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 and BNC101), its licensing agreements 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.

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Company Overview

- Deep understanding of ion channel physiology, CNS and cancer stem cells
  - Three drug discovery platforms to support a robust pipeline
- Partnerships with Merck & Co. in cognition and pain - up to US$658m combined future potential milestones plus additional royalties on net sales of licensed drugs
  - Merck & Co equity investment in October 2015
  - Pain program partnership extended in October 2015
- Lead drug, BNC210, is a novel, orally-administered, first-in-class, modulator of α7 nicotinic acetylcholine receptor
  - Ongoing Phase 2 trial in Generalized Anxiety Disorder patients, results expected Q3 2016 calendar year
  - Phase 2 trial in PTSD patients to be initiated in H1 2016 calendar year
- BNC101 is a first-in-class anti-LGR5 antibody targeting cancer stem cells
  - LGR5 is a receptor that modulates Wnt signaling
  - Entering Phase 1 trial in colon cancer in Q1 2016 calendar year
- Experienced management team
  - Cash position supplemented by Merck investment and US capital raise post 30 September (total US$21M) and receipt of Australian R&D Tax Incentive A$8.5M

\(^1\) Based on USD:AUD of 0.7306 as of December 31, 2015; \(^2\) Based on USD:AUD of 0.7010 as of September 30, 2015.
Our Proprietary Platform Technologies

**ionX**

- Identifies drug candidates targeting both ligand gated and voltage gated ion channels for CNS indications
- Proprietary cell lines and screening approaches
- Comprehensive in vivo models validate target biology

**MultiCore**

- A diversity orientated chemistry platform for the discovery of small molecule drug candidates
- Computer aided pharmacophore modelling
- Scaffold hopping synthetic approaches rapidly create diversity in small, focused libraries
- Parallel, differentiated chemical series of potential drug candidates

**CSCRx**

- Identifies drug candidates that target cancer stem cells
- Enables dissection and validation of target biology
- Proprietary in vitro assays combined with in vivo assays
Merck Partnerships: Technical Validation

Two major partnerships with Merck & Co – up to US$658m combined future potential milestones plus additional royalties on net sales of licensed drugs

Validates ionX and MultiCore drug discovery platforms

Value creation through strategic partnering business model

Future success based revenue streams & royalties
<table>
<thead>
<tr>
<th>Drug Candidate</th>
<th>Indication(s)</th>
<th>Preclinical</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Milestones (Calendar Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Nervous System (ionX and MultiCore)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>BNC 210</td>
<td>Generalized anxiety disorder</td>
<td></td>
<td></td>
<td></td>
<td>Results from P2 trial in Q3 2016</td>
</tr>
<tr>
<td></td>
<td>Other indications including PTSD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undisclosed</td>
<td>ADHD, Alzheimer’s, cognition, Parkinson’s, schizophrenia</td>
<td></td>
<td></td>
<td></td>
<td>Initiate P2 trial in PTSD H1 2016</td>
</tr>
<tr>
<td>Others</td>
<td>Chronic and neuropathic pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer Stem Cells (CSCRx)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BNC101</td>
<td>Colorectal cancer</td>
<td></td>
<td></td>
<td></td>
<td>Initiate P1 trial in Q1 2016</td>
</tr>
<tr>
<td></td>
<td>Pancreatic cancer</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Other solid tumors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer Stem Cells (CSCRx and MultiCore)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MELK*</td>
<td>Solid tumors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>Solid tumors</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other Programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BNC105</td>
<td>Solid tumors, renal, ovarian, mesothelioma</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BNC420</td>
<td>Solid tumors, melanoma, breast</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BNC164</td>
<td>Psoriasis, uveitis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Maternal embryonic leucine zipper kinase
# BNC210 Overview: Novel, Best-in-Class Modulator of α7 Receptor

## Mechanism of Action
- Negative allosteric modulator of α7 nicotinic acetylcholine receptor

## Target Indications
- Anxiety (Generalized Anxiety Disorder or GAD & Post Traumatic Stress Disorder or PTSD)
  - Potential for other CNS indications

