Bionomics

CREATING INNOVATIVE THERAPIES
FOR CNS DISORDERS.

# 2020 ANNUAL GENERAL MEETING
# EXECUTIVE CHAIRMAN'S PRESENTATION

BNO (Australia: ASX)
BNOEF (USA: OTCQB)

20 November 2020

Central Nervous System (CNS)

# Safe Harbor Statement

## Factors Affecting Future Performance

This presentation contains "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 and BNC101), 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 funding arrangements, 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, our inability to integrate acquired businesses and technologies into our existing business and to our competitive advantage, 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.

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.

# Bionomics Overview

- Global, clinical stage biopharmaceutical company leveraging proprietary platform technologies, ionX and MultiCore, to discover and develop a deep pipeline of novel drug candidates targeting ion channels in CNS disorders

- Lead candidate, BNC210, is a novel, orally-administered, first-in-class, negative allosteric modulator of the α7 nicotinic acetylcholine receptor, in development for anxiety-, depression-, and stress-related disorders:
  - Demonstrated target engagement and proof-of-biology (anti-panic) in healthy subjects
  - Positive data from Phase 2 trial in Generalized Anxiety Disorder (GAD) patients reported in September 2016
  - Phase 2 exploratory trial in Agitation in elderly patients reported in June 2019 showed good safety profile but did not reach primary endpoint
  - **Back on track to leverage large opportunity for treatment of Post-Traumatic Stress Disorder (PTSD) with novel tablet formulation and Fast Track Designation granted by the FDA**

- Strategic partnership with Merck & Co., (MSD):
  - Cognition therapeutic candidate (US$20M upfront) entered clinical development and triggered US$10M milestone payment (Q1, CY2017) in a deal valued up to US$506M in upfront, research and milestone payments plus additional royalties on net sales of licensed drugs
  - Merck & Co equity investment in October 2015
  - Two candidates in development for the treatment of Alzheimer's disease

# Bionomics Overview …..

- Oncology partnership with Carina Biotech for BNC101 CAR-T therapeutic development:
  - Bionomics is eligible to receive up to A$118M in clinical development milestones plus royalty payment if Carina fully develops and markets the new therapy. In the event that Carina sub-licenses the CAR-T treatment, Bionomics is eligible to share in the sub-licensing revenues.
  - Bionomics retains rights to BNC101 for all other (non CAR-T) types of therapies.

- Emerging pipeline of first-in-class ion channel CNS programs:
  - Nav1.7/1.8 candidate for treatment of chronic pain
  - Kv3.1/3.2 candidate for treatment of cognitive deficits in schizophrenia, Alzheimer's and autism spectrum disorder

