Global leader in drug discovery and development

Deborah Rathjen | CEO & Managing Director
March 2015
Safe Harbor Statement

Factors Affecting Future Performance

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BNO Value Proposition

Combining one of the world’s most innovative drug discovery platforms with development of first-in-class and best-in-class therapies:

- **Three Proprietary Technology Platforms**: Unique and rigorous drug discovery platforms provide a pipeline of compelling drug candidates which exhibit characteristics with potential for development and commercialisation.

- **De-risked Business Model**: Partnering for late stage development and commercialisation.

- **Technical Validation**: Two strategic collaborations with Merck & Co with up to US$678m in potential future milestone and other payments.

- **Broad and deep portfolio**: Our pipeline of drug candidates has a series of near-term catalysts in both clinical progress and partnering opportunities.

- **Strong cash position and growing revenue**: Cash balance of A$38.4m (at December 2014) supports rapid and unencumbered investment in development programs.
Company Overview

- Leader in the discovery, development & strategic partnering of innovative biopharmaceuticals for cancer & central nervous system disorders.


- **Robust pipeline and business model** with multiple revenue generating streams through strategic partnering including two strategic collaborations with Merck & Co:
  - Cognition in neurodegenerative diseases (Alzheimer’s, Parkinson’s), US$506m in upfront and milestone payments plus royalties on product sales
  - Pain, option and license agreement, US$172m in fees and milestones payments plus royalties on product sales
Company Overview

Broad and deep portfolio of clinical and preclinical drug candidates with near-term catalysts:

- **BNC210**: negative allosteric modulator of $\alpha_7$ nAChR in development for anxiety and depression with clinical trial readouts expected in 2015 and 2016.

- **BNC101**: monoclonal antibody targeting Cancer Stem Cells (CSC), entering clinic in 2015 (colon, pancreatic cancer);

- **BNC105**: A cancer treatment that disrupts tumour blood vessels and activates tumour cell death pathways, high response rate observed in ovarian cancer in combination with chemotherapy, biomarker driven development strategy; and

### Proprietary Technology Platforms

Drug discovery platforms focused on the creation of drug candidates across oncology and neuroscience pipeline.

<table>
<thead>
<tr>
<th>Platform</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>MultiCore®</td>
<td>A diversity orientated chemistry platform for the discovery of small molecule drugs</td>
</tr>
<tr>
<td>ionX®</td>
<td>A set of novel technologies for the identification of drugs targeting ion channels for diseases of the central nervous system</td>
</tr>
<tr>
<td>CSC Rx Discovery™</td>
<td>Identifies antibody and small molecule therapeutics that inhibit the growth of cancer stem cells</td>
</tr>
</tbody>
</table>
De-Risked Business Model

**DRUG DISCOVERY**
- Rigorous selection of drug candidates
- Focus on oncology and neuroscience
- Build pipeline with multiple and diverse commercial opportunities

**DRUG DEVELOPMENT**
- Identify drug candidates for partnering
- Clinical trials to validate efficacy and safety
- Maximise value and commercial options

**STRATEGIC PARTNERING**
- Share drug development risk with partner
- Receive upfront payments
- Generate multiple revenue streams in different markets
- Future royalty revenue streams

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Merck Partnerships: Technical Validation

Two major partnerships with Merck & Co – up to US$678m combined future potential milestones plus additional royalties on product sales

- Validates ionX® and MultiCore® drug discovery platforms
- Value creation through strategic partnering business model
- Future success based revenue streams & royalties secured
### Merck Partnerships: Technical Validation

<table>
<thead>
<tr>
<th>Merck Partnerships</th>
<th><strong>PAIN</strong></th>
<th><strong>COGNITION &amp; MEMORY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target Indication</strong></td>
<td>Treatment of chronic and neuropathic pain</td>
<td>Cognitive impairment – Alzheimer’s, Parkinson’s and other conditions</td>
</tr>
<tr>
<td><strong>Partnership Deal</strong></td>
<td>Option &amp; license agreement – US$172m in option exercise fees, development/regulatory milestone payments plus royalties</td>
<td>Potential up to US$506m payments to Bionomics, plus royalties and product sales Upfront payment of US$20m</td>
</tr>
<tr>
<td><strong>Estimated Market Size</strong></td>
<td>Neuropathic pain segment expected to grow from US$2.4Bn in 2010 to US$3.6Bn by 2020</td>
<td>Alzheimer’s Disease – ~US$10.5B in 2012, Parkinson’s disease – US$3.5B in 2014</td>
</tr>
</tbody>
</table>
# Platform Technologies Deliver Multi-Product Pipeline