## Ongoing Clinical Trials
- Phase 2 trial in GAD patients, results expected Q3 2016 calendar year
- Phase 2 trial in PTSD anticipated to be initiated H1 2016 calendar year

## Completed Clinical Trials
- 6 completed Phase 1 trials in > 190 healthy subjects
- Demonstrated safety and tolerability
- Brain activity consistent with potential to reduce anxiety without typical side effects including sedation
- BNC210 significantly reduced CCK4-induced panic symptoms
- Evidence of BNC210 target engagement by EEG measures (nicotine shift assay)
BNC210: Next Generation Drug Candidate to Treat Anxiety & Depression

Potential Competitive Advantages of BNC210*

<table>
<thead>
<tr>
<th>Drug</th>
<th>No sedation</th>
<th>No withdrawal syndrome</th>
<th>No memory impairment</th>
<th>Fast acting</th>
<th>No drug/drug interactions</th>
<th>Once-a-day dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNC210</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Valium and other BZD</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Prozac and certain other SSRI/SNRI</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
</tr>
</tbody>
</table>

Anxiety Treatments

- Dominated by benzodiazepines
- Associated with sedation, addiction and tolerance and cognitive disturbances
- Not recommended for long-term treatment

Depression Treatments

- SSRIs and SNRIs used to treat depression and anxiety
- Modest efficacy, late onset of action, discontinuation, changes in weight, sexual dysfunction and increased thoughts of suicide in adolescents
- Many have black box warnings

*Based on data from preclinical studies and Phase 1 clinical trials.
Anxiety and depression have overlapping symptoms: over 40% of those diagnosed with depression are also diagnosed with an anxiety disorder.

### Anxiety Market
- Projected to reach $18 billion globally by 2020
- Approximately 40 million adults suffer from anxiety in the US
- Anxiety patients may have more than one anxiety disorder

### Depression Market
- Approximately 18.2 million people suffer from depression in the US
- Sales of top 10 depression drugs reached a total market of $8.8bn in 2012
- Major types of depression:
  - Bipolar depression
  - Dysthymia
  - Major depression
### BNC210 Single Dose Phase 1 CCK4 Challenge Trial

| Subjects          | • 59 healthy subjects administered CCK4 to induce panic symptoms  
|                  | • 15 responders (consistent with panic attack rates in other studies) |
| Protocol         | • Randomized double-blinded, placebo controlled  
|                  | • Subjects received single dose of placebo and BNC210 (2,000 mg) |
| Primary Endpoints | • Changes in the PSS (Panic Symptom Scale) |
| Secondary Endpoints | • Change in anxiety symptoms by means of the e-VAS (emotional-Visual Analog Scale) scales |
BNC210 Significantly Reduced CCK4-Induced Panic Symptoms

% Reduction in Total Number of Symptoms & Symptom Intensity

<table>
<thead>
<tr>
<th></th>
<th>Placebo</th>
<th>BNC210</th>
</tr>
</thead>
<tbody>
<tr>
<td>37.7% Reduction in Total Symptom Score</td>
<td>5.3</td>
<td>3.3</td>
</tr>
</tbody>
</table>

52.7% Reduction in Symptom Intensity Score

<table>
<thead>
<tr>
<th></th>
<th>Placebo</th>
<th>BNC210</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>4.3</td>
<td></td>
</tr>
</tbody>
</table>

Emotional Visual Analogue Scale (eVAS)

Subjects Experiencing Panic Symptoms When Treated with BNC210 Showed:

- Reduction in the number and intensity of panic symptoms compared to placebo
- More rapid return to baseline emotional stability compared to placebo
BNC210 Phase 1 EEG Trial Design

Subjects
- 21 healthy subjects

Protocol
- Double-blind, placebo controlled
- Subjects received placebo, Lorazepam and two doses of BNC210 (300 and 2,000 mg)
- Randomized sequence with wash-out period between treatments

Primary Endpoints
- Change in attention

Secondary Endpoints
- Visual-motor coordination
- Emotion
- Cognition
- EEG
- Measure of addiction
- Others
BNC210 Induced Changes on EEG Indicate Anxiolysis in the Absence of Sedation

