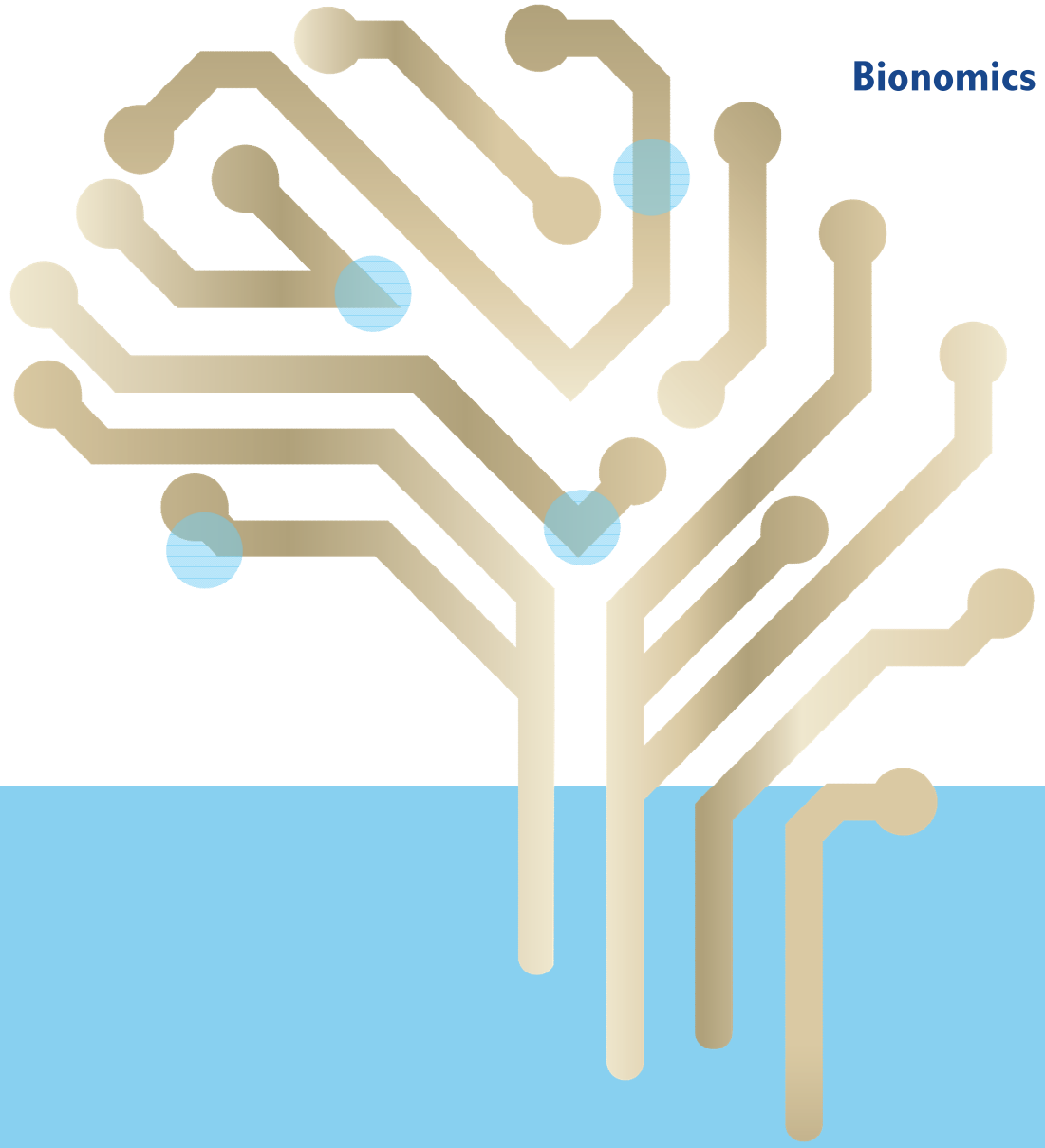
Bionomics Limited
2022 Annual General Meeting

Executive Chairman's Presentation

16 NOVEMBER, 2022

Improving the Lives of Patients with Serious CNS Disorders



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Bionomics Highlights

Targeting Social Anxiety Disorder (SAD), Post-Traumatic Stress Disorder (PTSD) and cognitive dysfunction associated with Alzheimer's disease, schizophrenia and other CNS conditions

Large underserved markets with over 25 million patients in the US alone suffering from SAD and PTSD and no new FDA approved therapies in nearly two decades

BNC210 (negative allosteric modulator of the α7 nicotinic acetylcholine receptor)

- ✓ Clinical proof of concept in Generalized Anxiety Disorder (GAD[2]) and panic attack model
- ✓ In Phase 2 PREVAIL trial with FDA Fast Track designation for acute treatment of SAD
- ✓ In Phase 2b ATTUNE trial with FDA Fast Track designation for treatment of 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

Cash runway beyond multiple near-term catalysts

CNS = Central Nervous System
MOU = Memorandum of Understanding

1. *Bluestar BioAdvisors*
2. *Wise et al 2020, Biological Psychiatry; Perkins et al 2021, Molecular Psychiatry*

