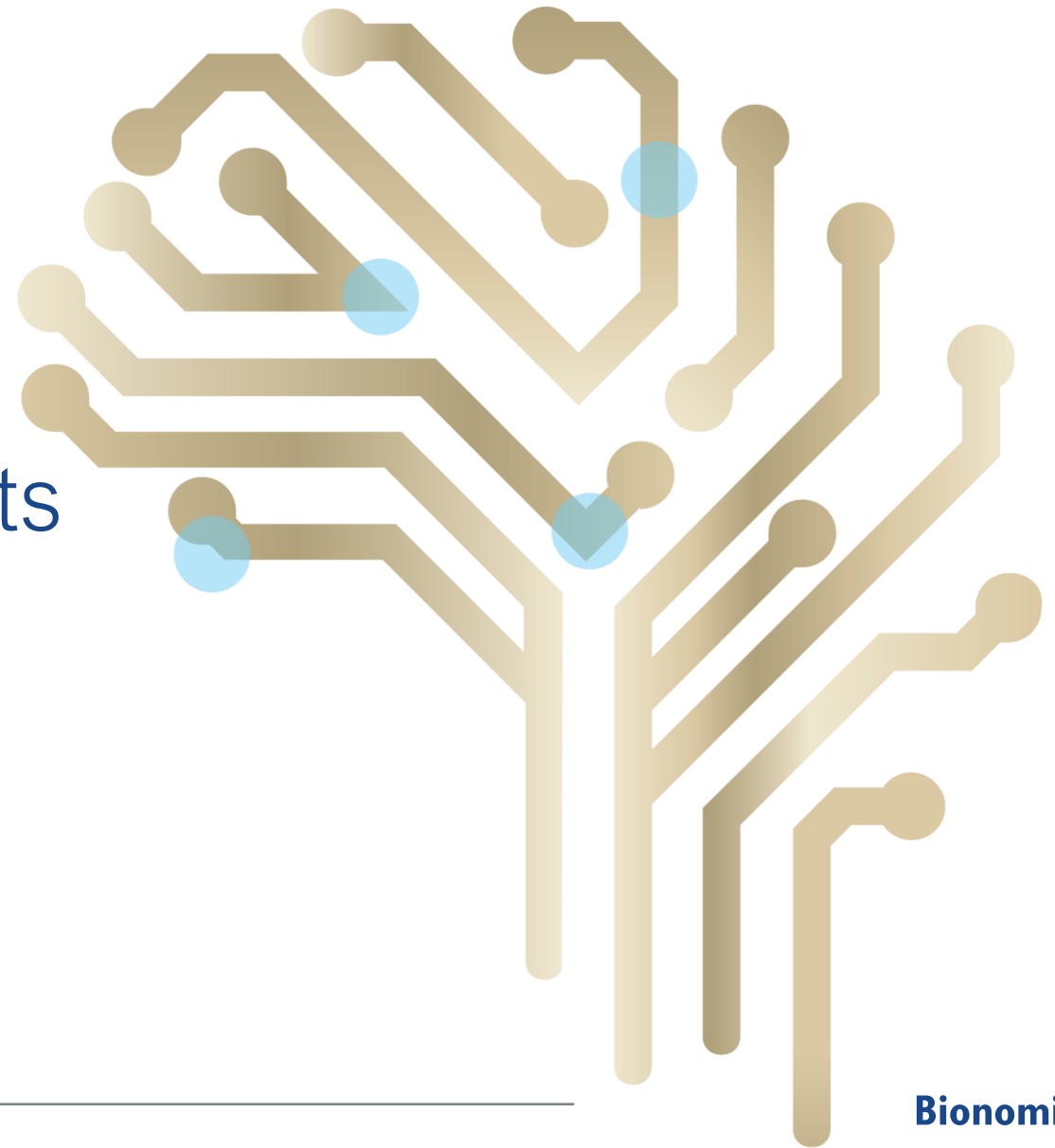

Bionomics
Corporate Update Presentation

Improving the Lives of Patients with **Serious CNS Disorders**

ASX: BNO
Nasdaq: BNOX

June 2022



Factors Affecting Future Performance

This presentation may contain "forward-looking" statements within the meaning of the United States' Private Securities Litigation Reform Act of 1995. Any statements contained in this presentation that relate to prospective events or developments, including, without limitation, statements made regarding Bionomics' drug candidates (including BNC210, BNC105, BNC101 and BNC375), its licensing agreement with Merck & Co. and any milestone or royalty payments thereunder, drug discovery programs, ongoing and future clinical trials, and timing of the receipt of clinical data for our drug candidates are deemed to be forward-looking statements. Words such as "believes," "anticipates," "plans," "expects," "projects," "forecasts," "will" and similar expressions are intended to identify forward-looking statements.