<table>
<thead>
<tr>
<th>Drug/ EEG Spectrum*</th>
<th>δ</th>
<th>γ</th>
<th>α</th>
<th>α1</th>
<th>α2</th>
<th>β</th>
<th>β1</th>
<th>β2</th>
<th>β3</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNC210</td>
<td></td>
<td></td>
<td></td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▲</td>
<td></td>
<td>▲</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>▲</td>
<td></td>
<td></td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▲</td>
<td>▲</td>
<td>▲</td>
</tr>
</tbody>
</table>

*Arrows represent statistically significant changes in spectral power (p<0.05) displayed over considerable surface or scalp regions measured at 6 hours (cMAX for Lorazepam and BNC210).

Increase in delta spectral power during vigilance control session is signature of Lorazepam-induced sedation

Increase in β3 spectral power is associated with the anxiolytic activity of Lorazepam

Brain Maps showing temporal effect of BNC210 on α and β frequency bands

*Arrows represent statistically significant changes in spectral power (p<0.05) displayed over considerable surface or scalp regions measured at 6 hours (cMAX for Lorazepam and BNC210).
BNC210 Phase 1 Multiple Ascending Dose Trial Provided Evidence of Target Engagement

<table>
<thead>
<tr>
<th>Subjects</th>
<th>54 healthy subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>Double-blind, placebo controlled</td>
</tr>
<tr>
<td></td>
<td>Subjects received multiple ascending dose</td>
</tr>
<tr>
<td></td>
<td>BID treatment for each of 8 consecutive days</td>
</tr>
<tr>
<td>Primary Endpoints</td>
<td>Safety and tolerability of multiple doses</td>
</tr>
<tr>
<td>Secondary Endpoints</td>
<td>Changes in cognitive functions, mood and addictive potential</td>
</tr>
<tr>
<td></td>
<td>Reduction of nicotine-induced EEG changes (2,000mg level)</td>
</tr>
<tr>
<td></td>
<td>Pharmacokinetics of multiple ascending doses</td>
</tr>
<tr>
<td>Results</td>
<td>All primary and secondary end points met</td>
</tr>
<tr>
<td></td>
<td>No adverse effects on cognition or emotional stability and no abuse potential indicated</td>
</tr>
<tr>
<td></td>
<td>BNC210 reduced the effect of nicotine, as measured by EEG, consistent with its mechanism of action</td>
</tr>
</tbody>
</table>
BNC210 Phase 1 Multiple Ascending Dose Trial: BNC210 Treatment Reduced Nicotine-induced EEG Changes

The difference between nicotine-induced EEG changes with and without BNC210 (2,000mg)

![Graph showing the difference between nicotine-induced EEG changes with and without BNC210 (2,000mg).](image)

- P=0.0014
- P=0.019
- P=0.0009
Ongoing BNC210 Phase 2 Trial in GAD

Randomized, double-blind, placebo and Lorazepam-controlled, 4-way crossover design

King’s College London
Institute of Psychology, Psychiatry and Neuroscience

Initiated March 2015
Results expected Q3 2016

BNC210

Phase 2
24 subjects

Primary endpoints:
Changes in cerebral perfusion
Changes in emotional control (amygdala) during the performance of an emotional task

Functional MRI

Emotional Faces Task
JORT

Secondary endpoints:
Changes in defensive behavior using the Joystick Operated Runway Task
Changes in self-reporting of affective parameters

All years reflect calendar years. JORT – Joystick Operated Runway Task.
Emotional Faces and Joystick Operated Runway Task (JORT)

We believe GAD patients treated with BNC210 will have reduced amygdala activity and less defensive behavior than placebo treated.