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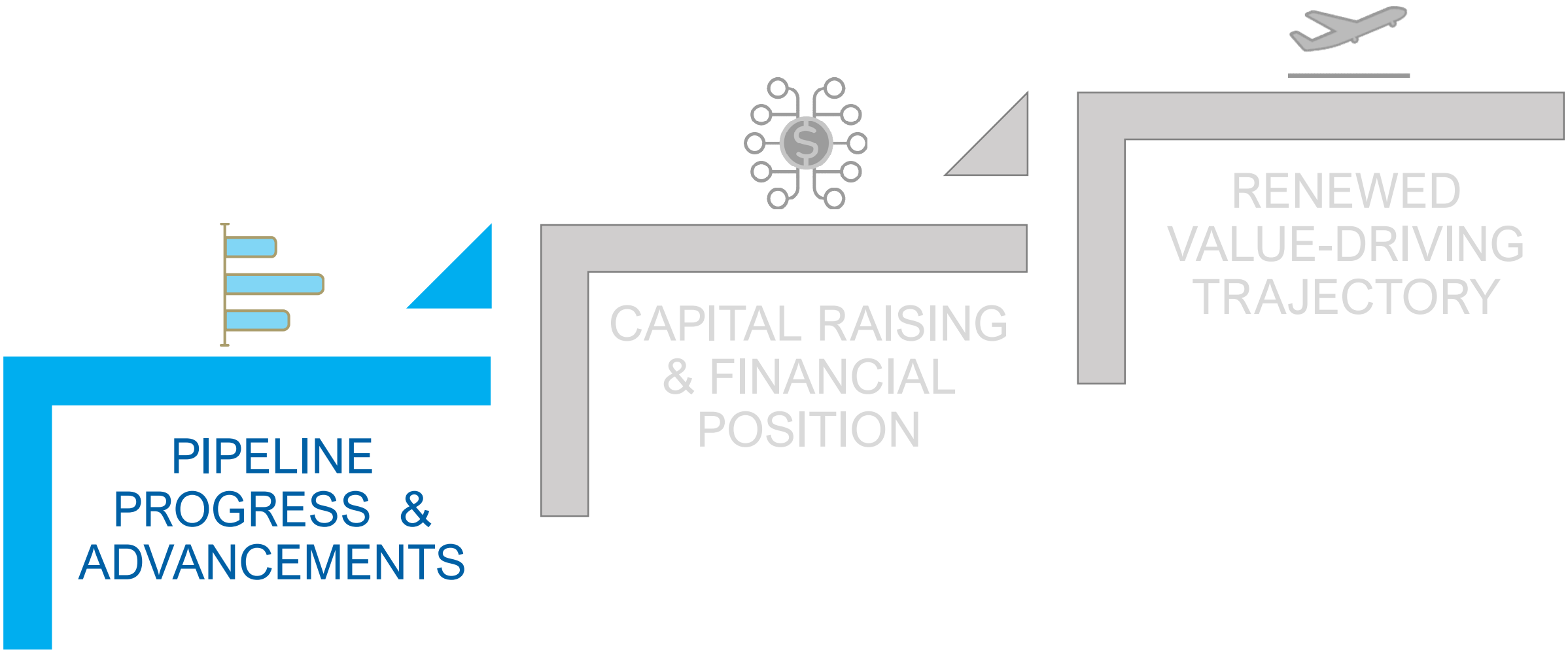
Focused CNS Pipeline with Multiple Catalysts on the Horizon

Program	Indication	Pre-Clinical	Phase 1	Phase 2	Phase 3	Expected Timing
Proprietary Programs:						
BNC210 α7 receptor NAM	Social Anxiety Disorder (SAD)			PREVAIL		Study underway Topline Data: YE 2022
	Post-Traumatic Stress Disorder (PTSD)			ATTUNE		Study underway Topline Data: mid 2023
Collaboration Programs:						
EmpathBio BNC210	+MDMA derivative EMP-01 (PTSD)		MOU to explore combination treatment regimen			Feasibility assessment
MERCK Collaboration α7 receptor PAM	2 candidates for Cognitive Deficit in Alzheimer's					Phase 1 safety & biomarker studies ongoing

FDA Fast Track designation

NAM = Negative Allosteric Modulator
PAM = Positive Allosteric Modulator

FY2022 Recap and Key Milestones



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Pipeline Progress & Advancements: Proprietary BNC210 Pipeline

- Phase 2 PREVAIL Study in Social Anxiety Disorder (SAD) started in beginning of calendar year 2022 and has completed enrollment with topline data expected in December 2022
- Continued management and oversight of recruitment for the ongoing BNC210 ATTUNE Post-Traumatic Stress Disorder (PTSD) Phase 2b trial
- Strategic evaluation of expansion of BNC210 to leverage its potential as a *"Pipeline in a Pill"* for future clinical and commercial development

