pharmaceuticals

CORPORATE PRESENTATION

DECEMBER 2021

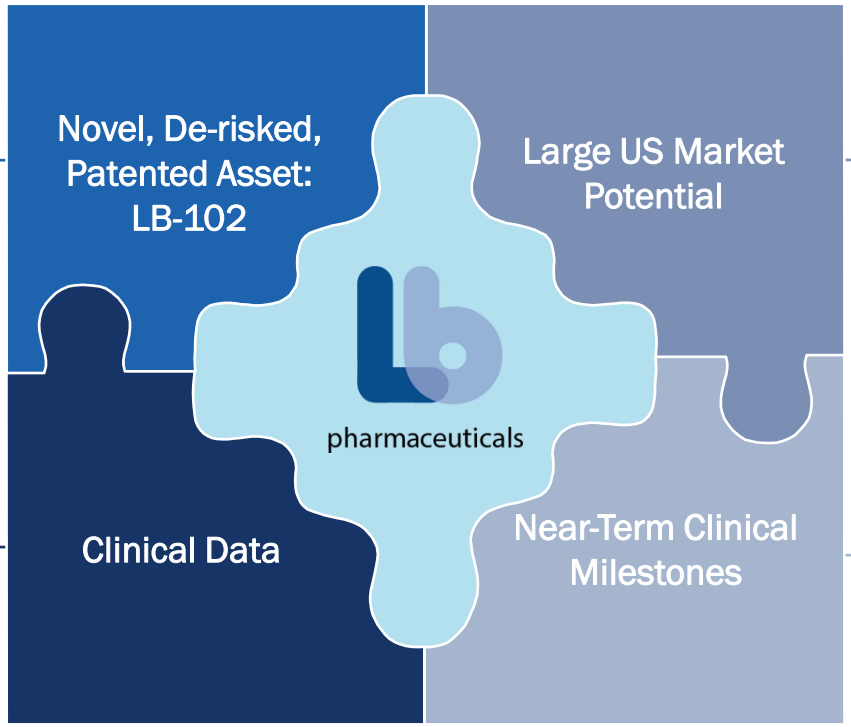
Making Smart Chemical Changes to Create Improved Novel Therapeutics

LB PHARMACEUTICALS INVESTMENT HIGHLIGHTS

CNS-focused biotech building a pipeline of potential best-in-class therapies for the US market

Lead asset, **LB-102,** is a novel benzamide leveraging the demonstrated safety and efficacy of amisulpride for the treatment of schizophrenia

N = 80 Phase 1 studies showed LB-102 safe, well-tolerated, and bound $D_{2/3}$ at desired occupancy to treat SCZ



LB-102 has potential to exceed $1 billion in annual US sales (based on EU comparison)

Phase 2 study, planned for H1 of 2022, could validate LB-102 as an important therapy for schizophrenia patients

LB is looking to raise $60 million in capital to support Phase 2 clinical activity through expected announcement of top-line results

MANAGEMENT TEAM

Zachary Prensky, Chief Executive Officer & Co-Founder

- Managed family office from 1997-2015
- Portfolio responsibilities included oversight of all biotechnology investments

Anna Eramo, M.D., Chief Medical Officer

- Former Clinical and Medical Affairs head at Lundbeck
- Has 18 years of global CNS experience; oversaw US development of brexpiprazole
- Trained clinical psychiatrist

Andrew Vaino, Ph.D., Chief Science Officer

- Chemistry PhD from Queen's University with two decades experience in biotech
- MBA from UC Irvine
- Inventor of two molecules studied clinically

Marc Panoff, Chief Financial Officer

- Previously CFO of Retrophin - raised $150 million in equity and debt financings and uplisted company to Nasdaq Global Market
- Previously CFO of Neurologix and Nephros

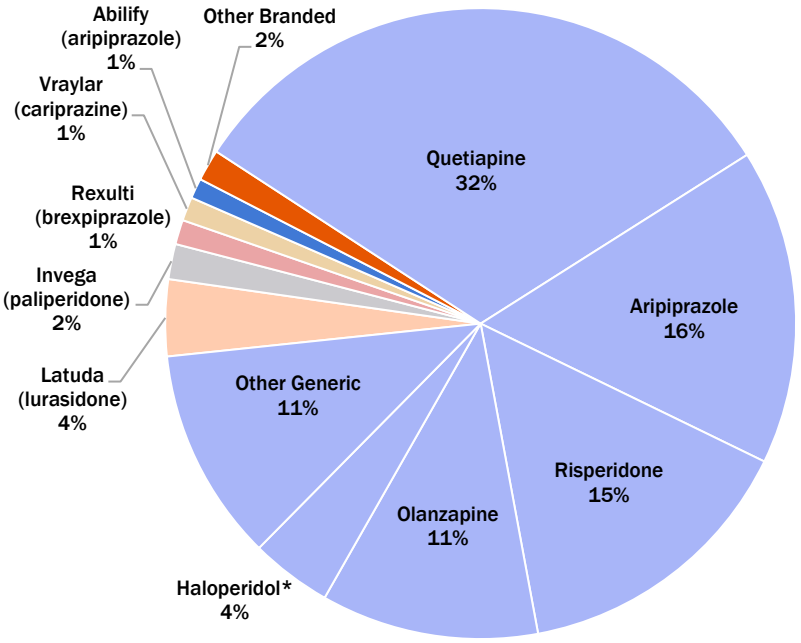
SCHIZOPHRENIA

- Schizophrenia (SCZ) is a chronic and debilitating disease affecting approximately 1% of the US population[1]
  - Approximately 100,000 new SCZ patients diagnosed per year[2]
  - SCZ patients have profoundly diminished quality of life
    - Fewer than 20% hold full-time employment; increased odds of arrest
  - Life expectancy of SCZ patients is reduced by 10-20 years compared to the general population[3]
    - Approximately 5% SCZ patients die of suicide[4]
  - Disease defined by three major groups of symptoms
    - Positive symptoms: delusions, hallucinations, agitation
    - Negative symptoms: lack of social engagement, depression
    - Cognitive symptoms: memory deficits, impaired executive functions

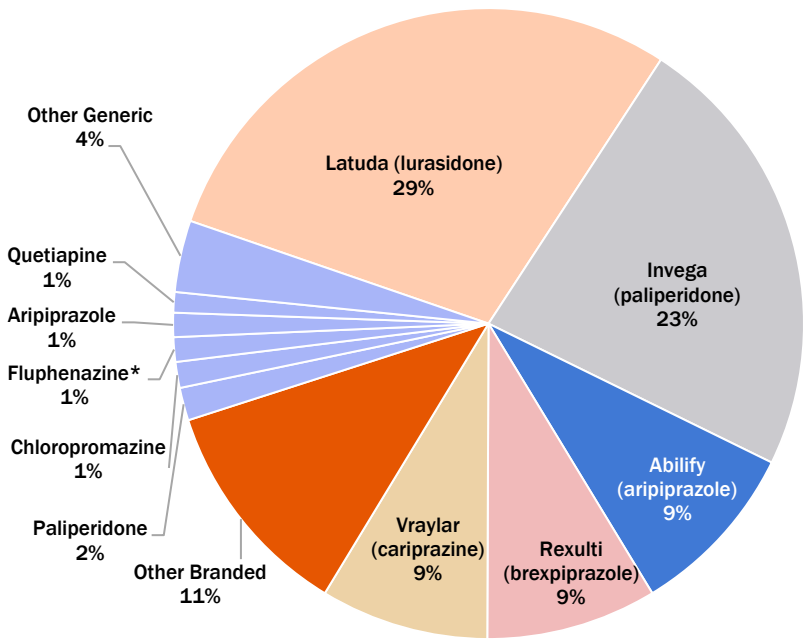
1 About Schizophrenia - Schizophrenia & Psychosis Action Alliance (sczaction.org)
2 Schizophrenia Symptoms, Patterns and Statistics and Patterns (mentalhelp.net)
3 Moradi et al. 2018
4 Palmer et al. 2005