There are a number of important factors that could cause actual results or events to differ materially from those indicated by these forward-looking statements, including unexpected safety or efficacy data, unexpected side effects observed in clinical trials, risks related to our available funds or existing arrangements, delays or difficulties associated with conducting clinical trials, our failure to introduce new drug candidates or platform technologies or obtain regulatory approvals in a timely manner or at all, regulatory changes, inability to protect our intellectual property, risks related to our international operations, as well as other factors. Results of studies performed on our drug candidates and competitors' drugs and drug candidates may vary from those reported when tested in different settings. The inclusion of forward-looking statements should not be regarded as a representation by Bionomics that any of its expectations, projections or plans will be achieved. Actual results may differ from those expectations, projections or plans due to the risks and uncertainties inherent in Bionomics business and other risks described in Bionomics' filings with the SEC. New risk factors emerge from time to time and it is not possible for our management to predict all risk factors, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in, or implied by, any forward-looking statements. You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements. Except as required by law, we undertake no obligation to update publicly any forward-looking statements for any reason after the date of this presentation.

Subject to the requirements of any applicable legislation or the listing rules of any stock exchange on which our securities are quoted, we disclaim any intention or obligation to update any forward-looking statements as a result of developments occurring after the date of this presentation.

Certain information contained in this presentation relates to, or is based on, studies, publications, surveys and other data obtained from third party sources and Bionomics' own internal estimates and research. While we believe these third-party sources to be reliable as of the date of this presentation, we have not independently verified, and make no representation as to the adequacy, fairness, accuracy or completeness of, any information obtained from third party sources. In addition, all of the market data included in this presentation involves a number of assumptions and limitations, and there can be no guarantee as to the accuracy or reliability of such assumptions. Finally, while we believe our own internal research is reliable, such research has not been verified by any independent source.

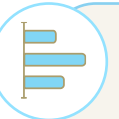




Targeting Social Anxiety Disorder (SAD) and PTSD, and cognitive dysfunction associated with Alzheimer's disease, schizophrenia and other CNS disorders



Lead asset: BNC210 - a negative allosteric modulator of the $\alpha 7$ Nicotinic Acetylcholine receptor



BNC210:

- ✓ Clinical PoC in GAD¹ and FDA Fast Track designation for acute Social Anxiety Disorder (SAD)
- ✓ In Phase 2 PREVAIL trial for acute treatment in SAD
- ✓ In Phase 2b ATTUNE trial with Fast Track designation from FDA for PTSD



Partnerships & Collaborations:

- ✓ Strategic partnership with Merck for treatment of cognitive deficits in Alzheimer's and other CNS disorders
- ✓ MOU with EmpathBio for feasibility assessment of EMP-01 (MDMA derivative) & BNC210 for PTSD treatment
- ✓ Pipeline of partnering candidates targeting potassium (Kv) and sodium (Nav) ion channels






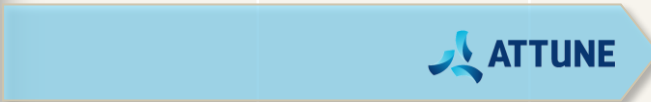



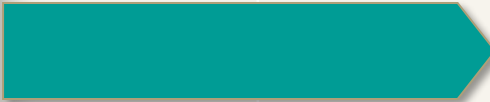
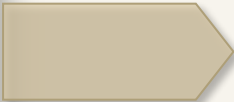

- ✓ Well-capitalized balance sheet and cash runway beyond multiple potential near term value-driving milestones
- ✓ BNC210 IP coverage extending to late 2030's





Focused CNS Pipeline with Multiple Potential Catalysts on the Horizon

4

Program	Indication	Pre-Clinical	Phase 1	Phase 2	Phase 3	Status
BNC210 α 7 receptor NAM 	Social Anxiety Disorder (SAD)					Study underway Topline Data: YE'22
	Post-Traumatic Stress Disorder (PTSD)					Study underway Topline Data: 1H'23
	+MDMA derivative EMP-01 (PTSD)		Memorandum of Understanding to explore combination treatment regimen for PTSD			Feasibility studies ongoing
 Collaboration α 7 receptor PAM	2 candidates for cognitive deficits in Alzheimer's					Phase 1 safety & biomarker studies ongoing
Nav1.7/1.8 Inhibitors Candidate	Chronic Pain					Pending
Kv3.1/3.2 Activators Series Lead	Cognitive Impairment					Pending