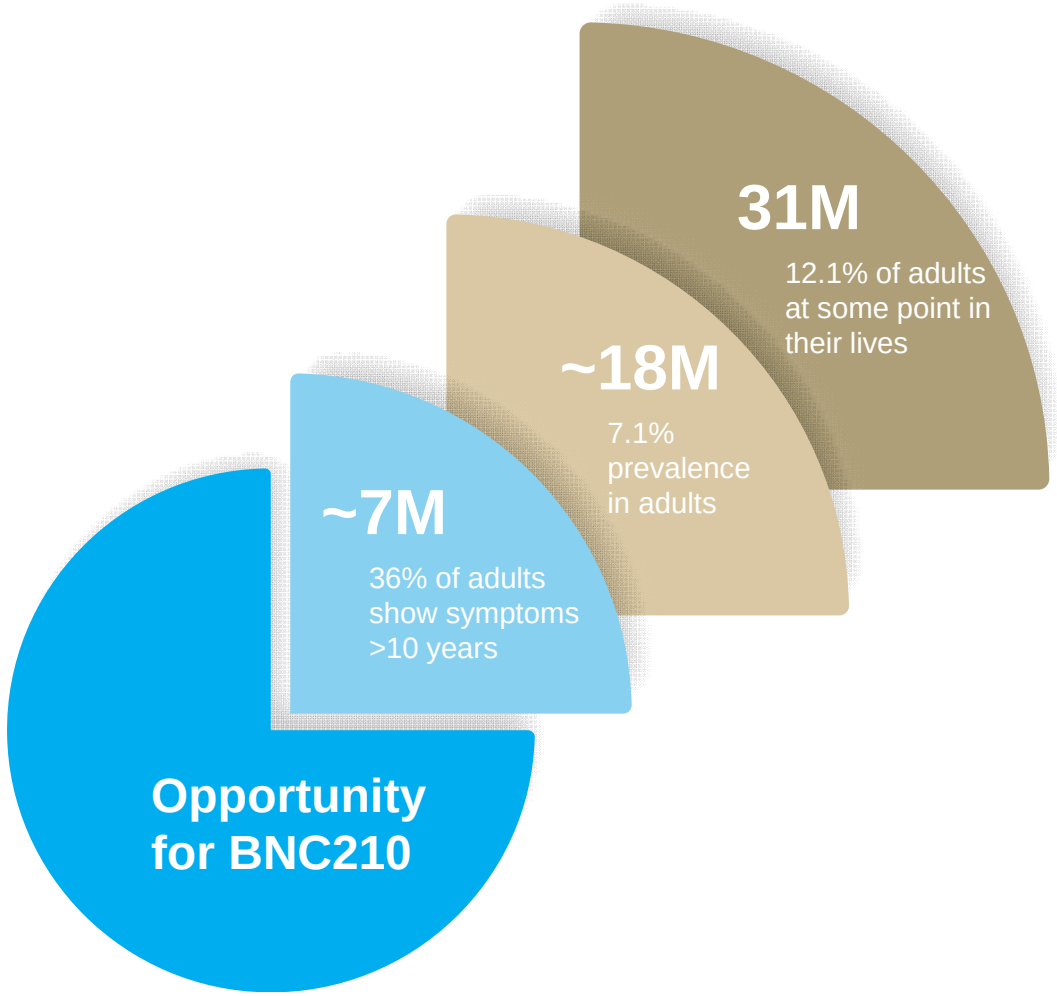
Social Anxiety Disorder: Targeting a Large Segment of the Anxiety Market

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; a reoccurring episodic disorder

Amongst the largest mental health conditions with lifetime prevalence affecting >31M Americans. Triggers that exacerbate anxiety can occur at any time



Sources:
US Census Bureau. https://www.census.gov/library/stories/2021/08/united-states-adult-population-grew-faster-than-nations-total-population-from-2010-to-2020.html
NIMH. "Social Anxiety Disorder" data from 2017 National Comorbidity Survey (NCS). https://www.nimh.nih.gov/health/statistics/social-anxiety-disorder.shtml
Anxiety and Depression Association of America (ADAA). "Social Anxiety Disorder - Understand the Facts" https://adaa.org/understanding-anxiety/social-anxiety-disorder

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BNC210 Potentially Addresses the Shortcomings of Existing Social Anxiety Disorder Medications

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

	CURRENT THERAPIES FOR THE TREATMENT OF ANXIETY AND STRESSOR-RELATED DISORDERS*					
	DRUG	FAST ACTING	NO SEDATION	NO WITHDRAWAL SYNDROME	NO MEMORY IMPAIRMENT	NO MOTOR IMPAIRMENT
	BNC210	✓	✓	✓	✓	✓
Used off-label for as-needed treatment	Benzodiazepines[1]	✓	X	X	X	X
Approved for SAD	SSRIs / SNRIs[2]	X	✓	X	✓	✓

** Potential benefits based on analysis of data from separate studies and not on results that have been obtained from head-to-head studies. Such data may not be directly comparable due to differences in study protocols, conditions and patient populations. Accordingly, cross-trial comparisons may not be reliable predictors of the relative activity or other benefits of BNC210 compared to existing therapies or other product candidates that may be approved or are in development for the treatment of PTSD or SAD. The potential benefits of BNC210 does not imply an expectation of regulatory approval which is solely within the authority of the FDA (or applicable foreign regulator).*

1. *Includes Valium and certain other benzodiazepines*
2. *Includes Prozac and certain other SSRIs (Selective Serotonin Reuptake Inhibitors) / SNRIs (Serotonin-Norepinephrine Reuptake Inhibitors)*