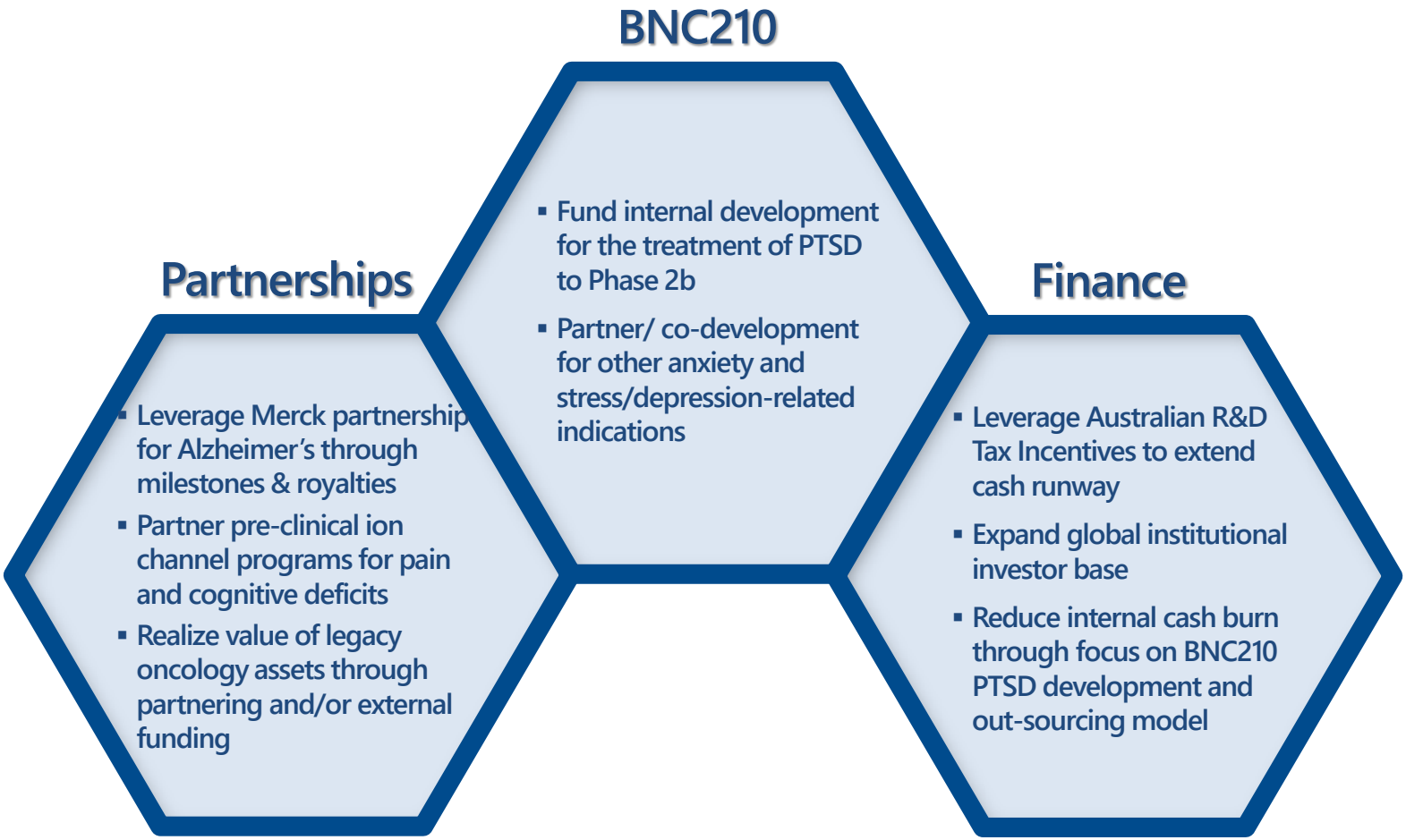
- Clinical stage oncology pipeline:
  - BNC105: small molecule in two mid stage, externally funded trials in solid and liquid (AML/CLL) tumours
  - BNC101: early-stage antibody targeting LGR5 which has completed Phase 1 studies

- Experienced Management and Board of Director and strong international investor base

