestone payments of up to \$200M (including \$50M received in Q2 2018)
- Biogen responsible for all development and commercial expenses (as of 1/1/18)

# BIIB098: Clinical Program Designed to Reveal Differentiating Features

- Streamlined regulatory pathway 505(b)(2)
  - PK bridging studies to confirm bioequivalence to TECFIDERA<sup>®</sup>
  - Long-term safety study exposure requirements
  - Completing clin/pharm studies
- Elective head-to-head GI tolerability study underway
  - Designed to demonstrate differentiated GI tolerability compared to TECFIDERA (dimethyl fumarate)

## Initial data from open-label safety study presented at ECTRIMS 2017

	of ALKS 8700 Robert T. Naismith Narinder Nançia, PhD	P1170 Term Safety Study tiple Sclerosis (Arganese, My ,any 3. Wolvaky MD) Modal blood, What, Joanne, X				
	BACKGROUND The second	And instant And instant and an	No. 1 Support of All No. 2014 IN 1978 IN 1978			
			Patients	, n		
Mandha	0 4 - 61 - 7 1 - 7		(%)			
Months 0 - 1 after treatment initiation (n=580)						
Discontinuations due to GI AEs			3 (0.5)			
Serious GI AEs			0			
Most common TEAEs (>5% of patients)						
Flushi	ng		184 (31.	7)		
Pruritu	JS		43 (7.4	)		
Diarrhea			38 (6.6	)		
Months 0–3 after treatment initiation (n=574)						
Deaths			0			
Serious AEs			13 (2.3	)		
Discontinuations due to AEs			21 (3.7	)		
Disconti		Preliminary data from safety population as of July 27, 2017; study recruitment is ongoing. AE, adverse event; GI, gastrointestinal; TEAE, treatment-emergent AE.				
Preliminary data	from safety population as of J	uly 27, 2017; study recruitmen	it is ongoing.	,		



## ALKS 4230: Novel Selective Effector Cell Activator Immuno-Oncology Candidate

### ALKS 4230: Designed for Targeted IL-2 Receptor Activation to Enhance Tumor-Killing Immune Cells

- Novel immunotherapy to enhance tumor-killing T cells
- Potential points of differentiation:
  - Dosing regimen and tolerability profile compared to PROLEUKIN®
  - Potential to be complementary to a range of cancer therapies
- Phase 1 study dose-escalation stage underway
  - Multi-center study evaluating safety, tolerability and immunological-pharmacodynamic effects in patients with solid tumors
- Advancing into planned phase 1 dose-expansion stage in patients with select solid tumors (H2)
  - Monotherapy and in combination with anti-PD-1s
- Dose optimization initiatives
  - IND-enabling activities underway for a subcutaneous dosing phase 1 study and parallel plans to evaluate less frequent IV dosing regimens

## Alkermes' Picasso<sup>TM</sup> Technology Enables Fusion of IL-2 With IL-2R $\alpha^{44}$



Proximal termini allow fusion of circularly permuted IL-2 with IL-2R $\alpha$ 







#### ALKS 4230 Induces Selective Expansion of CD8<sup>+</sup> T Cells and Natural Killer Cells



 ALKS 4230 treatment induced expansion of CD8<sup>+</sup> T cells and natural killer cells, with minimal expansion of immunosuppressive CD4<sup>+</sup> T<sub>regs</sub>

Source: 0.1 mg/kg ALKS 4230 dosed QDx5 in cynomolgus monkeys induces the selective expansion of CD8 T cells and CD56+ NK cells over CD4+ T<sub>regs</sub>











Science: World-class R&D at the bench and in the clinic



**People Affected:** Patients, their caregivers, families and communities



**Policy:** To assure access in complex government and private systems



**Economics:** Pricing to deliver value in large chronic markets

Great Science Deep Compassion Real Impact



(in millions, except per share amounts)	Financial Expectations for Year Ending Dec. 31, 2018 <sup>†</sup>
Revenues	\$975 – 1,025
COGS	\$180 – 190
R&D Expense	\$415 – 445
SG&A Expense	\$515 – 545
Amortization of Intangible Assets	~\$65
Net Interest Expense	~\$10
Income Tax Expense	\$0 – 10
GAAP Net Loss	\$(210) - (240)
Non-GAAP Net (Loss) Income <sup>‡</sup>	\$(10) – 20
GAAP Net Loss Per Share	\$(1.35) – (1.55)
Non-GAAP Net (Loss) Earnings Per Share	\$(0.06) - 0.12