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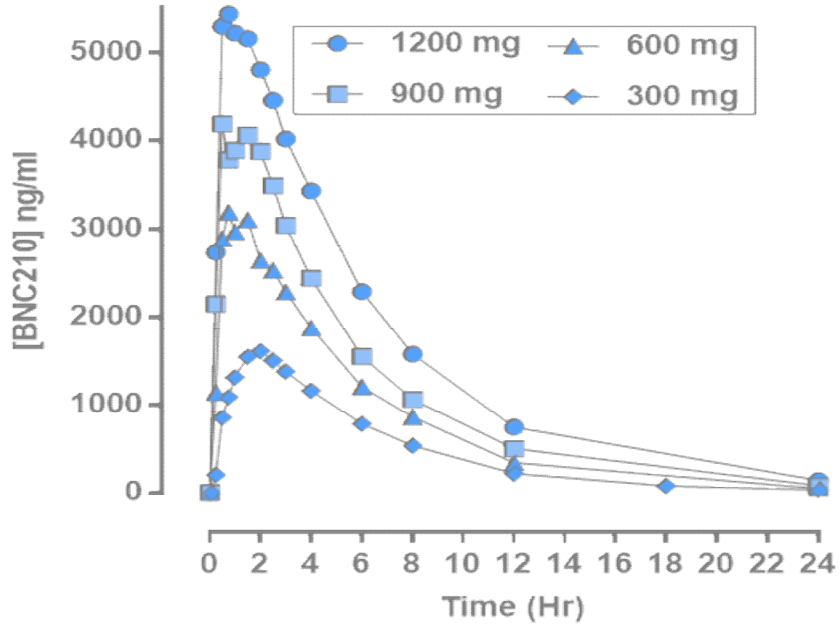
BNC210's Unique Profile is Well-Positioned for Acute Treatment of SAD

Rapid Onset of Action with BNC210 Formulation

45 – 105 min to reach maximum blood concentrations across dose range following oral administration of tablet



Potentially well-suited for acute dosing – rapidly absorbed with coverage extending for several hours

Proof of Concept in GAD and Panic Attack Model

- SAD shares many characteristics with General Anxiety Disorder (GAD), including a common neural basis in amygdala hyperactivation expressed as excessive or unrealistic anxiety
- BNC210 clinically demonstrated its potential for reducing anxiety in acute treatment of GAD patients and following panic induction in healthy volunteers
- Observed acute anxiolytic activity reduction of BNC210 similar to lorazepam without sedating properties or addiction liability
- Our studies also provide evidence of clear demonstration of clinical activity using biomarker data including EEG and fMRI

EEG = Electroencephalogram
fMRI = Functional magnetic resonance imaging

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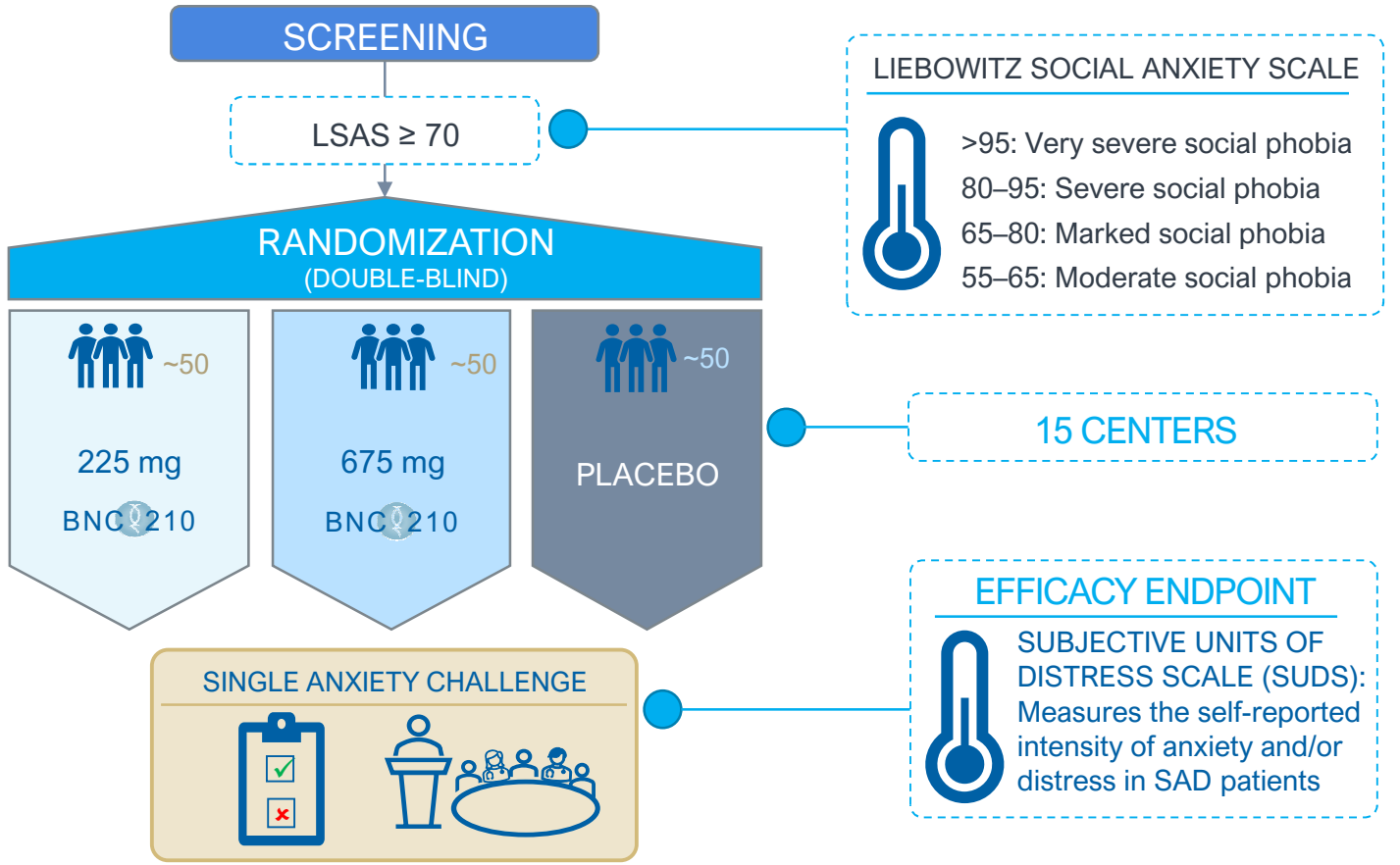
BNC210 Phase 2 Social Anxiety Disorder Trial