<table>
<thead>
<tr>
<th>THERAPEUTIC AREA</th>
<th>DRUG CANDIDATE/PROGRAM</th>
<th>DISCOVERY</th>
<th>PRE-CLINICAL</th>
<th>PHASE I</th>
<th>PHASE II</th>
<th>LICENSEE/PARTNER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CANCER</strong></td>
<td><strong>BNC105</strong> – Solid tumours, renal, ovarian, mesothelioma</td>
<td></td>
<td></td>
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<td>★</td>
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<tr>
<td></td>
<td><strong>BNC101</strong> – Cancer stem cells, solid tumours, colon, breast, pancreatic</td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td></td>
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<tr>
<td></td>
<td><strong>BNC102</strong> – Cancer stem cells, solid tumours</td>
<td></td>
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<tr>
<td></td>
<td><strong>BNC420</strong> – Solid tumours, melanoma, breast</td>
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<tr>
<td></td>
<td><strong>MELK, PRMT1</strong> - Solid tumours</td>
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<tr>
<td><strong>CENTRAL NERVOUS SYSTEM</strong></td>
<td><strong>BNC210</strong> – Anxiety, Depression</td>
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<tr>
<td></td>
<td><strong>BNC375</strong> – Cognitive impairment, Alzheimer's disease, Parkinson's, ADHD, schizophrenia</td>
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<td></td>
<td>★</td>
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<td></td>
<td><strong>GABA-A</strong> – Epilepsy</td>
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<td></td>
<td><strong>Undisclosed</strong> - Pain</td>
<td></td>
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<tr>
<td><strong>IMMUNE DISEASE</strong></td>
<td><strong>BNC164</strong> – Psoriasis, multiple sclerosis, rheumatoid arthritis</td>
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<td>★</td>
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★ Targeted licensing point
Partnered Programs

Bionomics
The BNC375 program is developing small molecule therapeutics for the treatment of cognitive impairment in Alzheimer’s disease, Parkinson’s disease, ADHD, Schizophrenia and other conditions.

<table>
<thead>
<tr>
<th>Partnership Deal</th>
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<tbody>
<tr>
<td></td>
<td>Covers Bionomics’ research program on BNC375 and related compounds.</td>
</tr>
<tr>
<td></td>
<td>Potential for up to US$506m in payments to Bionomics plus additional royalties on net product sales.</td>
</tr>
<tr>
<td></td>
<td>Upfront payments of US$20m.</td>
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<tr>
<td></td>
<td>Merck funds R&amp;D.</td>
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<tr>
<th>Compound Target</th>
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<tr>
<td></td>
<td>Targets cognitive impairment in Alzheimer’s disease other conditions, targeting receptor critical to cognitive processes.</td>
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<table>
<thead>
<tr>
<th>Market Size &amp; Positioning</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Significant market opportunity includes many neurodegenerative &amp; psychiatric disorders.</td>
</tr>
<tr>
<td></td>
<td>By 2025 the number of Americans aged 65 and older with Alzheimer’s is forecast to rise 40% to 7.1 million</td>
</tr>
</tbody>
</table>
**BNC375 Program: Potential Competitive Advantages**

**Demonstrated potent *in vivo* memory enhancing properties in animal models:**
- Improvement in both episodic and working memory
- >100-fold therapeutic dose range & wide safety window

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Bionomics BNC375</th>
<th>Competing Agents*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potent</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Rapid onset of action</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Potentiates endogenous receptor ligand</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Preserve the normal signalling patterns of the receptor</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Do not cause receptor desensitization</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>No potential for development of tolerance</td>
<td>✓</td>
<td>✗</td>
</tr>
</tbody>
</table>

*Based on data from preclinical animal studies
+Published information & Bionomics’ in-house data
BNC375 Program: Market Potential

BNC375 market opportunity includes many neurodegenerative & psychiatric disorders with a significant need for new treatments:

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**Alzheimer’s Disease**

- More than 5 million Americans are living with the disease
- Every 67 seconds someone in the United States develops Alzheimer’s
- Alzheimer’s disease is the 6th leading cause of death in the United States
- There are approximately 500,000 people dying each year because they have Alzheimer’s
- 1 in 3 seniors dies with Alzheimer’s or another dementia
- In 2013, 15.5 million caregivers provided an estimated 17.7 billion hours of unpaid care valued at more than $220 billion.