US ANTIPSYCHOTIC MARKET LANDSCAPE

US Antipsychotic Market[1]: ~67mm Retail TRx



US Antipsychotic Market[1]: ~$12bn Sales



Represents generic TRx / Sales

⁎ Indicates typical (first-generation) product

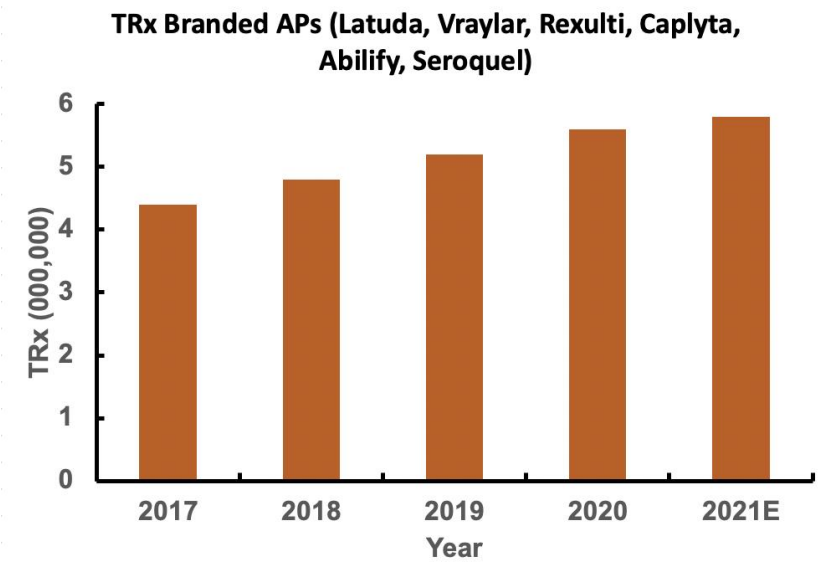
- Branded SCZ drugs products generate ~$11 billion in sales annually in the US
- Despite limited efficacy, and a crowded generic market, new branded antipsychotics such as Latuda, Vraylar, and Rexulti are approaching or have achieved > $1 billion each in annual sales in the US

Notes: (1) Source: IMS 2019 data including all dosage forms; (2) Source: *J. Clin. Psychiatry*, 77, 764-711

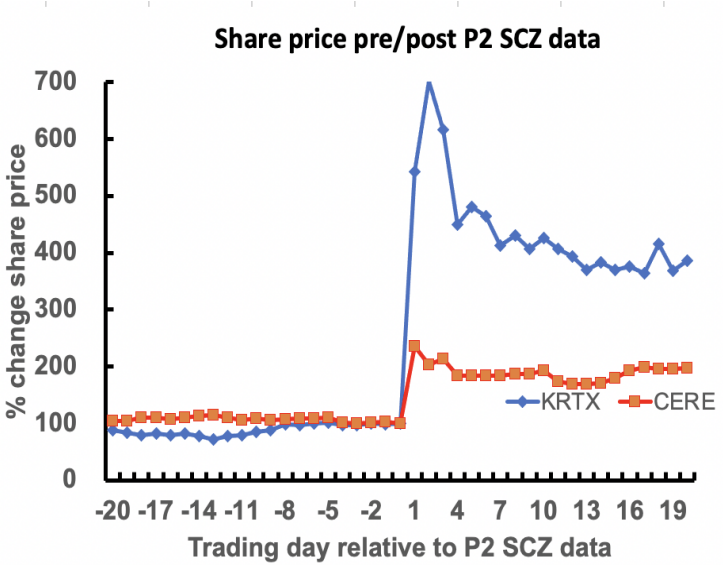
SCHIZOPHRENIA – UNMET MEDICAL NEED

- Despite 20+ FDA approved drugs, SCZ patients don't get adequate help
  - An estimated 50% of patients with SCZ do not take their prescribed medications as directed[1]
  - Up to 74% of SCZ patients cycle through multiple drugs within 18 months, with up to 60% failing to find an effective therapy[2]

Branded Rx growing



Phase 2 data price catalyst



1 About Schizophrenia - Schizophrenia & Psychosis Action Alliance (sczaction.org)
2 Patel et al. P&T 2014 Sep; 39(9): 638–645.

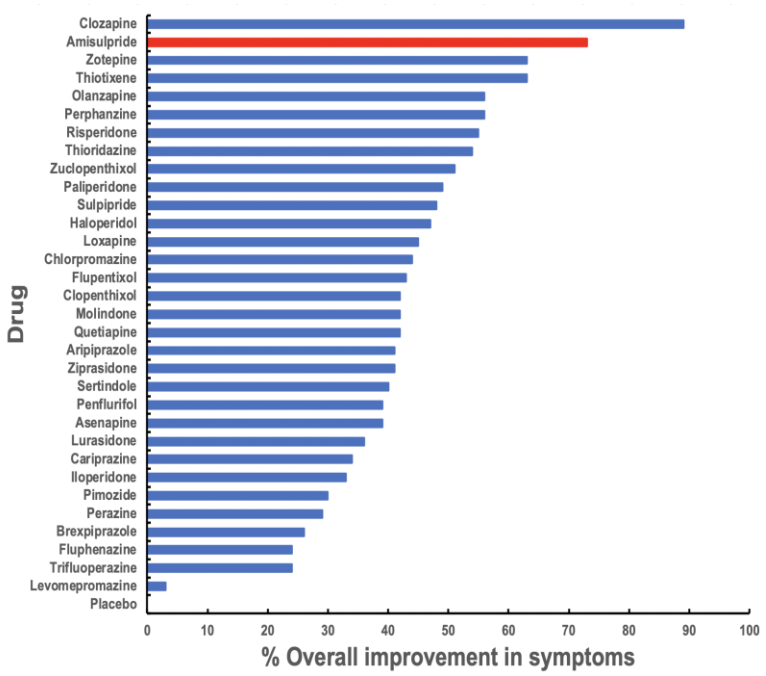
AMISULPRIDE BACKGROUND

- Amisulpride is a benzamide marketed for the treatment of schizophrenia in Europe since 1986
    - Patented and developed by Synthélabo (acquired by Sanofi)
    - Selective D_2 (K_i = 2.8 nM)/D_3 (K_i = 3.2 nM) and $5HT_7$ (K_i = 31 nM) antagonist
    - In July 2000 Sanofi announced it would discontinue development of amisulpride in the US based on IP
- Amisulpride has generated over 2.5 million prescriptions annually for the past three years in Europe
- 35 years of clinical use demonstrates an excellent safety/efficacy profile

AMISULPRIDE COMPARATIVE EFFICACY/SAFETY

Meta-Analysis of 32 Schizophrenia (SCZ) Drugs[1] (n = 53,500)

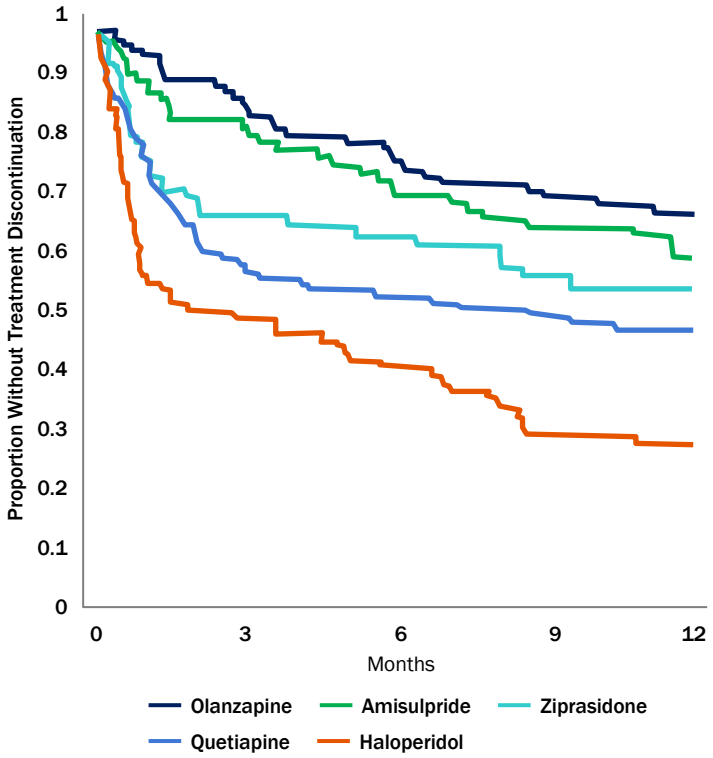
Antipsychotic Efficacy



Amisulpride is one of the most effective antipsychotics in the world

EUFEST Study[2] (Clinical Trial of 5 SCZ Drugs in First Episode) (n = 498)