SAD Represents a Significant Unmet Need

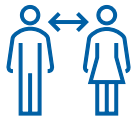


Social Anxiety Disorder (SAD), or Social Phobia, is a significant and persistent fear of social and performance-related situations



Includes anxiety from everyday social situations

Frequently occurring episodic disorder



Amongst the largest mental health conditions with lifetime prevalence affecting >31M Americans

Triggers that exacerbate anxiety can occur at any time.

Work

Patients may orient their careers around a narrow set of potential occupations and may struggle with job performance

Relationships

Friendships, family relationships, & romantic partnerships are physically draining and stressful. Moderate to severe patients often live alone

Lifestyle

Events like dining entertainment, and public transport, are often very distressful and/or impossible for SAD patients

Daily Activities

Normal parts of everyday life such as grocery shopping, calling a handyman, or picking up coffee can be very challenging for SAD patients

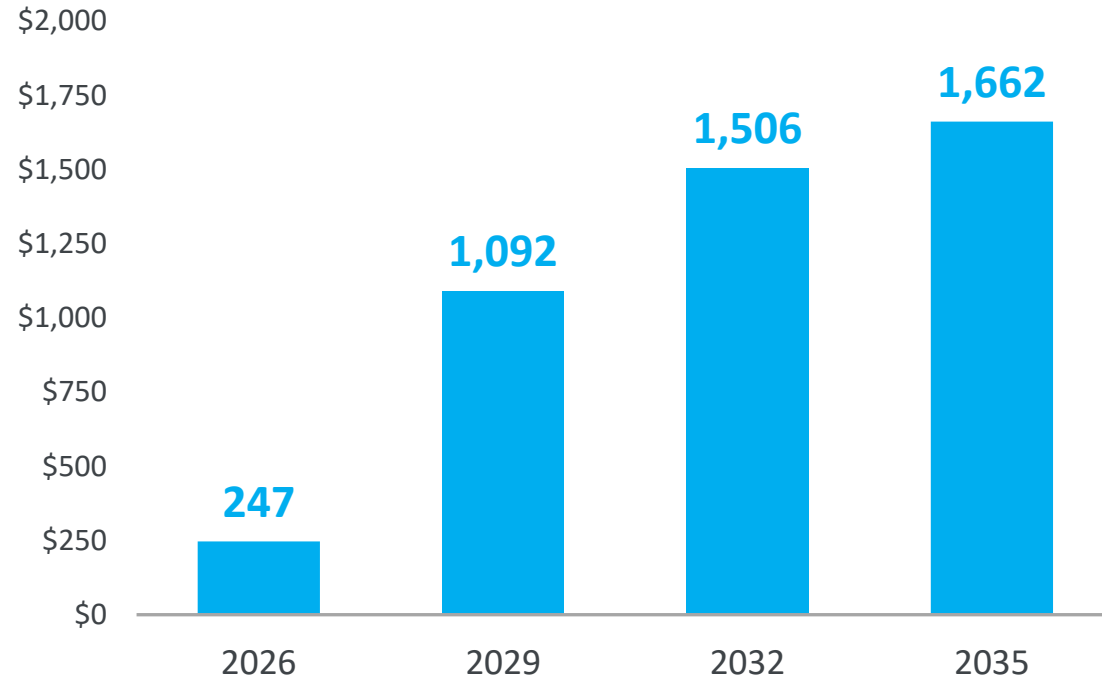




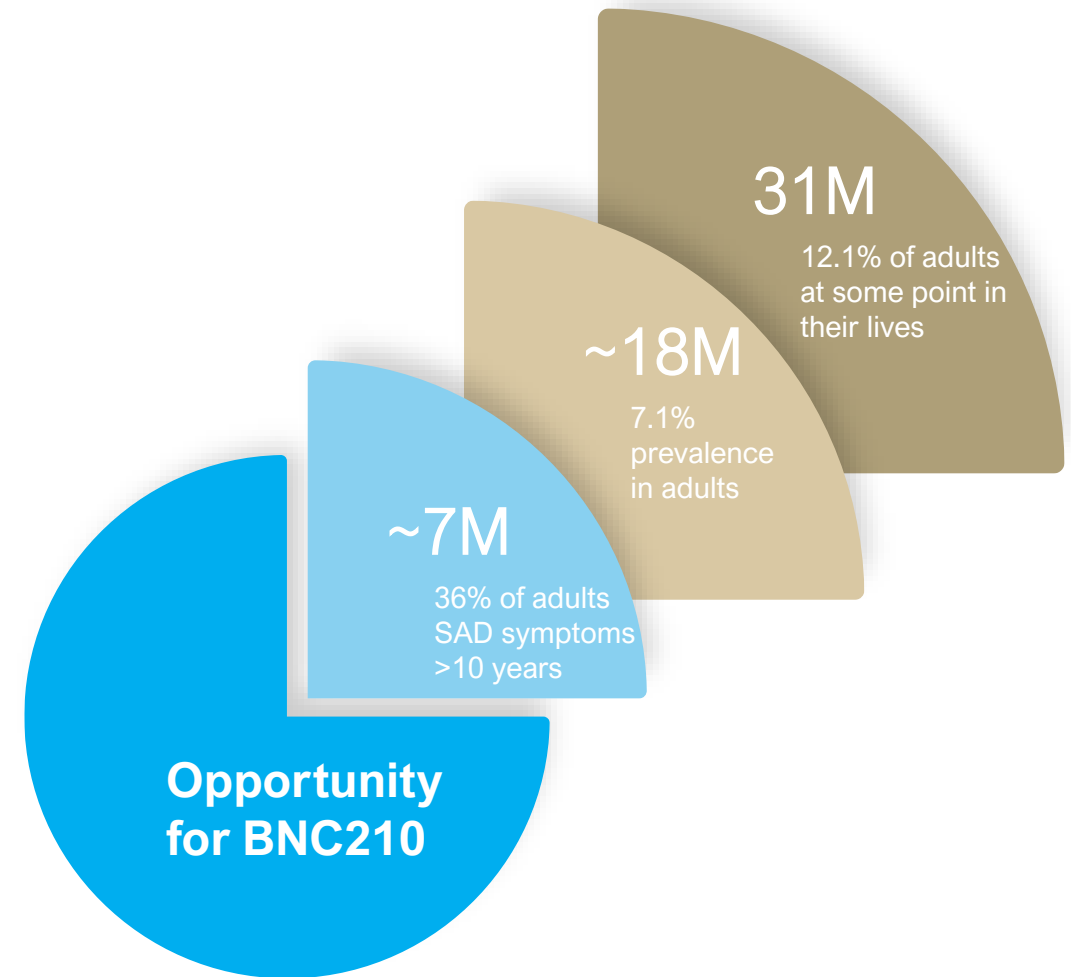
Targeting a Large Segment of the Anxiety Market/Market Size

No FDA-approved fast-acting medications for as-needed treatment

BNC210 US Social Anxiety Disorder Sales (\$M)



BNC210 could achieve \$1.7B in US annual peak sales in SAD*