PREVAIL Study

Acute Social Anxiety Disorder Study Highlights

- Leveraging FDA precedent on simplified public speaking challenge endpoint for acute anxiety reduction vs. placebo*
- Cost-effective trial with an efficacy endpoint conducive to rapid data generation
- FDA Fast Track designation
- Phase 2 trial underway and will read out topline data expected by end of 2022

Phase 2 Study Design



*Based on path of CNS peer proceeding with registrational Phase 3 endpoint

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PTSD Represents a Significant Unmet Need and Market Opportunity

A Chronic Psychiatric Disorder with no newly approved pharmacotherapy in almost two decades

PTSD Represents a Significant Unmet Need

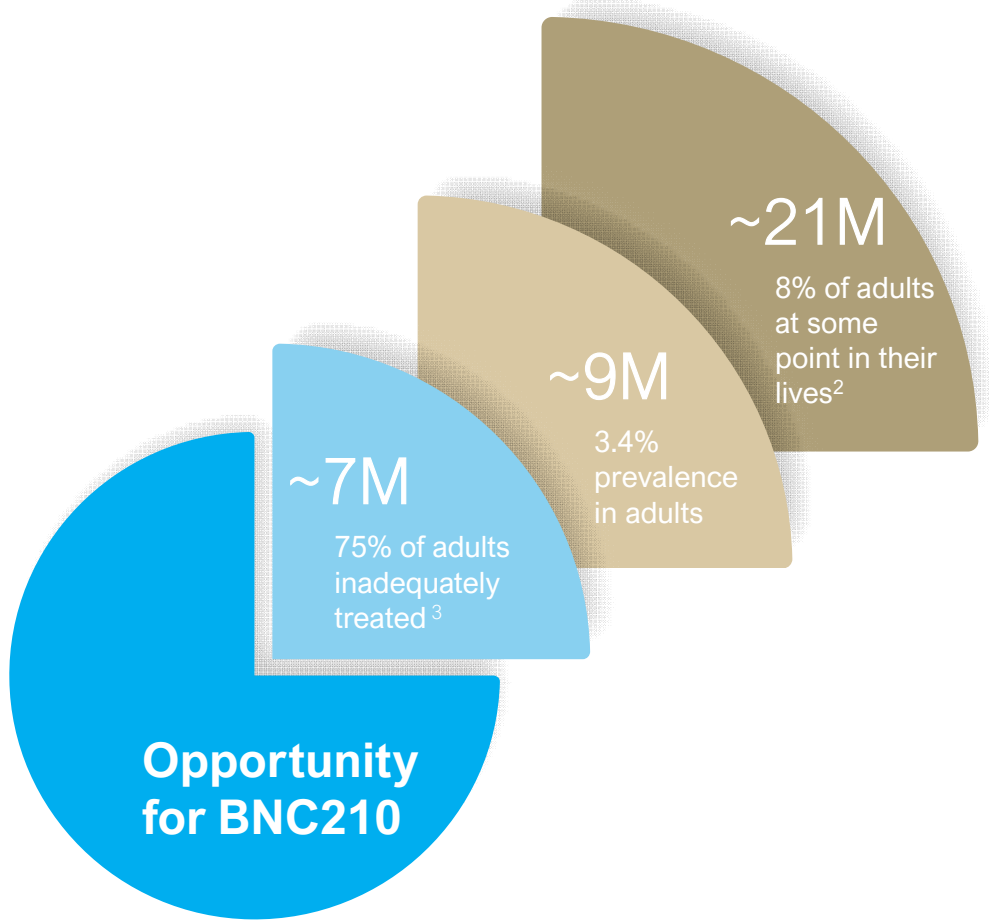
A debilitating progressive disorder that leads to social, occupational and interpersonal dysfunction

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 therapy[1]