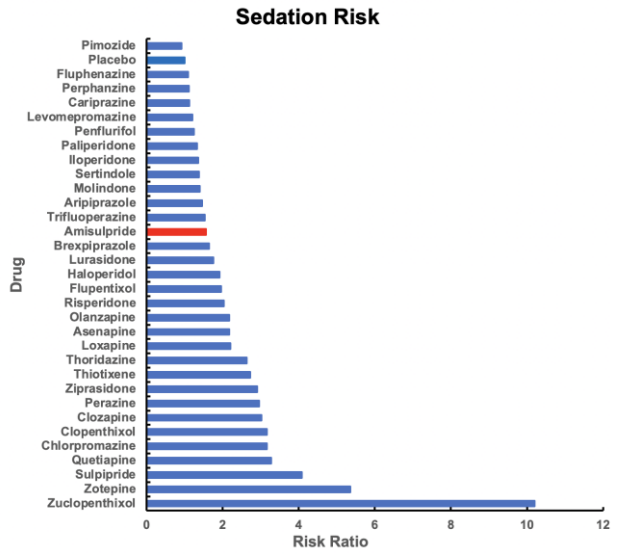
All-Cause Discontinuation

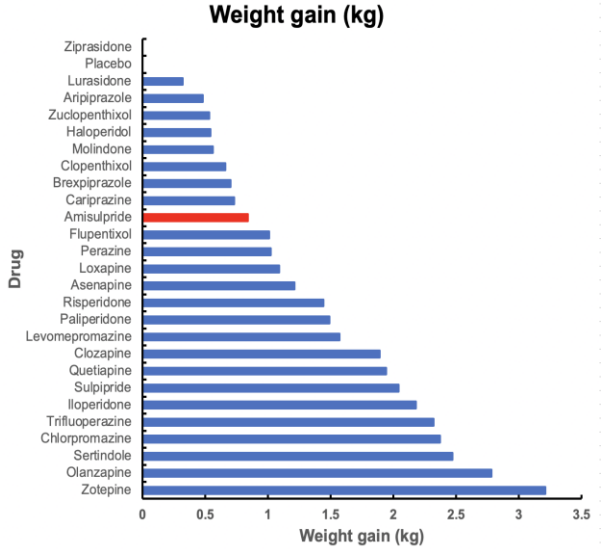


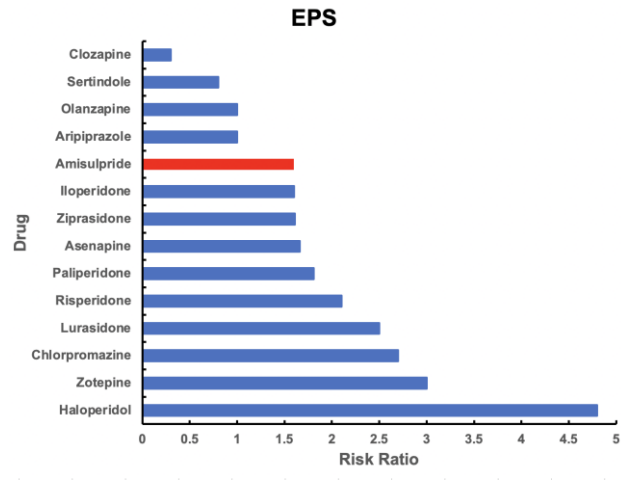
Amisulpride is one of the best tolerated antipsychotic

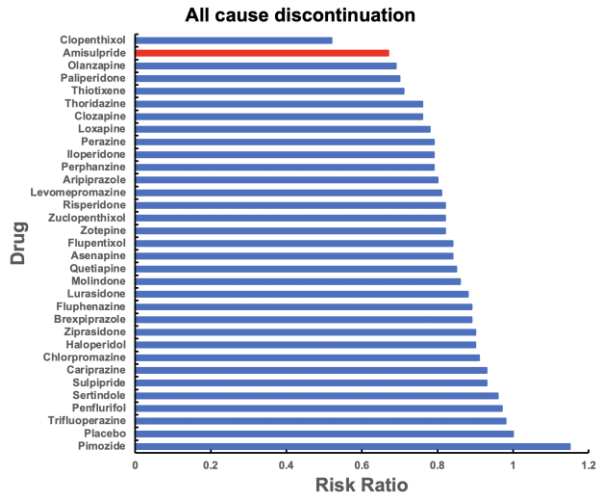
Notes: (1) Source: *Lancet*, **2019**, *394*, 939-951.; (2) Source: *Lancet*, **2008**, *371*, 1085-1097

AMISULPRIDE COMPARATIVE SAFETY









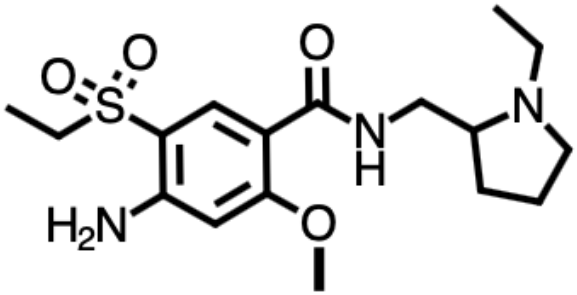
- All cause discontinuation combines efficacy and tolerability. When reported separately, more patients dropped out due to inefficacy (40%) than due to adverse events (20%)

* Lancet, 2019, 394, 939-951

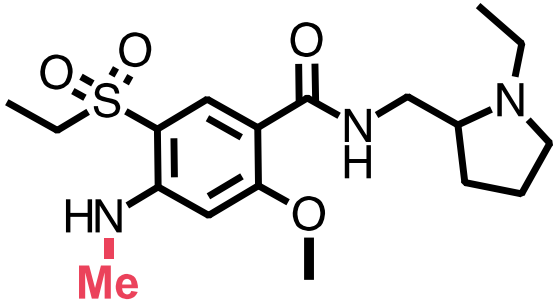
LB-102 OVERVIEW

LB-102 is a methylated version of amisulpride

Amisulpride (1983)



LB-102 (2016)



- Novel chemical structure with chemical properties designed to improve amisulpride's safety and efficacy
- Safe and well-tolerated in a (n = 64) Phase 1 clinical study
- Three US and four ex-US composition of matter patents covering LB-102 issued extending to at least 2037
- CNS receptor binding profile similar to amisulpride: high selectivity for $D_{2/3}$ and $5HT_7$
- LB-102 same as/better than amisulpride in preclinical animal models of SCZ