	Fast Onset of Action	Not Sedating	No Withdrawal/ Abuse Potential	No Memory Impairment	No Motor Impairment	No Suicidal Ideation
SSRIs & SNRIs ¹	X	✓	X	✓	✓	X
BZDs ² (Off-label)	✓	X	X	X	X	✓
BNC210	✓	✓	✓	✓	✓	✓





ANTI-PANIC

Single doses reduce panic symptoms & intensity in healthy volunteers experiencing a CCK-4 induced panic attack

ANTI-ANXIETY

Single doses reduce amygdala activation in GAD patients performing the Emotional Faces task during fMRI

REDUCES PERCEPTION OF THREAT

Single doses reduce threat avoidance behavior in GAD patients performing a behavioral task

FAST-ACTING

Pharmacokinetics of reformulated BNC210 tablet are ideal for acute dosing

UNMET NEED

No acute treatments are approved for SAD; represents potential for rapid path to market





PTSD Represents a Significant Unmet Need

- A debilitating disorder that leads to social, occupational and interpersonal dysfunction



PTSD involves flashbacks, intrusive thoughts and nightmares



PTSD causes changes in cognition, mood, arousal and reactivity



PTSD results from exposure to actual or threatened death, serious injury or sexual violence

- Only 20-30% of PTSD patients achieve clinical remission on SoC SSRI therapy²

Work

Patients may orient their careers around a narrow set of potential occupations and may struggle with job performance

Relationships

PTSD can impair trust, closeness, and communication, leading to difficulty maintaining family and romantic relationships.