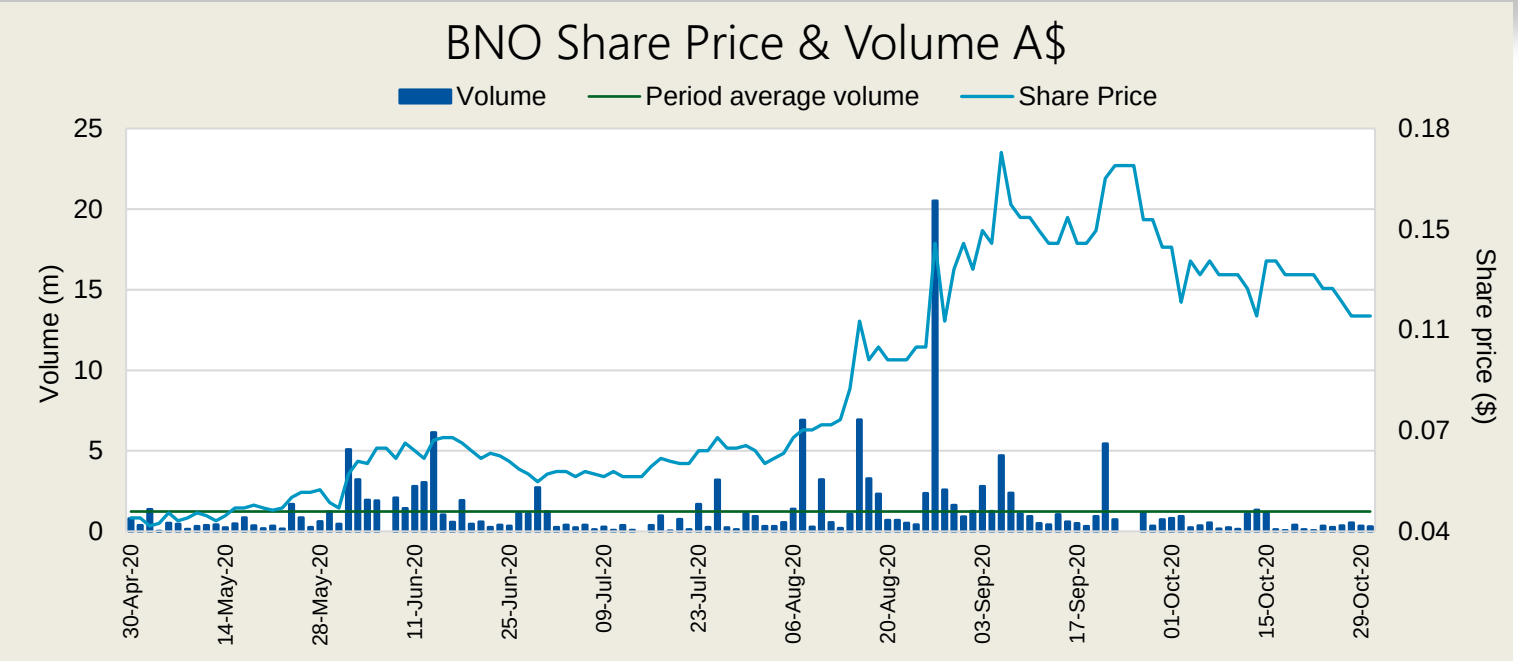
- Equity Financings from June – October 2020: raised A$7,564,498

- Financials: Cash at 31 October 2020: A $ 8,397,497

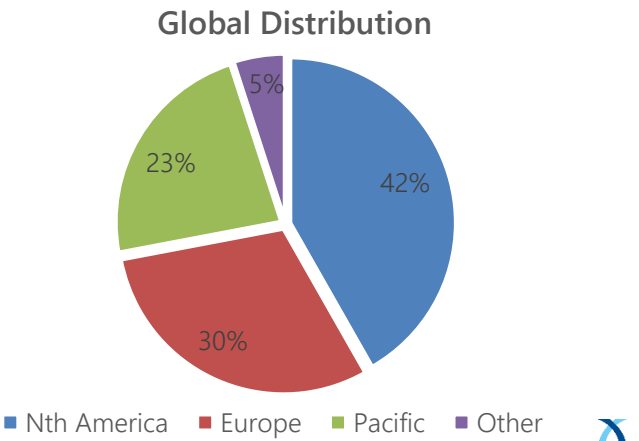
# Bionomics' Strategy and Value Proposition



# Bionomics Stock & Financial Information




- Cash at 31 October 2020: A$8.4MM
- Share Register Issued Capital 735,247,550 shares
- Market capitalization of ~A$84.5MM *(as at 30 Oct 2020)*
- Significant Investors
  - Apeiron Investment Group Ltd.
  - Biotechnology Value Fund
  - Thiel Capital
  - Galaxy Investment Partners (M Novogratz)
  - Merck & Co.



# Board of Directors

## Errol De Souza PhD
## Executive Chairman

- More than 35 years experience in Biotech, Big Pharma and Academia
- Previous President & CEO of multiple public (Biodel, Synaptic) & private (Neuropore, Archemix) biotech Companies
- Founder of Neurocrine Biosciences
- Previous SVP Aventis Pharmaceuticals
- Previous Head of CNS Diseases, DuPont Merck
- Multiple public and private Boards

## David Wilson

- Chairman & Founding partner of WG Partners
- Over 30 years' experience in investment banking in City of London
- Previous CEO of Piper Jaffray Ltd
- Previous Joint Head of UK Investment Banking Group, ING Barings
- Previous head of Small Companies Corporate Finance, Deutsche Bank
- Previous Head of Small Companies Corporate Broking, UBS

## Jane Ryan PhD

- Over 30 years of international experience in the pharmaceutical and biotechnology industries
- Worked in Australia, the US and the UK with companies including Peptech, Roche, Cambridge Antibody Technology and Biota Holdings.
- Led many successful fundraising campaigns and Licensing initiatives inclusive of a $230m US government contract
- Non-Executive Director of Anatara Lifesciences