**Estimated 2017 CNS Global Sales**

- ADHD $4.1B
- Alzheimer’s Disease $4.1B
- Schizophrenia $7.3B
- Parkinson’s Disease $3.2B
- Other CNS Disorders

Source: Evaluate Pharma, 2013
Pain Program: Partnership with Merck & Co

Further validates ionX® & MultiCore® drug discovery platforms.

Heterogeneity of pain requires a range of analgesics with different modes of action but there exists significant unmet needs.

### Partnership Deal

- Option & license agreement with Merck & Co.
- **US$172M** in option exercise fees, development/regulatory milestone payments, plus additional royalties on net sales.

### Treatment

Chronic & neuropathic pain.

- Pain market: ~US$22b sales in 2010.
- Current medications have limited effectiveness:
  - Side-effects e.g. drowsiness, somnolence & dizziness.

### Market Size & Positioning

- Estimated 1 in 4 patients achieve >50% reduction in pain levels

Neuropathic pain segment expected to grow from ~US$2.4b in 2010 to ~US$3.6b by 2020.
In-House Development Programs

Bionomics
BNC210: Next Generation Compound Potential to Treat Anxiety & Depression

**TREATMENT**

Anxiety and Depression.

**MARKETS**

- Anxiety – global sales of US$5-7B annually.

**CLINICAL / REGULATORY**

- Phase I trial program - BNC210 prevented panic attack and reduced panic attack symptoms.
- BNC210-related changes in human brain activity observed, indicative of efficacy in absence of sedation.
- Excellent safety profile

### 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</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PROZAC</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Based on data from preclinical animal studies and Phase I clinical trials
BNC210: Key Findings from Phase I Trials

Double-blinded, placebo controlled Phase I trials have provided indicators of BNC210 efficacy in humans and strong data supporting its safety.

Subjects treated with BNC210 experienced:

1. A reduction in number and intensity of panic symptoms on the Panic Symptoms Scale scores following CCK-4 challenge

2. A positive result on the emotional visual analogue scale following a CCK-4 challenge
BNC210: Induced EEG Changes in Brain Activity

Induced EEG changes in brain activity associated with anxiolysis and the absence of sedation

**BNC210.003**

<table>
<thead>
<tr>
<th>Drug/EEG Activity</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>
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</tbody>
</table>

Arrows represent significant increases or decreases in spectral power displayed over considerable surface or scalp regions.

**Brain Maps showing BNC210 effect on alpha and beta frequency bands**

**alpha**

- p < 0.01
- p < 0.05
- p < 0.1

**beta**

- p < 0.1
- p < 0.05
- p < 0.01
BNC105: “Best in Class” Tubulin Targeting Agent with Unique Mechanism of Action

**TREATMENT**

**MARKETS**

- >US$10b current market size in solid tumours.
- Renal cancer market size >US$2.5b; includes TKIs Sutent (Pfizer), Nexavar (Bayer/Onyx), Afinitor (Novartis).
- Ovarian cancer market size ~US$2.2b; includes carboplatin (BMS), gemcitabine (Gemzar, Eli Lilly).
- Chronic Lymphocytic Leukemia (CLL) market ~US$1.4b in 2013

**BENEFITS**

- **Targets both solid tumours and blood cancers (CLL)**
- **Multi Action** – selectively targets both tumour blood vessels (solid tumours) and cancer cells (solid tumours and blood cancers)
- **Enhances Effectiveness of Other Cancer Treatments** – delivers synergistic anti-cancer effects in numerous combinations

**Solid and blood cancers: New paradigm with blockbuster potential.**
BNC105: Positive Phase I Ovarian Trial Results

10 of 12 patients achieved positive response in combination study of BNC2015 and standard of care chemotherapy.

- Combination study (carboplatin + gemcitabine chemotherapy + BNC105) in partially platinum sensitive ovarian cancer patients in first or second relapse.

- 15 patients enrolled, 12 patients completed six cycles of combination therapy and commenced with BNC105 monotherapy.

- 10 patients achieved a positive response according to RECIST 1.1 and/or GCIG CA125 criteria.

- Side-effects related to gemcitabine and carboplatin treatment backbone; haematological origin.

- Recommended BNC105 Phase II dose: 12mg/m² in combination with carboplatin and gemcitabine.
DISRUPTOR-1 Phase II Trial in Renal Cancer Patients

- Primary endpoint not met
- Patients with liver metastasis treated with BNC105+Afinitor experience 3.8 month increase in Progression Free Survival compared to patients treated with Afinitor alone.