Lifestyle

PTSD-associated poor nutrition, reduced physical activity, and increased obesity and smoking, increase risk of cardiovascular and other diseases

Quality of Life

PTSD patients avoid people, places, or environments which may trigger trauma, making daily living difficult

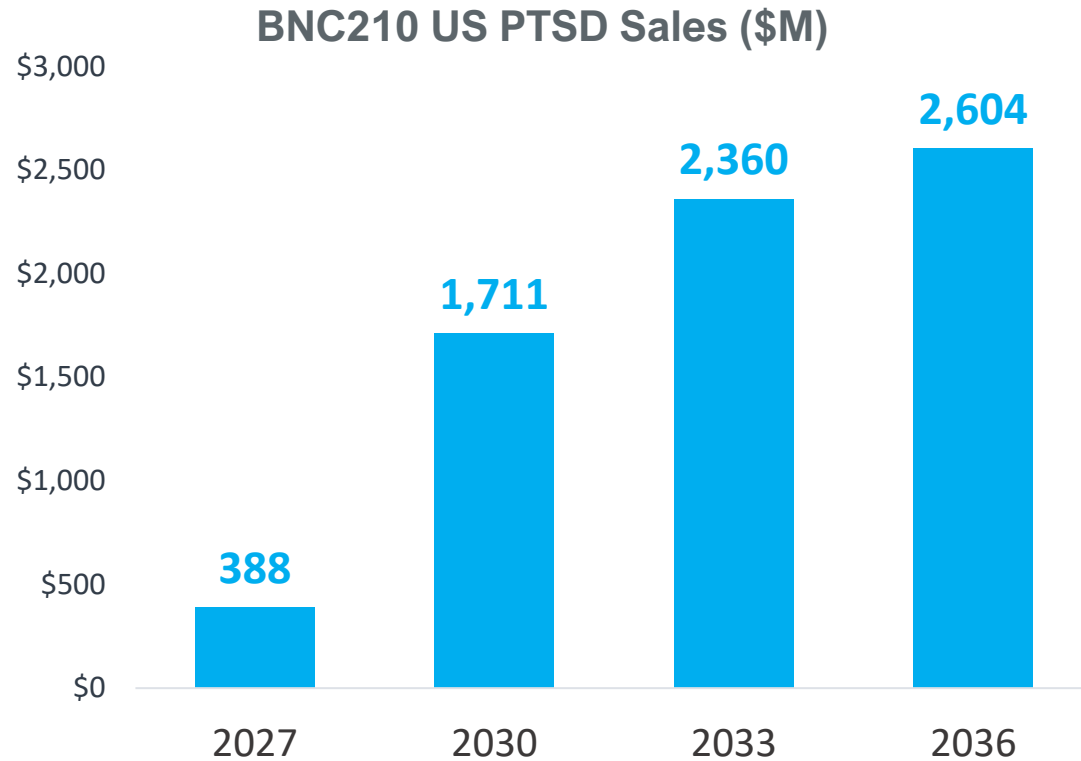




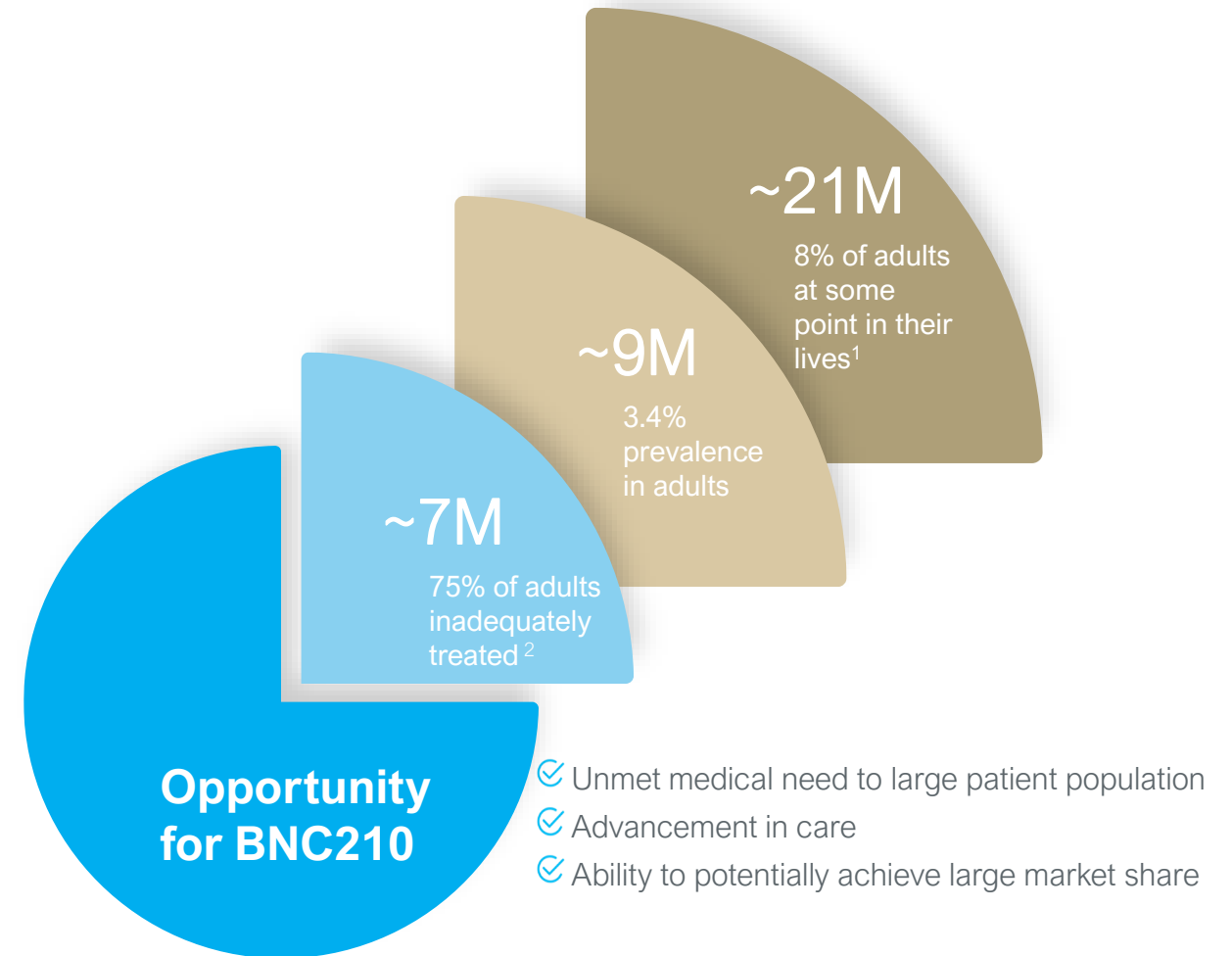
PTSD Represents a Significant Unmet Need and Market Opportunity

10

No newly approved pharmacotherapy in almost two decades



BNC210 could achieve \$2.6B in US annual peak sales in PTSD*





✓ **REDUCES ANXIETY**

*Reduced anxious behavior in many rodent models **AND** reduced amygdala hyperactivity in GAD patients*

✓ **ANTI-DEPRESSANT**

*Antidepressant effects in rat model **AND** in PTSD trial at early time points*

✓ **ENHANCES FEAR EXTINCTION**

*Enhanced fear extinction in mice **AND** promoted more rapid recovery in healthy humans following panic attack (CCK-4)*

✓ **ANTI-PANIC ACTIVITY**

*Reduced Number **AND** Intensity of Panic Symptoms in Phase 1 CCK-4 challenge*

✓ **REDUCES THREAT AVOIDANCE**

*Reduced threat avoidance behavior in animals (various models of threat) **AND** in GAD patients (Phase 2 study)*





$\alpha 7$ Receptor PAMs correct cholinergic states in cognitive dysfunction and impairment



MSD Collaboration Overview

- ✓ 2014 agreement to develop $\alpha 7$ receptor PAMs targeting cognitive dysfunction associated with Alzheimer's disease, schizophrenia and other CNS conditions
- ✓ Merck funds all research and clinical development, and WW commercialization of any resulting products
- ✓ Payments received: *US\$20M upfront* and *US\$10M for Phase 1 milestone*
- ✓ Eligible to receive *up to US\$465M in additional milestone payments plus royalties*