1. *Lee DJ, et al. Psychotherapy versus pharmacotherapy for posttraumatic stress disorder: systemic review and meta-analyses to determine first-line treatments. Depress Anxiety. 2016;33(9):792–806.*
2. *Kilpatrick, D., Resnick, H., Milanak, M., Miller, M., Keyes, K. and Friedman, M., 2013. National Estimates of Exposure to Traumatic Events and PTSD Prevalence Using DSM-IV and DSM-5 Criteria. Journal of Traumatic Stress, 26(5), pp.537–547; 2 Mayo LM, Asratain A., Lindé J et al. Elevated Anandamide, Enhanced Recall of Fear Extinction, and Attenuated Stress Responses Following Inhibition of Fatty Acid Amide Hydrolase: A Randomized, Controlled Experimental Medicine Trial. Biol Psychiatry. 2020 Mar 15; 87(6): 538-54*
3. *Only 20 to 30% of PTSD patients achieve clinical remission on SSRI therapies.*

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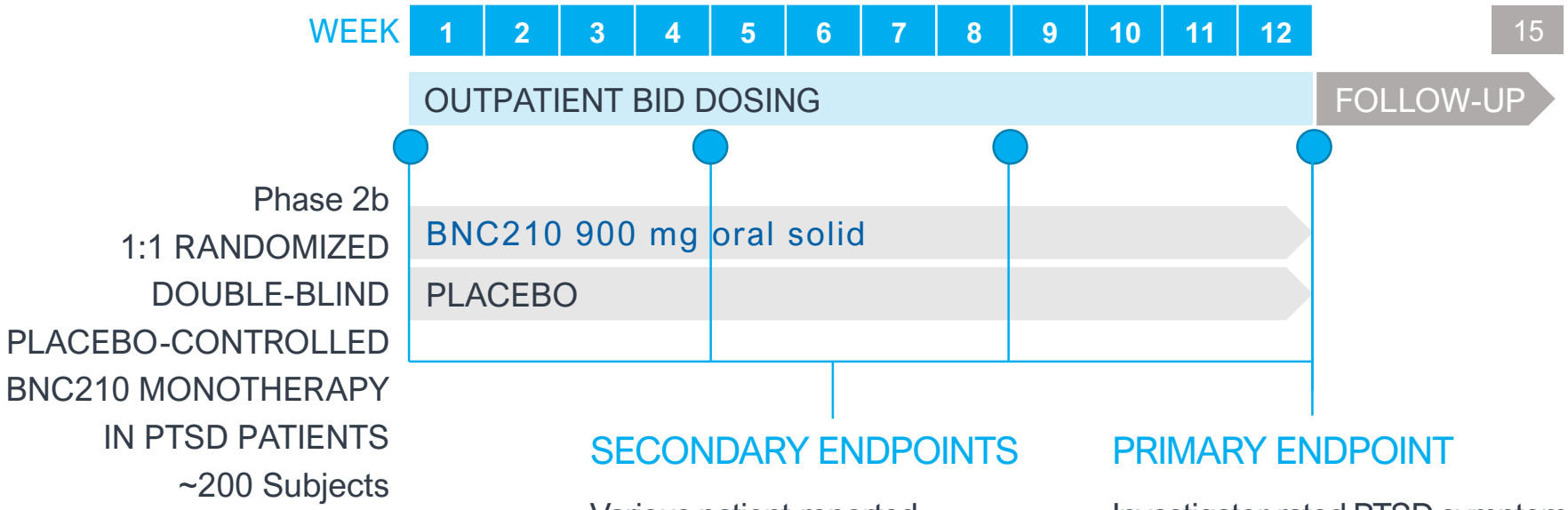
BNC210 Phase 2b PTSD Trial Underway

ATTUNE Study



SECONDARY ENDPOINTS

Various patient-reported symptoms of PTSD, changes in anxiety and depression symptoms, and global and social functioning; Safety & tolerability endpoints

PRIMARY ENDPOINT

Investigator-rated PTSD symptoms on CAPS-5 Total Symptom Severity Scores in change from Baseline to Week 12 compared to placebo

Phase 2b

Single trial for monotherapy treatment in PTSD

KEY INCLUSION CRITERIA

Female and male (18 – 75 years)
Current PTSD diagnosis
CAPS-5 ≥ 30 (Screening & Baseline)
(& ≤ 25% decrease Screening to Baseline)

~25 Sites

Fast Track designation from FDA

Topline data expected mid 2023

BID = Twice daily dosing
CAPS-5 = Clinician-Administered PTSD Scale for the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)

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BNC210 “Pipeline in a Pill”: Development Strategy Highlights

Seek approval in first acute indication: Acute SAD

Potential for rapid approval in acute setting

Seek approval in first chronic indication: PTSD

Building robust safety database for BNC210 as a potential chronic treatment[1]

Leveraging robust safety database across BNC210 programs

Evaluate other indications for BNC210

Evaluate other acute and chronic anxiety and stressor-related disorders

Co-Morbid Anxiety

Chronic Social Anxiety Disorder
Generalized Anxiety Disorder
Panic Disorder
Bipolar Disorder
Major Depressive Disorder

Neurodegenerative Disease

Anxiety & Agitation

1. *Clinical data observed in ~400 subjects to date in 12 clinical trials, excluding ongoing ATTUNE and PREVAIL studies.*

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Pipeline Progress & Advancements: Collaborations