LB-102 KEY DIFFERENTIATORS

- Superior efficacy than most recently launched antipsychotics

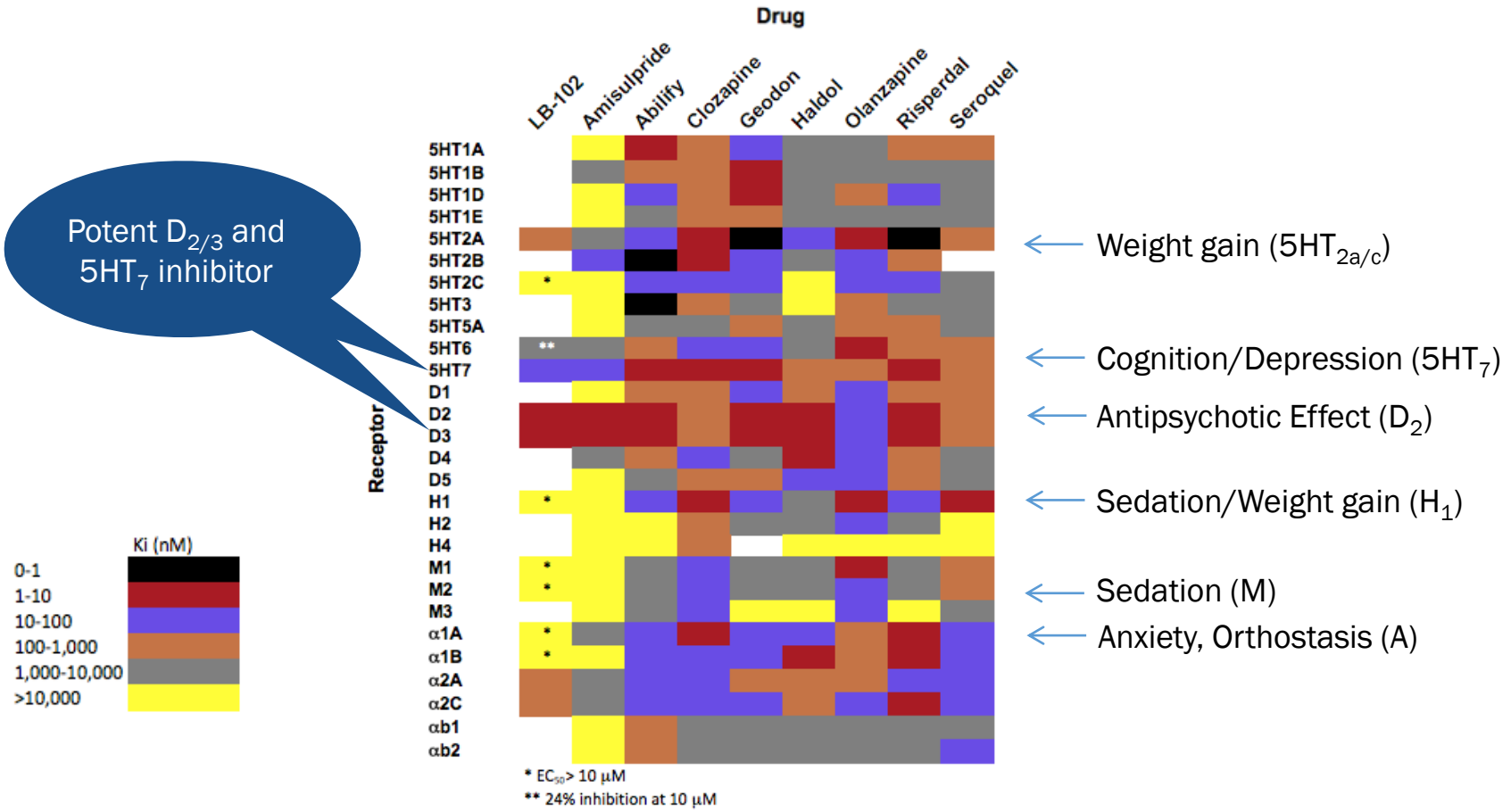
	Avg PANSS Δ from BL[1]
Caplyta	-14.1
Rexulti, 4 mg	-19.9
Vraylar, 3 mg	-22.4
Amisulpride	-28.9

- Minimal off-receptor binding (D_2, D_3, $5HT_7$) leading to low incidence of AEs
- Potential use in patients with predominantly negative symptoms, depression, and Alzheimer's psychosis
  - Amisulpride one of two drugs to show statistically significant improvement in negative symptoms (SANS Δ 12 points vs. placebo)[2]
  - Equivalent to Prozac in clinical study of depression[3]
  - ATLAS study showed amisulpride effective in treating psychosis in elderly[4]
- Weakly metabolized, low risk of drug/drug interactions
- LB-102's low expected therapeutic doses (50 mg LB-102 = same dopamine RO as 400 mg amisulpride) could be amenable to LAI formulation

Notes: (1) Data from FDA Medical Reviews except amisulpride data from *Neuropsychopharmacology*, **2002**, *27*, 1071 and *Current Medical Research and Opinion*, **2002**, *18*, 355; (2) Danion et al, *Am J Psychiatry,* **1999**; (3) Cassano et al., *Int. Clin. Pharmacol.*, **2002**, 17, 17. (4) Howard et al., *Lancet Psychiatry,* **2018**

LB-102 AND AMISULPRIDE RECEPTOR SPECIFICITY

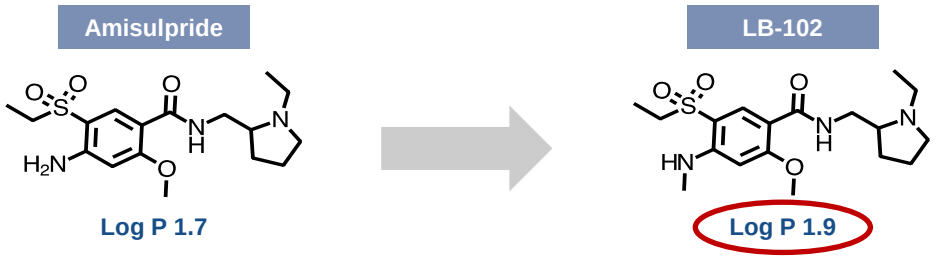
LB-102 is a selective D_2/D_3 /$5HT_7$ antagonist with minimal off-target activity



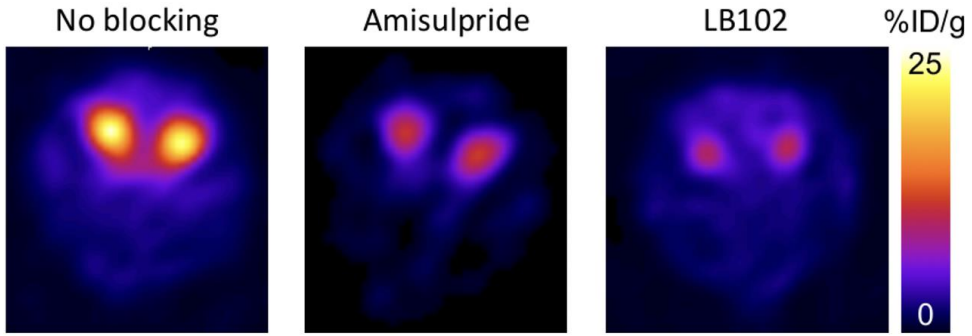
Notes: Ki data from: *The Neuroscientist*, **2000**, 6, 252-26245rf

LB-102: ENHANCING AMISULPRIDE'S PRODUCT PROFILE

- Of 30 psychiatric medications tested amisulpride was least able to passively diffuse across model BBB[(1)]
- Improving BBB permeability could improve efficacy/decrease adverse events
- Methylation has been shown to improve membrane permeability without changing receptor binding activity, for example desipramine to imipramine and nortriptyline to amitriptyline



- In a PET study, using ^{11}C raclopride, directly measuring dopamine RO in mice the same dose of LB-102 showed LB-102 bound $D_{2/3}$ receptors ~2X as strongly at amisulpride (K_is are similar)