**Emotional Faces Task**
- Primary Endpoint
- Evaluates activity in the amygdala via Functional MRI
- Several FDA-approved anxiety drugs reduce amygdala activation in the Emotional Faces Task

**Joystick Operated Runway Task**
- Secondary Endpoint
- Computer simulation used to evaluate changes in defensive behavior including flight and risk taking behavior
# Phase 2 Trial in Post Traumatic Stress Disorder (PTSD) to be initiated in H1 2016

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Up to 200 PTSD Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>Double-blind, placebo controlled, multi-center</td>
</tr>
<tr>
<td></td>
<td>1 week placebo run-in, 12 week treatment phase (placebo or BNC210)</td>
</tr>
<tr>
<td></td>
<td>2 arms, 1:1 randomization</td>
</tr>
<tr>
<td>Primary Objective</td>
<td>To determine whether BNC210 causes a decrease in symptoms of PTSD as measured by CAPS-5</td>
</tr>
<tr>
<td>Secondary &amp; Exploratory Endpoints</td>
<td>To determine the effects of BNC210 on anxiety (HAM-A), depression (MADRA) and cognitive functions</td>
</tr>
<tr>
<td></td>
<td>Correlation of genotype and imaging pharmacodynamics markers</td>
</tr>
</tbody>
</table>
Bionomics Approach to Targeting Cancer Stem Cells

• Bionomics’ CSCRx platform can identify drugs that target cancer stem cells
  – CSC have the potential to differentiate into all cell types within a tumor
  – Many drugs do not specifically target CSC leading to tumor recurrence and metastasis

• Wnt signaling has been implicated in proliferation and survival of CSC

• LGR5 is a receptor that modulates Wnt signaling in CSCs via binding of RSPO
**BNC101 Overview: First-in-class LGR5 mAb Targeting Cancer Stem Cells**

| Mechanism of Action | • Allosteric disruptor of LGR5/RSPO/ZNRF3 regulatory module Wnt signal strength  
|                     | • Inhibition of cancer stem cell self-renewal and tumor initiating capacity |
| Therapeutic Hypothesis | • A monoclonal antibody (mAb) that effectively targets LGR5 will eliminate a key pathway for CSCs  
|                     | • Targeting CSCs (BNC101) and proliferate tumor bulk (SOC) will prevent or significantly delay tumor recurrence and improve treatment outcomes and overall survival in cancer patients |
| Target Indications | • Metastatic colorectal and pancreatic cancers  
|                     | • Potential for other solid tumors including breast, lung GI tract |
| Clinical Development Plan | • Single agent dose escalation/expansion in 2\textsuperscript{nd}/3\textsuperscript{rd} line metastatic CRC  
|                     | • Chemo combination in mCRC  
|                     | • Demonstration of safety and tolerability  
|                     | • Exploratory Endpoints: OS, PFS, biomarkers |
## Market Opportunity

Currently approved therapies do not effectively address the underlying mechanism of tumor recurrence and metastasis

<table>
<thead>
<tr>
<th>CRC Therapeutic Market</th>
<th>Pancreatic Cancer Therapeutic Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Projected to reach $9B by 2020 in 8 Major Countries</td>
<td>• Projected to reach $5B by 2020 in 8 Major Countries</td>
</tr>
<tr>
<td>• Colorectal Cancer (CRC) is the second most prevalent cancer type, yet overall survival lags behind other high incidence cancers</td>
<td>• Pancreatic Cancer remains a high unmet need due to lack of safe and highly efficacious products in the market</td>
</tr>
<tr>
<td>• Metastatic CRC incidence = &gt;136,000 new cases in US in 2014</td>
<td>• Pancreatic cancer incidence = 46,420 new cases in US in 2014 (38,000 deaths)</td>
</tr>
<tr>
<td>• In metastatic CRC, five year survival is just 12%</td>
<td>• In Pancreatic Cancer, five year survival is just 6%</td>
</tr>
</tbody>
</table>

### Additional LGR5+ Solid Tumors

- • Triple negative breast cancer therapeutic market est. $6B by 2020
- • Lung cancer therapeutic market est. $4.5B by 2020
- • Hepatocellular (liver) cancer therapeutic market est. $1.5B by 2020

Source: GBI Research - Cancer Therapeutics in Major Developed Markets to 2020
LGR5: A definitive marker of CSCs