- Merck a7 PAM program for the treatment of cognitive deficits in Alzheimer's, schizophrenia and other CNS disorders continuing to progress with two candidates in clinical development
- Memorandum of Understanding with EmpathBio for BNC210 & EMP-01 (MDMA derivative) combination for treatment of PTSD
- Legacy oncology assets: Carina Biotech expects to advance LGR5 (BNC101 target) CAR-T cell into Phase 1/2a clinical trials in patients with advanced colorectal cancer

Merck & Co Strategic Collaboration: Positive Allosteric Modulators (PAMs) of α7 Nicotinic Acetylcholine Receptor for Treatment of Cognitive Deficits

α7 Receptor PAMs correct hypocholinergic states in cognitive dysfunction and impairment

MERCK
PARTNERSHIP

MSD Collaboration Overview

2014 agreement to develop α7 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 α7 receptor PAM candidates in early-stage Phase 1 safety and biomarker studies for cognitive impairment

1st compound has completed Phase 1 safety clinical trials in healthy subjects and biomarker studies ongoing

In 2020, a second molecule with an improved potency profile in non-human primate models was advanced into Phase 1 clinical trials

Wang et al. J Pharmacol Exp Ther 373:311–324, May 2020 https://pubmed.ncbi.nlm.nih.gov/32094294/
PAM = Positive allosteric modulator
MSD = A tradename of Merck & Co., Inc., Kenilworth NJ USA

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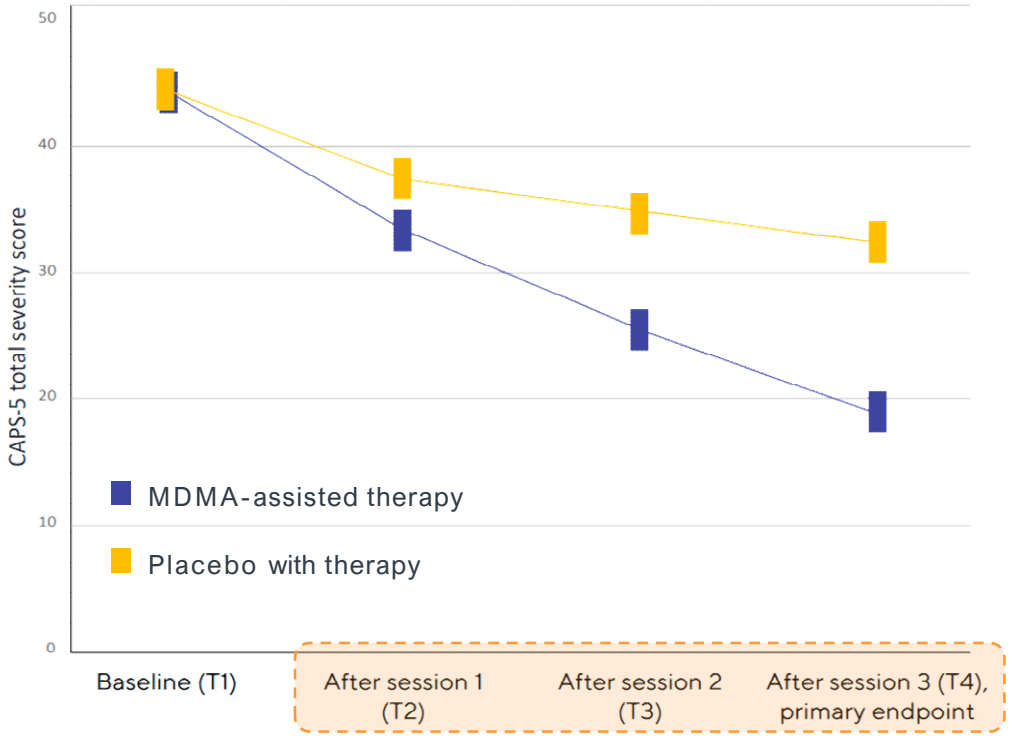
Memorandum of Understanding with EmpathBio for BNC210 and MDMA Derivative for PTSD

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



Joint Feasibility Assessment

EMP-01 (3,4-Methylenedioxymethamphetamine) (MDMA) derivative BNC210 + EMP-01 could relieve 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 CBT 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

1. 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)
Mitchell et al., "MDMA-assisted therapy for severe PTSD: a randomized, double-blind, placebo-controlled phase 3 study" (2021)
CBT = Cognitive Behavioral Therapy

Legacy Oncology Asset Monetization to Drive Value: BNC101

Exclusive BNC101 Oncology License Agreement for the Development of CAR-T Therapeutics

Licensing Overview

Exclusive Agreement to license Bionomics' BNC101 oncology drug candidate to Carina Biotech for the development of Chimeric Antigen Receptor T cell (CAR-T) therapy, which harnesses the body's immune system to fight cancer.

Bionomics eligible for up to A$118M in clinical & development milestones plus royalty payments if Carina fully develops and markets the new therapy.