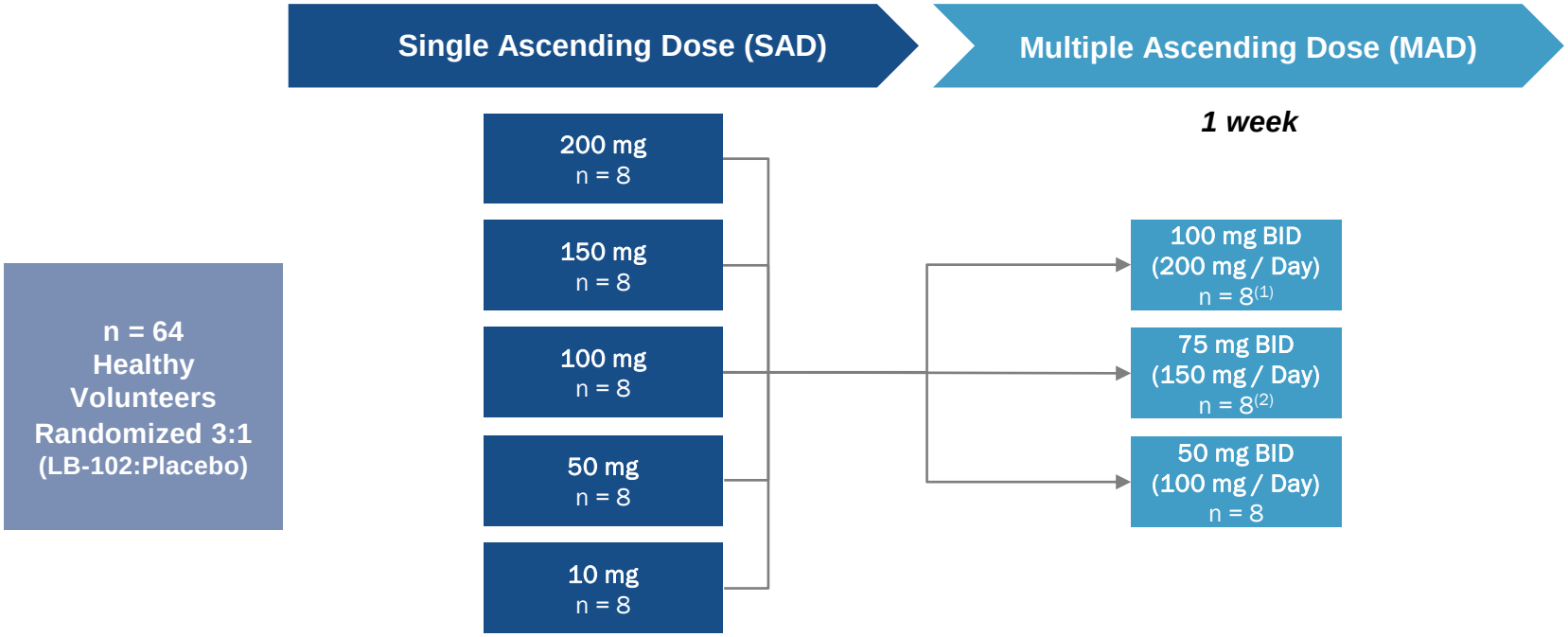


PET scans taken 140 min after dosing either 100 mg/kg amisulpride or LB-102

Notes: (1) Source: *The AAPS Journal*, **2014**, *16*, 1247-1258

LB-102 PHASE 1 CLINICAL TRIAL OVERVIEW

- **Dosing:** 5 single ascending dose (SAD) cohorts/3 multiple ascending dose (MAD, 1 week, BID dosing) cohorts
- **Endpoints:** Safety and pharmacokinetics
- **Single Site:** Medpace in Cincinnati, OH

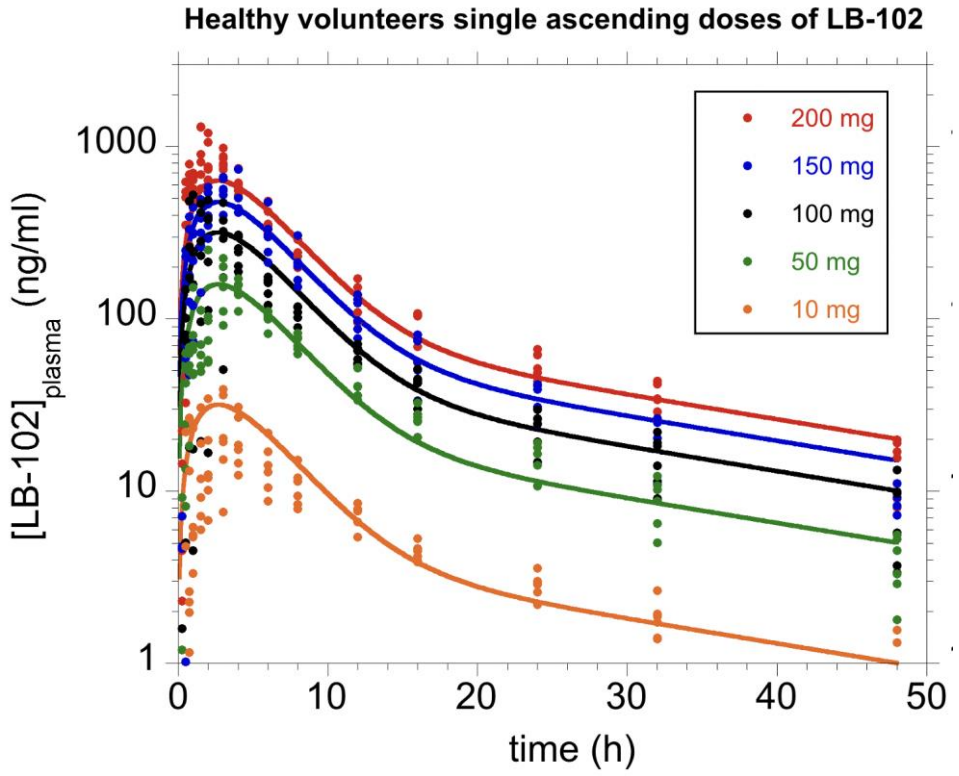


Notes: (1) Did not complete as pre-specified number of adverse events was reached; (2) n = 7 completed, one patient dropped out due to adverse events

LB-102 PHASE 1 PHARMACOKINETICS (SAD)

LB-102 exhibits favorable PK properties, with a half-life of 12+ hours and Tmax of 2-3 hours

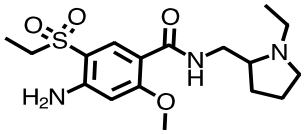
Dose LB-102 (mg)	Cmax (ng/mL)	AUCinf (h*ng/mL)	Tmax (h)	$T_{1/2}$(h)
10	24	253	3	13.7
50	176	1600	3	12.3
100	349	2823	2.8	14.7
150	596.5	4650	3.2	12.6
200	976	7001	2	12.8



PLASMA EXPOSURE OF LB-102 > AMISULPRIDE

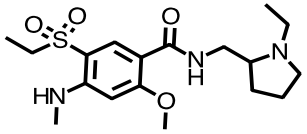
Rosenzweig[1] reported PK data on 18 healthy volunteers exposed to a single dose 50 mg amisulpride

Amisulpride



MW = 369.5
LogP = 1.7

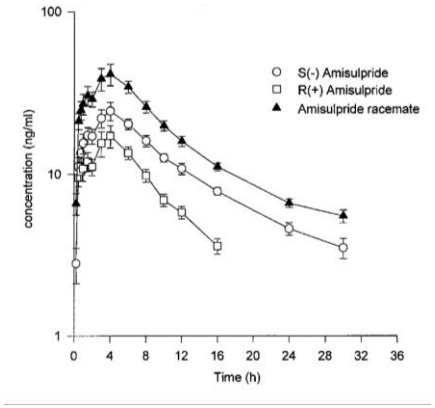
LB-102



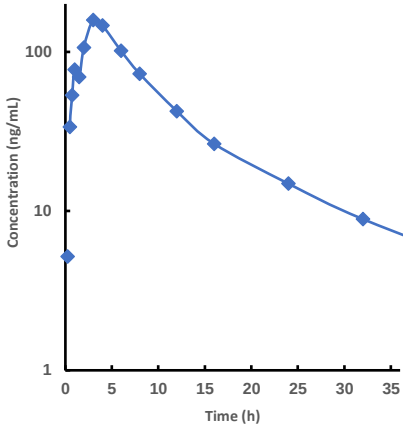
MW = 383.5
LogP = 1.9

Plasma Concentration of 50mg LB-102 vs. 50mg Amisulpride

50 mg Amisulpride



50 mg LB-102



Observed LB-102 plasma exposure is ~ 2.5x that of amisulpride[2]