LGR5+ cells drive tumorigenesis

- Wnt activation in non-stem cells
  No progress to cancer (284 days)

- Wnt activation in LGR5+ stem cells
  Massive tumors, mice die ~ day 24

- LGR5: Highly specific marker of cancer stem cells in multiple solid tumor types
- Overexpressed in colorectal, pancreatic, breast, lung and other solid tumors
- Low LGR5 expression in normal tissues provides large therapeutic window
- LGR5 is a functional target involved in stem cell and tumor signaling
LGR5 Target Validation

LGR5\(^+\) Tumor Cells are Highly Tumorigenic and Predict Disease Relapse in CRC

Sorted LGR5\(^+\) Cells from CRC PDX CT1

LGR5\(^+\) ISC Gene Signature Predicts 10-fold Higher Disease Relapse in 340 CRC Patients

Source: Merlos-Suarez et al., Cell Stem Cell 2011
BNC101 Shows Anti-Tumor Activity in Solid Tumor PDX Models

Cancer Stem Cell Recurrence Assay

CT3 LDA Tumor Growth

Mean Tumor Volumes

Individual Tumors @ Day 68

Pancreatic Cancer: Preclinical Activity

Colorectal Cancer: Preclinical Activity

Asterisk indicates P<0.05. Nab-paclitaxel is also known as Abraxane.
**BNC101 Phase 1 Clinical Trial**

Ascending dose trial to examine safety, tolerability and preliminary signals of efficacy

- **Initiation**
  - Cohort 1: Q1 2016
  - Cohort 2: H2 2016

- **Results**
  - Cohort 1: Q3 2017
  - Cohort 2: H1 2018

**Primary endpoints:**
- Safety and tolerability
- BNC101 Single Agent
- Cohort 1 25 Patients
- Cohort 2 25 Patients

**Other endpoints:**
- PFS, ORR, OS
- Changes in biomarkers including circulating tumor cells and LGR5 expression as well as other disease-related biomarkers

**BNC101**

Colorectal

- BNC101 +5FU regimens

*All dates reflect calendar years.*
Cognition Program: Partnership with Merck & Co.

Combines the platform expertise from ionX and MultiCore

**Scope / Market Opportunity**

- Small molecule drugs for the treatment of cognitive impairment in ADHD, Alzheimer’s disease, Parkinson’s disease, Schizophrenia and other conditions
- Targeting cognitive impairment through a receptor critical to cognitive processes

**Partnership Economics**

- Merck funds all R&D
- Upfront payments of US$20M
- Up to US$486M in future payments to Bionomics plus potential royalties
Pain Program: Partnership with Merck & Co.

Combines the platform expertise from ionX and MultiCore

Scope / Market Opportunity

- Target related to chronic and neuropathic pain
- Neuropathic pain market expected to grow to US$3.6B by 2020
- Current medications have limited effectiveness and multiple side effects

Partnership Economics

- Option and license agreement
- US$172M in option exercise fees, development/regulatory milestone payments, plus potential royalties
Milestones & Outlook

Continue to evaluate BNC210 and BNC101 for other indications

Continue to trigger milestone payments from strategic partner

Add new strategic partnerships

BNC210
Q2 2015: Initiated Phase 2 trial in GAD patients

BNC210
Q3 2015: Results from Phase 1 multiple ascending dose trial

PAIN PARTNERSHIP EXTENDED, MRK INVESTMENT & US CAPITAL RAISE
Q4 2015: US$21M

BNC210
Q3 2016: Results from Phase 2 trial in GAD patients

BNC101
Q1 2015: Initiated Phase 1 multiple ascending dose trial

BNC101
Q1 2016: Initiate trial and the enrollment of the first mCRC cohort

BNC101
Q2 2015: Initiated Phase 2 trial in GAD patients

BNC101
H1 2016: Initiate enrollment in Phase 2 PTSD trial

BNC210
Q3 2016: Results from Phase 2 trial in GAD patients

BNC210
Q3 2017: Results from first mCRC cohort

BNC101
Q3 2017: Results from first mCRC