## Alan Fisher

- 24 years at accounting firm Coopers & Lybrand as lead Advisory Partner – Melbourne Corporate Finance Division
- Last 22 years as founder of his own Corporate Advisory company specializing in M&A business restructurings, strategic advice and capital raisings for small cap companies
- Non-Executive chairman – Centrepoint Alliance Ltd & IDT Aust.
- Non-Executive Director and chair of Audit and Risk committee of Thorney Technology

# Board of Directors

## Srinivas Rao

- Chief Scientific Officer at ATAI Life Sciences AG.
- Over 19 years of professional experience in pharmaceutical and biotechnology industries.
- Has held the titles of Chief Scientific, Medical , or Executive Officer at companies ranging from Venture backed start-ups to vertically-integrated publicly traded pharmaceutical companies.
- PhD in neurobiology form Yale Graduate School
- M.D. from Yale School of Medicine

## Aaron Weaver

- Managing Director at Apeiron Investments focused on the life sciences sector.
- Snr General Counsel supporting fundraising & IR at ATAI Life Sciences AG.
- Qualified Chartered Financial Analyst (CFA) and a registered solicitor in the UK
- Previously an investor banker at Credit Suisse in London within the Capital Markets Solutions team.
- Previous capital markets solicitor at Allen & Overy LLP.

## Mitchell Kaye

- COO BVF Partners
- Founding member of Xmark Opportunity Partners LLC
- Founding member of Brown Simpson Asset Management LLC
- Founder of MedClaims Liaison LLX
- Previous Managing Director Navigant Capital Advisors, Head of Navigants Financial Institutions restructuring Solutions team.

# FY2020 and YTD in Review – Key Developments

- July 2019 - Bionomics receives further R&D Tax Incentive Refund for FY2018 of A$1.3M
- September 2019 – BNC210 positive feedback from FDA Type C Meeting and Fast Track application filed for PTSD; BNC210 solid dose formulation achieves blood levels for future development in PTSD
- November 2019 – FDA grants Fast Track designation to the BNC210 development program for the treatment of PTSD and other trauma- and stressor-related disorders
- November 2019 - Receipt of A$5.2M R&D Tax Incentive Refund
- March 2020 – Sale of Bionomics French subsidiaries (Neurofit & Prestwick) to Domain Therapeutics
- April 2020 – Recruitment completed in Phase 2 Nivolumab/BNC105 combination trial in colorectal cancer patients
- June 2020 – Recapitalisation led by sophisticated life sciences investor – Apeiron Investment Group Ltd with investment of A$5,433,320 and commitment to underwrite a raise of A$15MM
- August 2020 – EGM Meeting - >95% shareholder approval of all resolutions related to Apeiron investment
- September 2020 – Clinical updates: Selection of final BNC210 tablet formulation for PTSD trial; completion of Merck Phase 1 safety trial on lead molecule and advancement of second candidate in development
- June – September 2020 – Appointment of three new directors (Mr Weaver and Drs Ryan and Rao)
- October 2020 – Completion of Entitlement Offer to raise A$2,131,180
- October 2020 - Receipt of A$2.9M R&D Tax Incentive Refund for FY2019
- November 2020 – Bionomics licenses oncology drug candidate BNC101 to Carina Biotech for CAR- T therapy development

# Bionomics' CNS Focused Pipeline

| Program | Pre-IND | Phase 1 | Phase 2a | Phase 2b |
|---|---|---|---|---|
| **BNC210**<br>α7 nAChR Negative Allosteric Modulator (NAM) | PTSD study, 193 pts, results released October 2018 | | | |
| | Agitated Elderly in Hospital Setting, exploratory study, 38 pts, results released June 2019 | | | |
| | GAD study, 24 pts, results released September 2016 | | | |
| | Panic - CCK panic model in 15 healthy volunteers | | | |
| | Nicotine-induced EEG changes in 24 healthy volunteers | | | |
| **Merck & Co. Collaboration**<br>α7 nAChR* Positive Allosteric Modulator (PAM) | Two candidates in development Phase 1 studies ongoing | | | |
| **PAIN**<br>Nav1.7/Nav1.8 Inhibitors | Candidate | | | |
| **COGNITION**<br>Kv3.1/3.2 Activators | Series Lead | | | |