Revenues:

- VIVITROL<sup>®</sup> net sales of \$300M \$330M
- ARISTADA<sup>®</sup> net sales of \$140M \$160M
- License and R&D revenue: \$50M option payment, reimbursement of BIIB098 R&D expenses from Biogen
- AMPYRA<sup>®</sup>/FAMPYRA<sup>®</sup> royalty & manufacturing revenue of \$40M - \$50M; Generic competition for AMPYRA expected in July 2018
- Operating Expenses:
  - Investment in ARISTADA INITIO<sup>™</sup> launch in 2018 and preparations for potential launch of ALKS 5461 in 2019

<sup>†</sup> This financial guidance, provided by Alkermes plc in its Current Report on Form 8-K filed with the SEC on Apr. 26, 2018, is effective only as of such date. The company expressly disclaims any obligation to update or reaffirm guidance. The company only provides guidance in a Regulation FD compliant manner.

\* Non-GAAP net (loss) income adjusts for one-time and non-cash charges by excluding from GAAP results: share-based compensation expense; amortization; non-cash net interest expense; certain other one-time or non-cash items; and the income tax effect of these reconciling items. Reconciliation of this non-GAAP financial measure to the most directly comparable GAAP financial measure can be found in the Alkermes plc Current Report on Form 8-K filed with the SEC on Apr. 26, 2018.



#### **Diverse Commercial Portfolio With Long Patent Lives**

	Description	Patent Life
$V\widehat{ivitrol}^{\circ}$ (nativexone for extended-release injectable suspension) 300mg/vial	Once-monthly medication for treatment of alcohol and opioid dependence	<b>2029</b> in U.S.
ARISTADA aripiprazole lauroxil extendar-frelese injectable suspension 441mg · 662mg · 882mg · 1064mg	Long-acting atypical antipsychotic for treatment of schizophrenia with once-monthly, six-week and two-month dosing	<b>2035</b> in U.S.
RISPERDAL CONSTA® (A Janssen product)	Long-acting atypical antipsychotic for treatment of schizophrenia and bipolar 1 disorder	<b>2023</b> in U.S. <b>2021</b> in EU
INVEGA SUSTENNA <sup>®</sup> / XEPLION <sup>®</sup> (Janssen products)	Long-acting atypical antipsychotic for treatment of schizophrenia and schizoaffective disorder	<b>2031</b> in U.S. <b>2022</b> in EU
AMPYRA <sup>®</sup> / FAMPYRA <sup>®</sup> (An Acorda product)	First and only approved treatment to improve walking in patients with multiple sclerosis	<b>2018</b> in U.S. <b>2025</b> in EU
BYDUREON <sup>®</sup> (An Astra-Zeneca product)	First once-weekly GLP-1 for treatment of type 2 diabetes	<b>2026</b> in U.S. <b>2024</b> in EU

Please refer to the company's Annual Report on Form 10-K for the fiscal period ended Dec. 31, 2017 for specific royalty agreement rates and terms, which may differ from the Patent Life set forth above.

AMPYRA® (dalfampridine) Extended Release Tablets, 10 mg is being developed and marketed in the U.S. by Acorda Therapeutics, Inc. and outside the U.S. by Biogen, under a licensing agreement with Acorda Therapeutics, as FAMPYRA® (prolonged-release fampridine tablets). RISPERDAL CONSTA® and INVEGA SUSTENNA® are trademarks of Johnson & Johnson, and are products developed and sold by Janssen Pharmaceuticals Inc. using Alkermes technology.



#### Patent Protection for Pipeline Candidates Extends Into Next Decade and Beyond

	Description	Patent Life (U.S.)
ALKS 5461	Method of Treatment Formulation Composition of Matter	2030 2032 2031
ALKS 3831	Method of Treatment Composition of Matter	2032 2031
BIIB098 (formerly ALKS 8700)	Composition of Matter Method of Treatment	2033 2033
ALKS 4230	Composition of Matter	2033



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