Bionomics eligible to share in sub-licensing revenues in early clinical development and receive a substantial double-digit portion of the revenues in later stages of clinical development if Carina sub-licenses the CAR-T treatment

Development Updates

In September 2021, Carina announced that it plans to initiate a clinical trial of BNC101 CAR-T therapy for the treatment of advanced colorectal (bowel) cancer in late 2022

Bionomics retains BNC101 for other types of therapies

FY2022 Recap and Key Milestones

Bionomics

Stock, Financial and IP Snapshot

Lean operations with modest burn

Well-capitalized through CY2023, bolstered by Aus. R&D tax credits

A$33.6M (US$23.1M) of cash and cash equivalents at 30 June

Listed on two global exchanges

ASX : BNO

Nasdaq : BNOX

Leading Significant Investors

APEIRON INVESTMENT GROUP

BVF PARTNERS L.P.

PRESIGHT CAPITAL

MERCK

Research Coverage

BERENBERG PRIVATBANKIERS SEIT 1590

CANTOR Fitzgerald

EVERCORE

HCW H.C.WAINWRIGHT&CO.

LOOP CAPITAL

William Blair

Robust CNS IP Portfolio

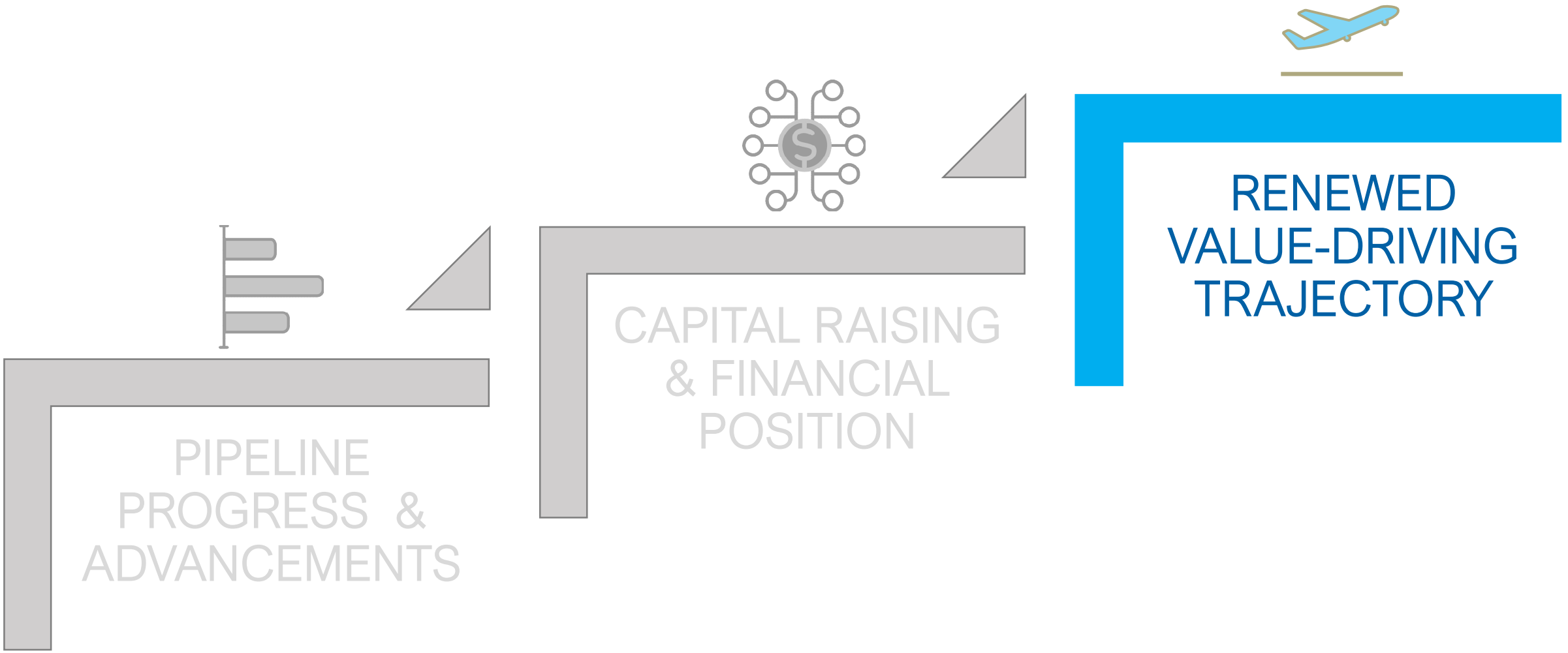
USA: 10 granted (incl. continuations/divisional) from 4 PCT Applications, 2 PCT Applications pending

WW: 29 granted from 4 PCT Applications, 2 PCT Applications pending

BNC210 freedom to operate opinion

Figures as of June 30, 2022

FY2022 Recap and Key Milestones



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Bionomics Outlook: Renewed Value-driving Trajectory

Balanced business model with multiple value-driving clinical milestones expected over the next 4 quarters

BNC210 potential in large underserved markets with over 25 million patients in the US alone suffering from SAD and PTSD and no new FDA approved therapies in nearly two decades

BNC210's Phase 2 PREVAIL trial under way with Fast Track designation for acute treatment of SAD with topline data expected by YE 2022; Established clinical proof-of-concept

BNC210 Phase 2b ATTUNE PTSD study under way with Fast Track designation, topline data expected by mid 2023; Tablet formulation achieves blood exposure projected from pharmacometric analysis

Merck strategic partnership for treatment of cognitive impairment in Alzheimer's disease and Schizophrenia with two compounds in clinical development

Well-capitalized balance sheet and experienced leadership