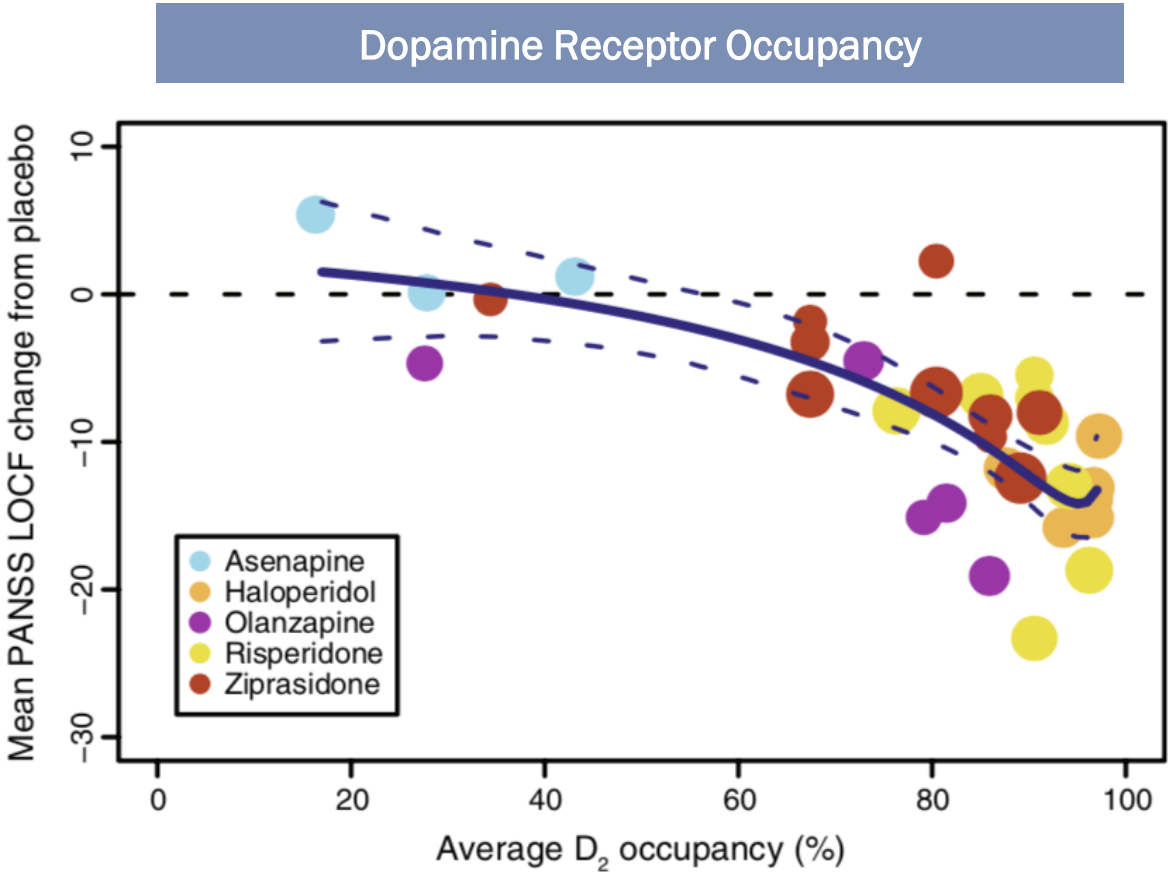
Notes: (1) Source: *Hum. Psychopharmacol. Clin. Exp.*, **2002**, *17*, 1-17; (2) Source: *Drugs*, **2001**, *61*, 2123-2150

LB-102 PHASE 1 ADVERSE EVENTS

		Single ascending dose					Multiple ascending dose		
Adverse event	**Placebo**	**10 mg**	**50 mg**	**100 mg**	**150 mg**	**200 mg**	**50 mg BID**	**75 mg BID**	**100 mg BID**
n	**16**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
Elevated prolactin		2	3	1	1	1	2	2	1
Diarrhea			1						
Upper respiratory infection			1	1					
Abdominal pain	1	1		1					
Nausea						1		1	1
Urticaria				1					
Acute dystonia						1		1	2
QT prolongation						1			
Insomnia						1		1	
Gastroesophageal reflux						1			
Headache	1					1			
Oropharyngeal pain						1			
Heart palpitations						1			
Vomiting									1
Dry mouth									1
Somnolence								1	1
Dizziness								1	
Migraine								1	
Back pain	1							1	
Bug bite	1								

- Prolactin elevation (PRL), which was reversible and unassociated with clinical consequences, was observed at all doses, a consequence of dopamine receptor binding
- Dosing in 200 mg/d MAD cohort was stopped after 3 days due to two occurrences of EPS (acute dystonia)
  - EPS associated with excess $D_{2/3}$ RO, suggesting need to tamp down dose < 200 mg/d

DOPAMINE RO DIRECTLY LINKED TO IMPROVEMENTS IN SCZ PATIENTS

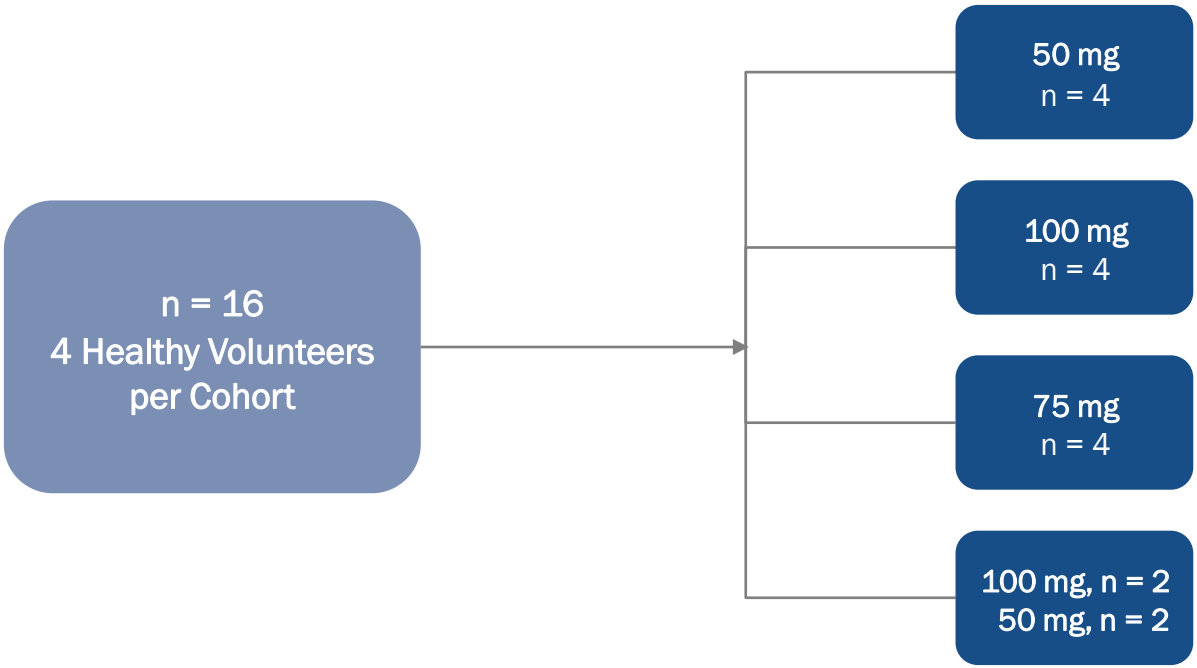


Dopamine RO a good predictor of PANSS improvement(1)

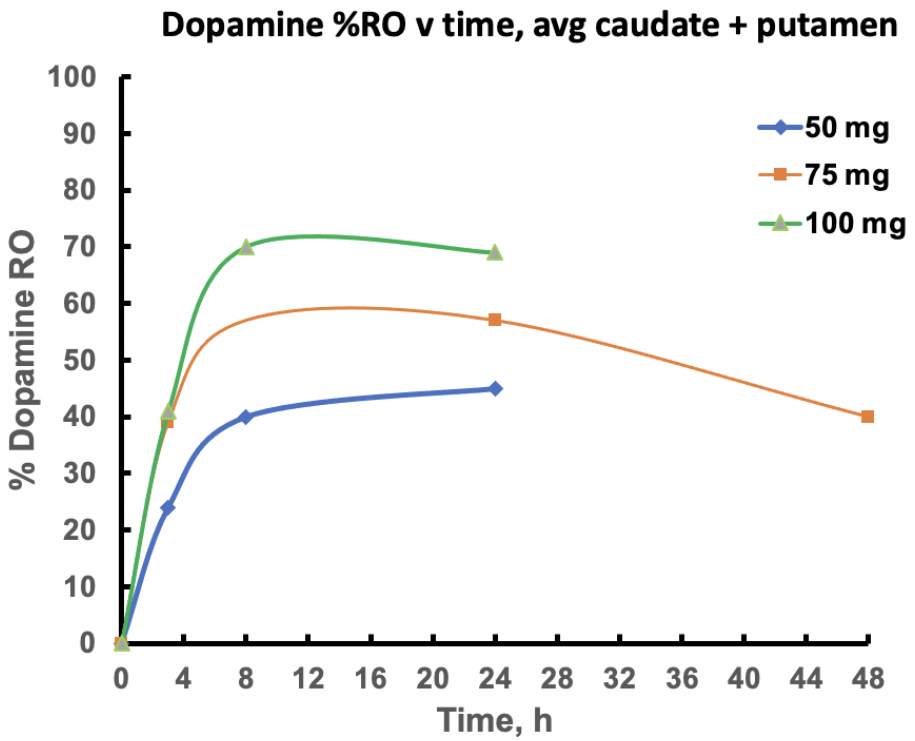
Notes: (1) Source: *The AAPS Journal*, **2011**, 13, 121-130