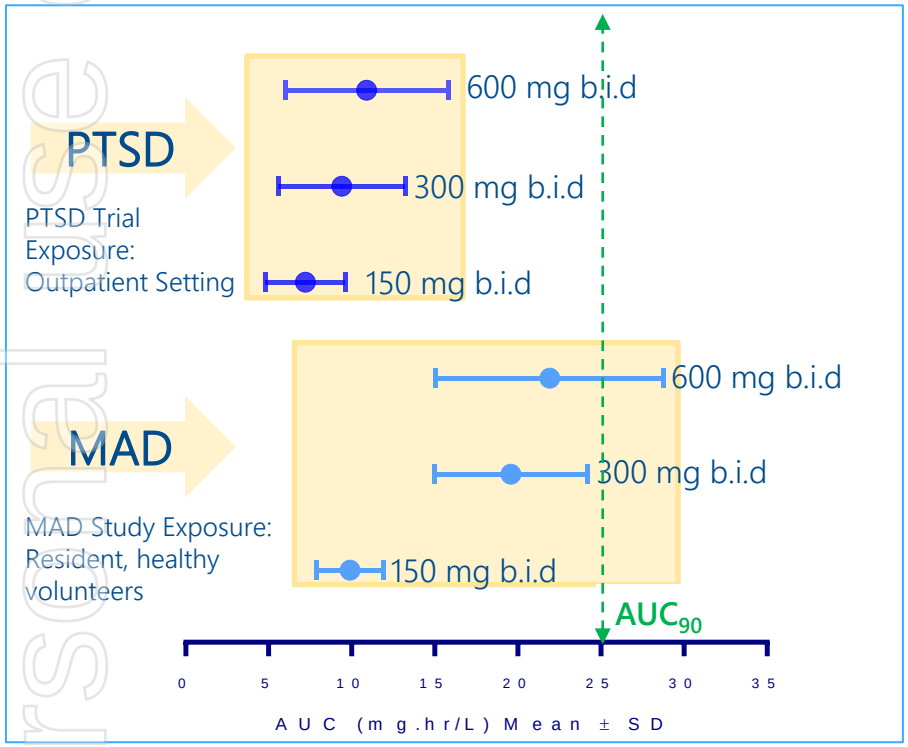
CCK = cholecystokinin; EEG = electroencephalogram; GAD = Generalized Anxiety Disorder; nAChR = nicotine acetylcholine receptor

# BNC210: Back on Track for PTSD!

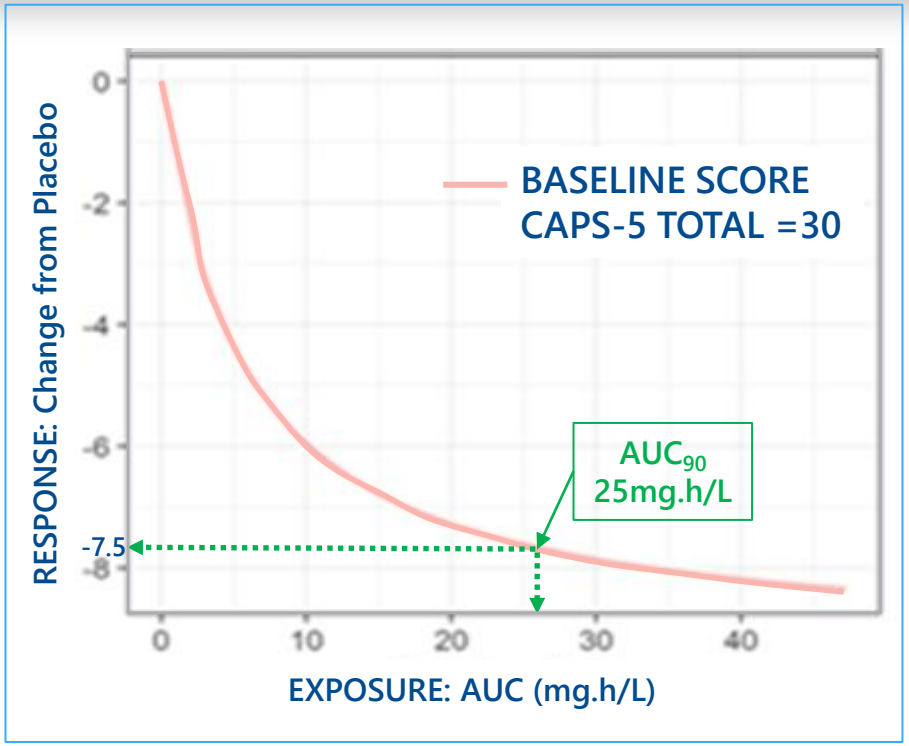
- BNC210 is back on track to leverage large opportunity for treatment of Post-Traumatic Stress Disorder (PTSD)
  - **October 2018:** Phase 2b trial did not reach primary endpoint on a dosage basis
  - **February 2019:** PK-PD modelling revealed subjects' under-exposed to BNC210 due to liquid suspension being unsuitable for outpatient setting; identified blood exposure levels (25 mg.h/L) projected to meet primary endpoint
  - New solid dose formulation identified (**February 2019**) and demonstrated to achieve blood exposure required for future PTSD trials (**September 2019**)
  - **3QCY2019:** Face-to-Face Type C meeting with FDA to discuss design of a further trial and opportunity for Fast Track designation
  - **September 2019:** Fast Track designation application submitted to the FDA
  - **November 2019:** FDA grants Fast Track designation for BNC210 development program for the treatment of PTSD and other trauma- and stressor-related disorders
  - **September 2020:** Tablet formulation optimized to increase loading capacity