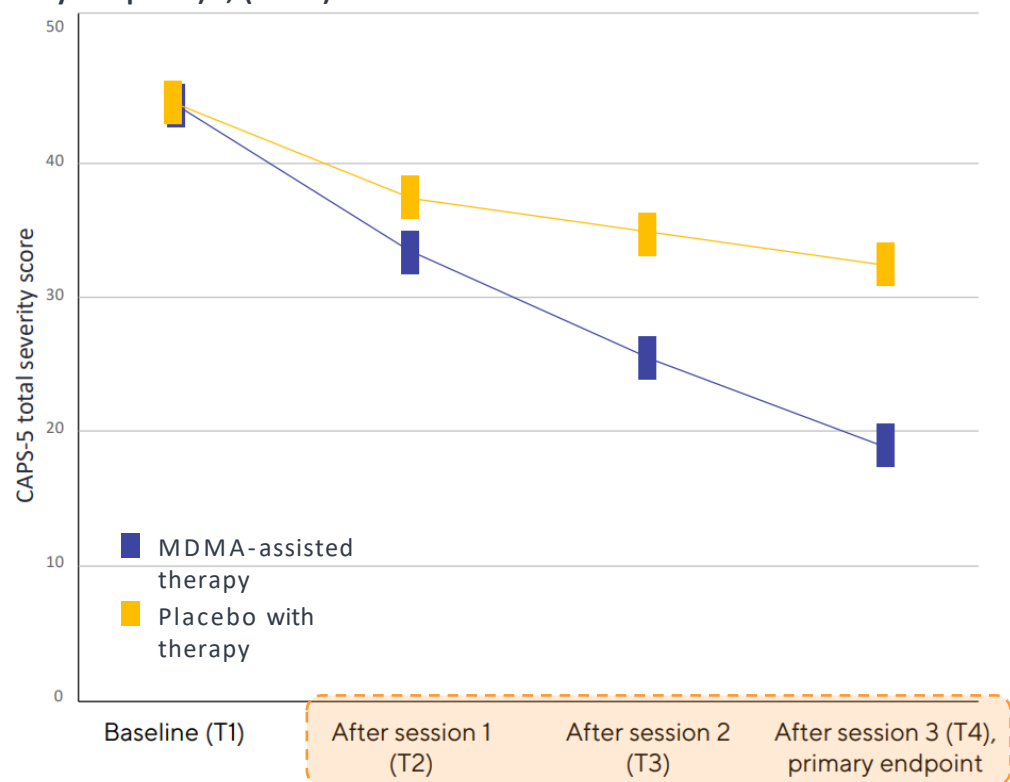
Development Updates

- ✓ Two candidate $\alpha 7$ receptor PAMs in early-stage Phase 1 safety and biomarker clinical trials for cognitive impairment
- ✓ *1st compound has completed Phase 1 safety clinical trials in healthy subjects with ongoing plans for further biomarker studies*
- ✓ *In 2020, a second molecule showed an improved potency profile in preclinical animal models and was advanced by Merck into Phase 1 clinical trials*





MDMA-assisted therapy significantly reduced CAPS-V scores in PTSD patients (primary endpoint)¹, (n=90)



Note: Change in CAPS-V total severity score from T1 to T4 ($P < 0.0001$, $d = 0.91$, $n = 89$ (MDMA $n = 46$)), as a measure of the primary outcome.
Primary analysis was completed using least square means from a mixed model repeated measure (MMRM) analysis model; ($n=90$)
1. Mitchell et al., "MDMA-assisted therapy for severe PTSD: a randomized, double-blind, placebo-controlled phase 3 study" (2021)

Joint Feasibility Assessment



EMP-01 (3,4-Methylenedioxymethamphetamine) (MDMA) derivative

- ✓ BNC210 + EMP-01 relieves the burden of pairing MDMA with CBT, potentially reducing the number of CBT sessions needed with MDMA treatment



MOU with EmpathBio's MDMA Derivative (EMP-01)

- ✓ Initial collaborative framework of preclinical studies to collectively explore a combination drug treatment regimen with BNC210 and EMP-01
- ✓ MDMA-assisted psychotherapy has demonstrated significant symptom improvement in PTSD patients
- ✓ FDA has granted a Breakthrough Therapy designation to MDMA-assisted psychotherapy
- ✓ EmpathBio is developing MDMA derivatives that may permit the entactogenic effects of MDMA to be separated from some of the known adverse effects
- ✓ To explore the possibility of a combination treatment regimen warranting clinical evaluation





- ✓ Lean operations with modest burn
- ✓ Well-capitalized through CY2023
- ✓ A\$40.4M (US\$29.2M) of net cash
- ✓ Listed on two global exchanges