LB-102 PHASE 1b PET IMAGING STUDY (NCT04588129)

- **Dosing:** Adaptive design with 4 cohorts of 4 healthy volunteers each
  - Multiple PET scans per subject using ^{11}C raclopride as tracer
- **Study Objectives:** To confirm D_2/D_3 target engagement and inform Phase 2 dosing

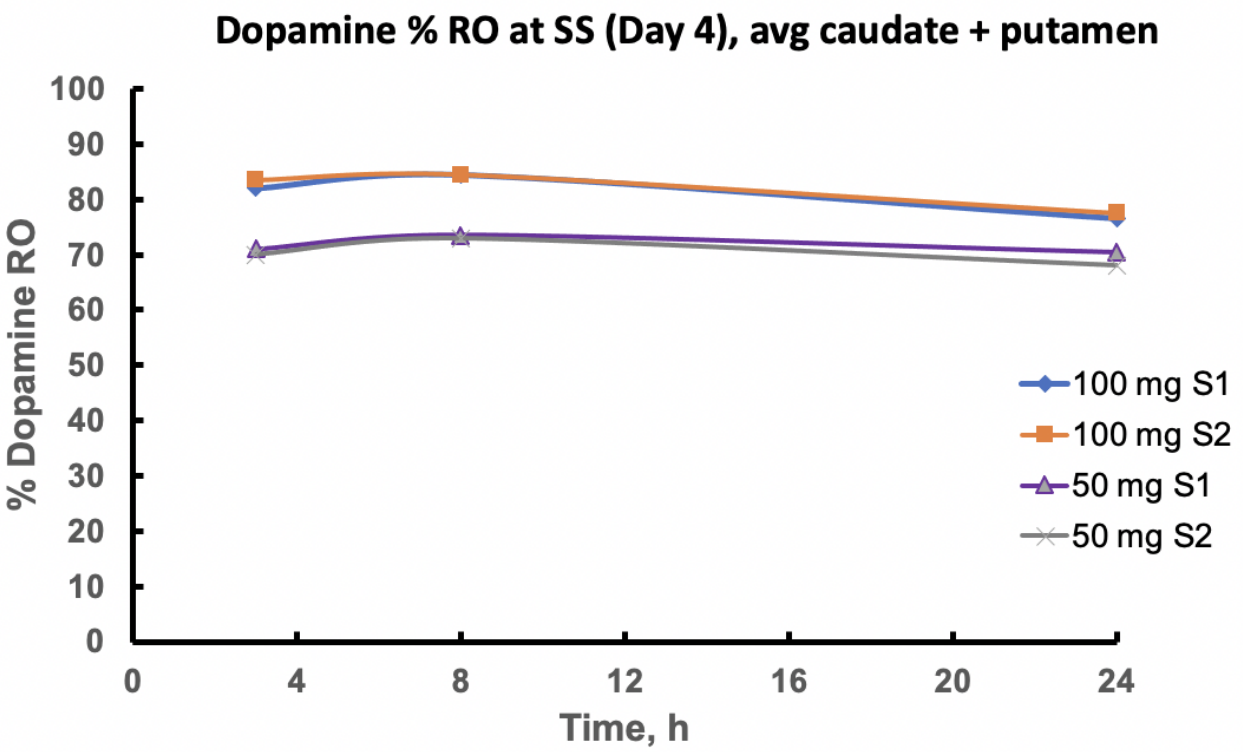


PHASE 1b - COHORTS 1 - 3, SINGLE DOSE



- Subjects in Cohorts 1 (100 mg) and 2 (50 mg) were scanned at 2.5, 7.5, and 23.5 hrs post-dose
- Subjects in Cohort 3 (75 mg) were scanned at 2.5, 23.5, and 47.5 hrs post-dose
- Desired dopamine RO between 60% and 75%
- Data suggests that LB-102 can be dosed once a day

PHASE 1b - COHORT 4, STEADY STATE, 100 MG (N=2); 50 MG (N=2)



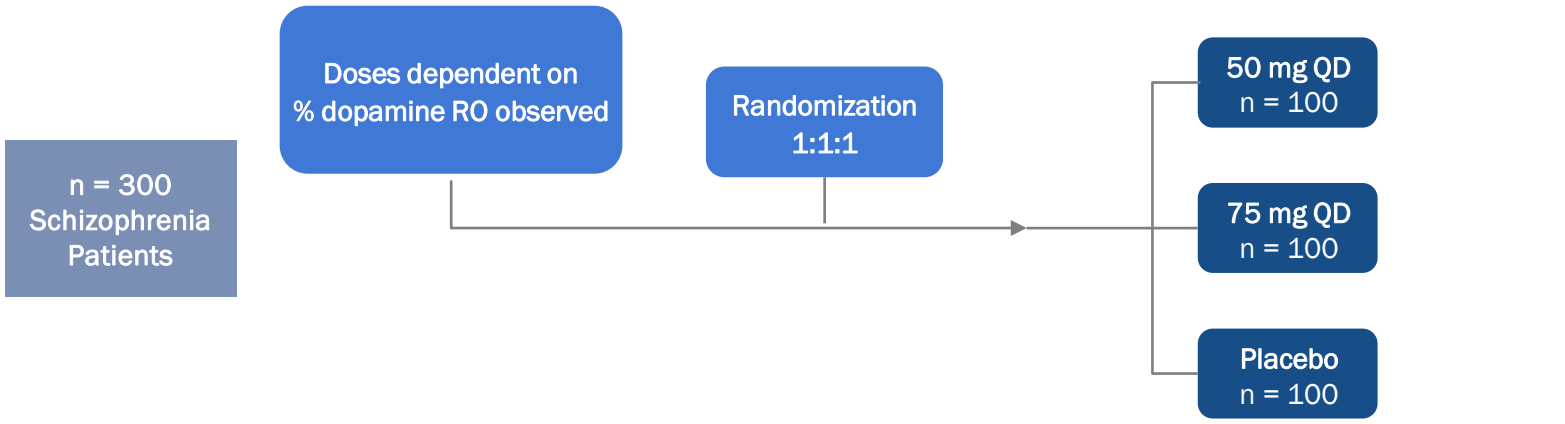
- Subjects scanned 2.5, 7.5, and 23.5 hrs after 4 days QD dosing
  - Dopamine RO observed at 50 mg was in the desired range for an effective schizophrenia drug
  - 50 mg LB-102 afforded same dopamine RO as 400+ mg amisulpride per day

PHASE 1b - KEY TAKEAWAYS

- No reported SAEs or EPS
- Dopamine receptor occupancy in desired range at 50 mg to 100 mg dose
- Confirms hypothesis from Phase 1 study
- Planned dosing for Phase 2 study: 50 mg and 75 mg, once per day
  - FDA guided LB could dose up to 200 mg/d in SCZ patients
  - Therapeutic doses expected to be well within the margin of safety

LB-102 PHASE 2 CLINICAL PROGRAM

- **Trial Size:** Expecting to enroll ~300 SCZ patients at ~25 sites
- **Design:** 2 doses LB-102 versus placebo (4 weeks duration, in-patient, double-blind, placebo controlled)
- **Primary Endpoint:** Change in PANSS
- Development plan will follow well-established criteria for FDA approval of a schizophrenia drug (cf. Rexulti, Vraylar, Latuda)
  - LB-102 Phase 2 study designed to potentially be registrational study