# BNC210 Population PK Modelling Indicated Lower-than-Expected Drug Exposure in the PTSD Subjects

Population PK modelling indicated that exposure (AUC) values in the PTSD patients were ~60% of those expected based on data from the healthy volunteer Multiple Ascending Dose study which used the same doses and same suspension formulation with standardised meals.




# An Exposure-Response Relationship was Established for CAPS-5 Total Severity Scores (<0.01), where Higher AUC Values were Related to a Larger Effect




Shown here is the model-predicted exposure-response curve for a subject with a baseline CAPS-5 score of 30 – this was the mean baseline score for patients on the PTSD trial in the 600 mg, b.i.d. treatment group.



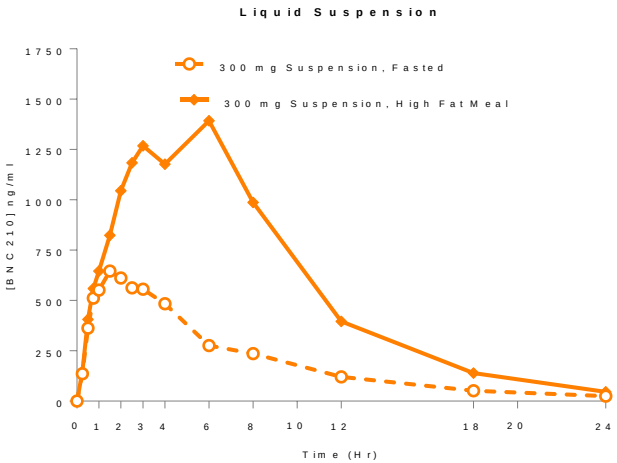


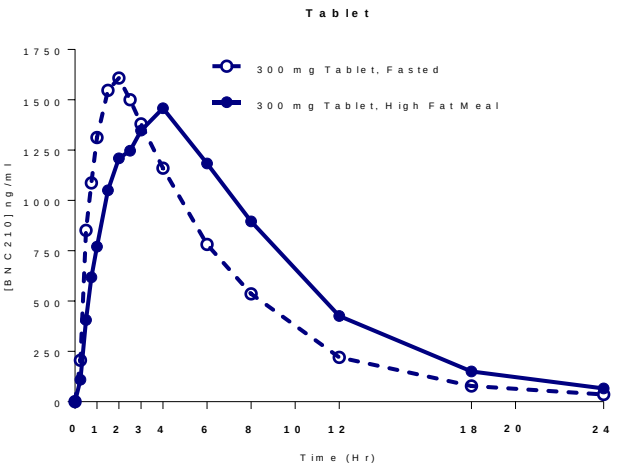
Bionomics

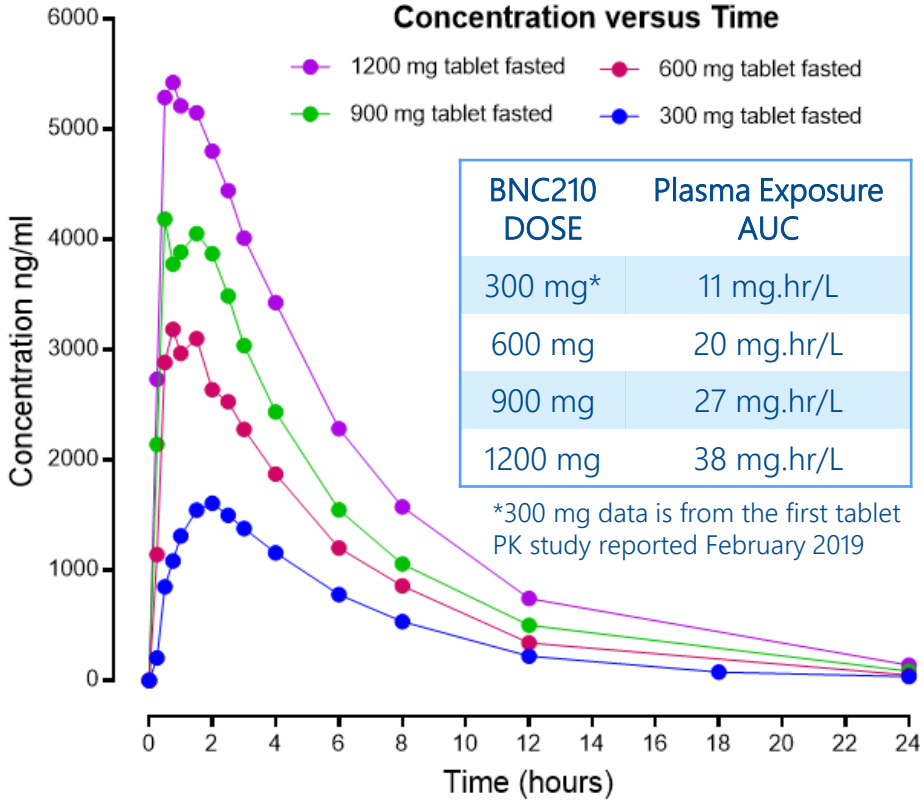
# BNC210 Tablet Formulation has Dose Linear Exposure and Overcomes Food Effect of the Liquid Suspension

**BNC210.009:** 300 mg dose of liquid suspension with food versus 300 mg doses of solid dose formulation, fed and fasted

**BNC210.010:** 600, 900 and 1200 mg doses of solid dose formulation in fasted subjects




| BNC210 DOSE | Plasma Exposure AUC |
|---|---|
| 300 mg* | 11 mg.hr/L |
| 600 mg | 20 mg.hr/L |
| 900 mg | 27 mg.hr/L |
| 1200 mg | 38 mg.hr/L |

*300 mg data is from the first tablet PK study reported February 2019

# BNC210 is Back on Track to Leverage Large Opportunity for Treatment of PTSD

## 2020: Preparations for Phase 2b PTSD Trial

- Optimized and selected the tablet formulation for a Phase 2b clinical trial
- Manufacturing underway of BNC210 tablets for a multiple dosing PK trial in healthy volunteers scheduled for late Dec 2020/Jan 2021
- Large scale manufacture of BNC210 drug substance and tablets for Phase 2b trial have been contracted

## 2021 – 2022: Implementation of Phase 2b PTSD Trial

- Conduct a Phase 2b clinical trial in ~200 PTSD patients comparing one dose of BNC210 with placebo on the change in CAPS-5 total severity scores at 12 weeks – target start date of late 2QCY2021
- CAPS-5 is the FDA-accepted primary endpoint for PTSD clinical trials