Arm A: BNC105+Afinitor; N=13
Arm B: Afinitor only; N=13
A prospective biomarker-driven study examining Afinitor + BNC105 with patients selected by baseline markers is in development.

60% of patients displaying the dynamic biomarker signature were progression free at 6 months.

89% of patients displaying the baseline biomarker signature were progression free at 6 months.
BNC105 Potential in Chronic Lymphocytic Leukemia (CLL)

Chronic Lymphocytic Leukemia:
- Most common type of adult leukemia, affects mostly males over 50 years of age (typically around 70 years).
- In US ~15,720 new cases and 4,600 deaths from CLL predicted for 2014.

BNC105 and CLL:
- BNC105 kills CLL cells through activation of death proteins pJNK and Noxa.
**BNC101: Targeting Cancer Stem Cells in Solid Tumours**

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>Solid tumours; colon &amp; pancreatic are priority indications.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Humanised monoclonal antibody.</td>
</tr>
<tr>
<td></td>
<td>• BNC101 binds selectively to LGR5; which marks tumour-initiating</td>
</tr>
<tr>
<td>MECHANISM</td>
<td>High expression of LGR5 in colon cancer has been linked to tumour</td>
</tr>
<tr>
<td>OF ACTION</td>
<td>recurrence &amp; poor prognosis in colon &amp; gastric cancer.</td>
</tr>
<tr>
<td></td>
<td>• LGR5 highly overexpressed in colon, ovarian, liver, breast, lung &amp; other solid tumours.</td>
</tr>
<tr>
<td></td>
<td>• High expression of LGR5 in colon cancer has been linked to tumour recurrence and poor prognosis</td>
</tr>
<tr>
<td>MARKET OPPORTUNITY</td>
<td>Market for cancer stem cell therapeutics estimated as US$8b by 2018.</td>
</tr>
<tr>
<td>DEVELOPMENT STAGE</td>
<td>Targeting IND filing and Phase I clinical trials in 2015.</td>
</tr>
<tr>
<td>BENEFITS</td>
<td>Inhibition of tumour recurrence.</td>
</tr>
<tr>
<td></td>
<td>Specific targeting of cancer stem cells which are not killed by chemotherapy or radiotherapy.</td>
</tr>
</tbody>
</table>
### BNC420: Suppressing Tumour Progression

<table>
<thead>
<tr>
<th><strong>TREATMENT</strong></th>
<th>Solid tumours; breast cancer &amp; melanoma are priority indications.</th>
</tr>
</thead>
</table>
| **MECHANISM OF ACTION** | • Orally active, small molecule.  
  • Modulates activity of VEGFR3 receptor:  
    • inhibits lymph vessel growth, key conduits promoting cancer spread; and  
    • Promotes re-activation of the anti-tumour immune response. |
| **MARKET OPPORTUNITY** | Melanoma market value growth predicted due to increasing patient numbers and market entry of novel pipeline therapies, expected US$2.8b by 2021.  
Breast cancer market projected to be US$10.4b by 2019. |
| **DEVELOPMENT STAGE** | Preclinical. |
| **BENEFITS** | Inhibition of cancer spread.  
Activation of the tumour immune response. |
Strong Financial Position

<table>
<thead>
<tr>
<th>FY14 Results</th>
<th>First Half FY15 Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating profit after tax: $3.2m</td>
<td>Operating loss: $5.68m</td>
</tr>
<tr>
<td>Revenue: $27.5m</td>
<td>Revenue: $7.33m</td>
</tr>
<tr>
<td>Cash at 31 December 2014: $38.37m</td>
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</tr>
</tbody>
</table>
The Year Ahead: New Studies in Three Programs

BNC 210 Clinical Development:

- Initiation and completion of Phase Ib trial investigating target engagement, data anticipated Q3, CY2015
- Initiation of Phase II trial in patients suffering anxiety, Q1, CY2015, data anticipated Q2, CY2016

BNC 105 Clinical Development:

- Initiation of Phase II clinical trial in renal cancer patients, biomarker signatures will guide patient selection, in collaboration with global pharma company
- Initiation of clinical trial in patients with Chronic Lymphocytic Leukaemia, in collaboration with Dartmouth College (US)

BNC 101 Development:

- IND filing and initiation of Phase I clinical trial in pancreatic and colorectal cancer patients

Continued execution of Bionomics’ partnership strategy
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