Inclusion Criteria

- Adults, 18 to 50 years old, with acute schizophrenia diagnosis

LB-102 CLINICAL DEVELOPMENT PROJECTED TIMELINE

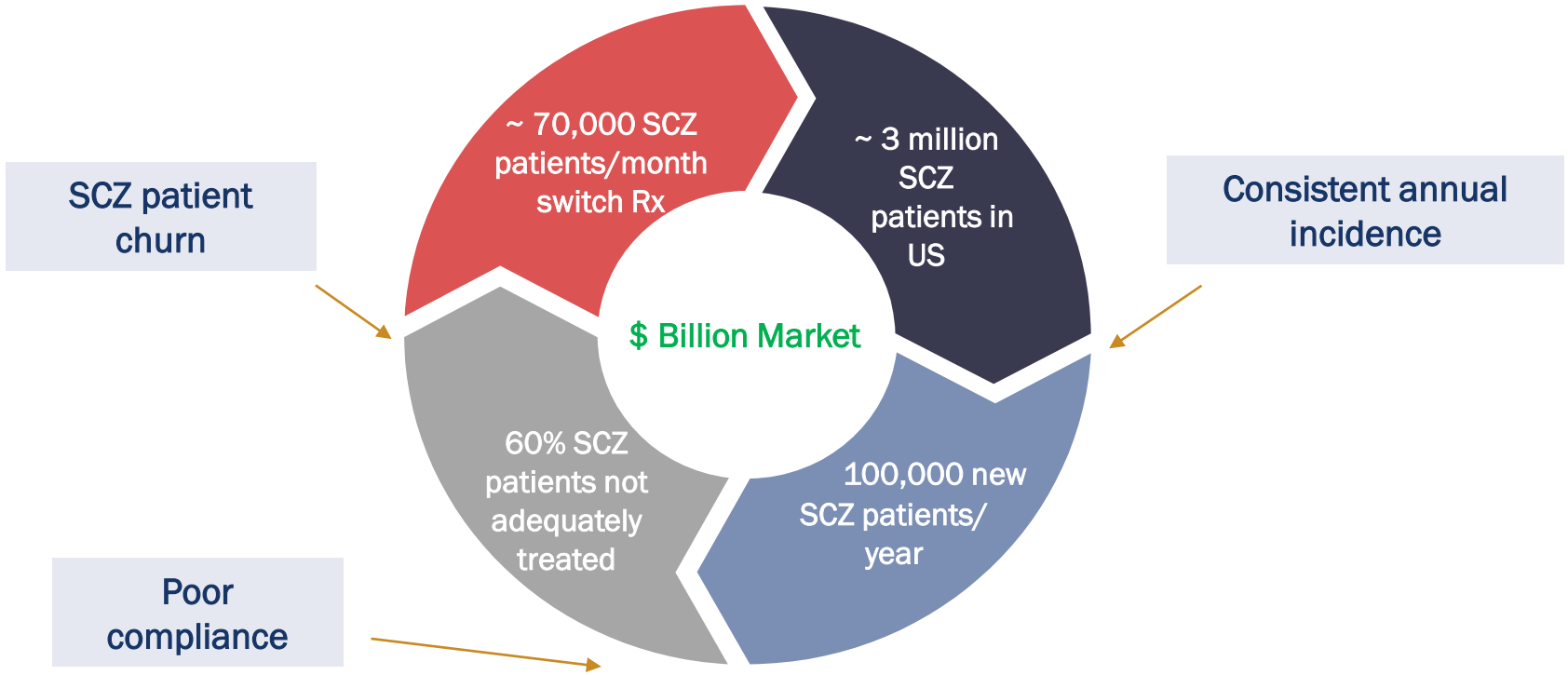
Study	Size	Cost	FY 2020	FY 2021 Q1	FY 2021 Q2	FY 2021 Q3	FY 2021 Q4	FY 2022 1H	FY 2022 2H	FY 2023 1H	FY 2023 2H
Phase 1a SAD/MAD	n = 64	$1.6	*Completed*								
Phase 1b PET	n = 16	$1.5		*Completed*							
Phase 2	n = 300	$40.0									★
CARC		$2.5									
CMC		$1.0	*Completed*								

★ - Indicates expected data readout

- Phase 1 and 1b studies completed; End of Phase 1 meeting with FDA took place earlier in 2021
- Start of Phase 2 study dependent on close of Series B financing
- CMC activities to support Phase 2 study completed
- Seeking $60 million + in a Series B financing to support clinical activity through Phase 2 data readout (anticipated 2023)

LB-102 US MARKET OPPORTUNITY

- Expect LB-102 would be 3rd line SCZ treatment initially
- Amisulpride/LB-102 differentiated by clean AE profile and strong efficacy for both positive and negative symptoms of the disease
  - Prescriptions in the EU exceed 2 million/year despite a lack of sales/marketing support for 12 years
- Branded SCZ drugs products generate ~$11 billion in sales annually in US



LB-102 combines de-risked safety/efficacy of amisulpride with IP of a NCE

Notes: (1) Source: IMS 2019 data including all dosage forms; (2) Source: *J. Clin. Psychiatry*, 77, 764-711

PIPELINE EXPANSION POTENTIAL

LB-102 has the potential for clinical impact in areas outside of schizophrenia, such as depression

Product Indication	Discovery	Pre-Clinical	Phase 1	Phase 2	Phase 3
LB-102 (schizophrenia)					
LB-104 (depression)					
LB-102 (schizophrenia – negative symptoms)					
LB-102 (schizophrenia - LAI)					

LB PHARMACEUTICALS INVESTMENT HIGHLIGHTS

CNS-focused biotech building a pipeline of potential best-in-class therapies for the US market

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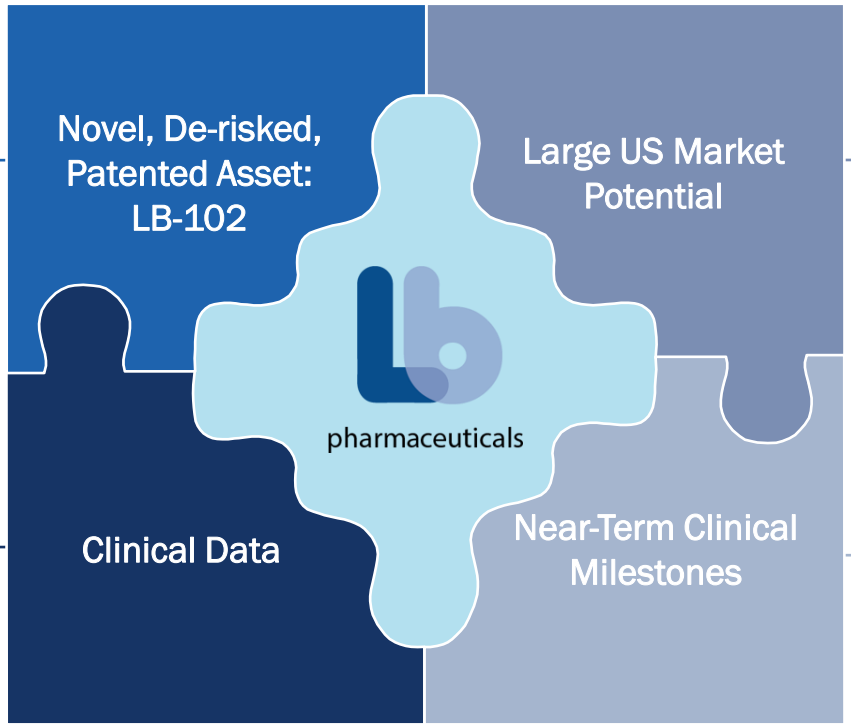

LB-102 has potential to exceed $1 billion in annual US sales (based on EU comparison)

Phase 2 study, planned for H1 of 2022, could validate LB-102 as an important therapy for schizophrenia patients

LB is looking to raise $60 million in capital to support Phase 2 clinical activity through expected announcement of top-line results

pharmaceuticals

THANK YOU