# Global License and Collaboration Agreement with MSD (Merck & Co.) in Cognition Provides Validation

- Partnership generated US$20M in upfront payment in 2014, research funding 2014-2017 and US$10M first clinical milestone in February 2017. Deal valued up to US$506M in upfront, research and milestone payments plus additional royalties on net sales of licensed drugs
- MSD (a tradename of Merck & Co., Inc., Kenilworth NJ USA) Collaboration Update:
  - Phase 1 safety clinical trials of the lead molecule in healthy subjects have been completed and there are ongoing plans for further biomarker studies
  - A backup molecule that showed an improved potency profile in preclinical animal models versus the current lead molecule is advancing into Phase 1 clinical trials


- Agreement covers research on BNC375 and related compounds
- BNC375 demonstrated potent memory enhancing properties in animal models – both episodic and working memory improved
- Targeting cognitive impairment in Alzheimer's, Parkinson's and other conditions

# Emerging CNS Pipeline for Partnering

- Small molecule Kv3.1 / Kv3.2 potassium ion channels activators
  - Kv3.1 / Kv3.2 activators represent a promising therapeutic strategy for improving cognitive dysfunction and negative symptoms in schizophrenia and other illnesses such as Autism Spectrum Disorder and Alzheimer's Disease
  - ~600 compounds synthesized; 3 chemical series developed and 2 series patented
  - Lead compound BL-76 fully reverses PCP-induced cognitive deficit in mice in the T-maze test

- Small molecule pan Nav inhibitors for treatment of chronic pain
  - Gain and loss-of-function mutations in Nav1.7, 1.8 and 1.9 have been associated with human pain
  - 1000+ compounds synthesized; 3 chemical series developed and patented
  - Bionomics' pan Nav inhibitors with functional selectivity for voltage gated sodium channels Nav1.7, Nav1.8 and potentially Nav1.9 offer potential to develop non-addictive therapeutics for chronic pain with less side effects

# Value in Non-Core Phase 1-2 Oncology Assets Leveraged Through External Funding and Partnering

- BNC105 - a Multi-Modal Small Molecule Tubulin Polymerization Inhibitor has completed four Phase 1 and Phase 2 clinical trials
  - Two externally-funded investigator-initiated clinical trials are in progress:
    - Phase 2 trial of BNC105 in combination with nivolumab (Opdivo) for the treatment of metastatic colorectal cancer sponsored by the Australasian Gastro-Intestinal Trials Group (AGITG) and funded by BMS; patient enrolment at 16 sites across Australia is complete with final results projected for early 2023
    - Phase 1 trial of BNC105 in combination with ibrutinib (Imbruvica) for the treatment of chronic lymphocytic leukemia funded by the Leukemia & Lymphoma Society (US)

- BNC101 - a First-in-Class Humanized Monoclonal Antibody to LGR5, a Cancer Stem Cell Receptor
  - BNC101 clinical dose and schedule were established in a Phase 1 trial in patients with metastatic colorectal cancer - the recommended Phase 2 dose was identified
  - Phase 2 ready: BNC101 in combination with standard of care treatment for gastro-intestinal cancers overexpressing LGR5
  - Potential for BNC101 to be developed as an Antibody-Drug-Conjugate (ADC) therapeutic or in combination with CAR-T being explored

# Exclusive BNC101 Oncology License Agreement with Carina Biotech for Development of CAR- T Therapeutics

- 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 is eligible to receive up to A$118 million in clinical & development milestones plus royalty payments if Carina fully develops and markets the new therapy. In the event that Carina sub-licenses the CAR-T treatment, Bionomics is eligible to share in the sub-licensing revenues in early clinical development and receive a substantial double-digit portion of the revenues in later stages of clinical development.
- Bionomics retains BNC101 for other types of therapies.

# Bionomics Outlook

- **Balanced business model with potential for short term milestones to drive shareholder value:**
  - Internal development of BNC210 is back on track with a solid dose formulation to achieve the blood exposure required for future PTSD trials, along with positive feedback from the FDA and Fast Track designation provide a promising opportunity for the company in 2020 and beyond
  - Strengthened strategic investor base with committed funding for BNC210 development
  - We continue to pursue licensing and partnering possibilities for our core CNS pain and cognition programs and have an ongoing collaboration with Merck & Co.
  - Maximize the value and partnering potential of legacy oncology assets through external funding of clinical programs
  - Cost cutting measures implemented in 2019 along with leveraging Australian R&D Tax Incentive Refund allow us to extend cash runway with non-dilutive funding