- ✓ CNS patents filed in the US and abroad
- ✓ USA: 4 granted, 5 pending
- ✓ Worldwide: 4 granted, 5 pending
- ✓ BNC210 freedom to operate opinion



✓ Leading Significant Investors:



✓ Research Coverage:

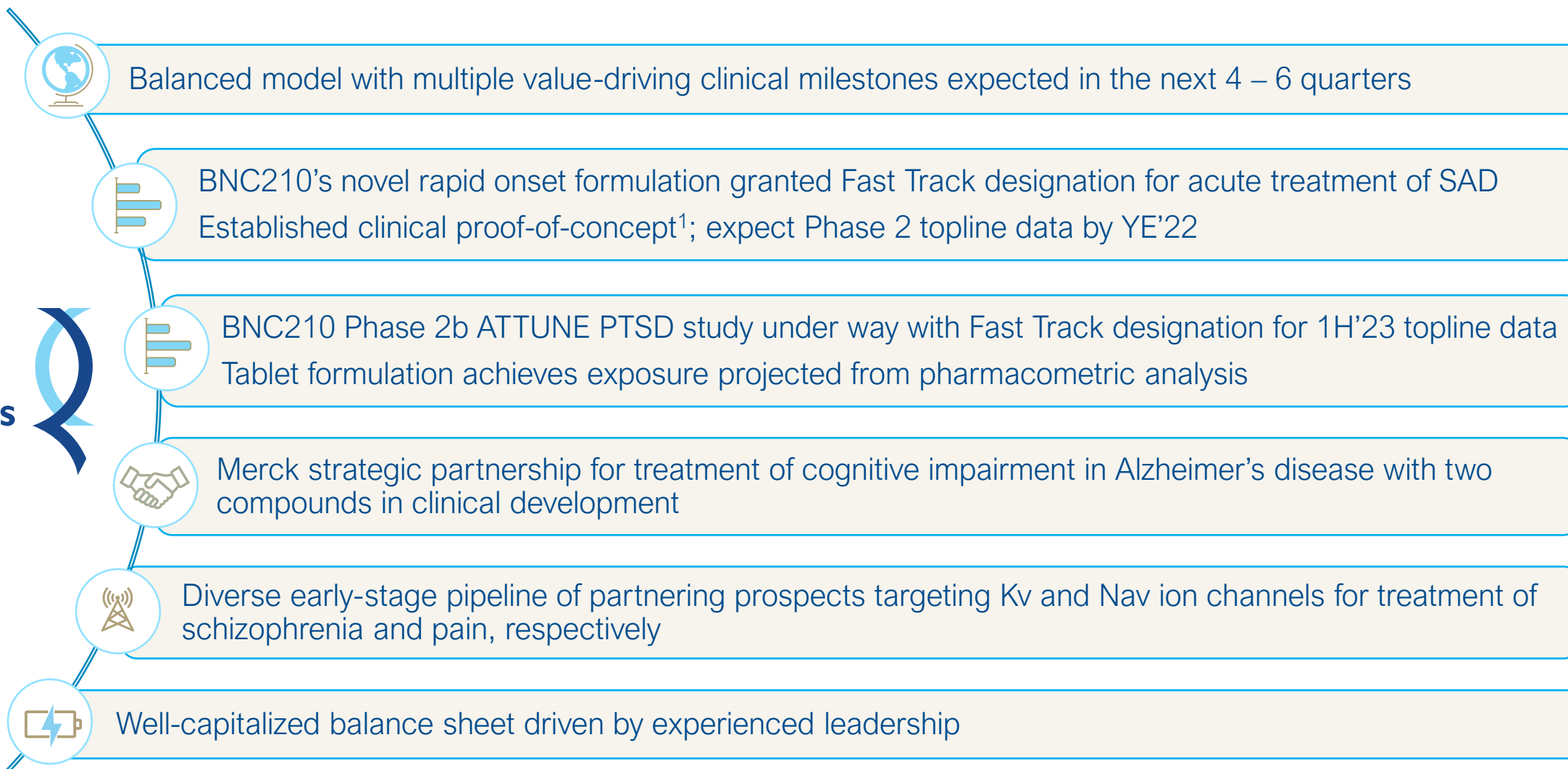


Figures as of March 30, 2022.





Bionomics



TO IMPROVE THE
LIVES OF
PATIENTS WITH
SERIOUS
CNS DISORDERS

THANK YOU

