hardman&co

Pharmaceuticals & Biotechnology

Source: Eikon Thomson Reuters

Market data	
EPIC/TKR	**BNO**
Price (p)	0.54
12m High (p)	0.64
12m Low (p)	0.34
Shares (m)	482.8
Mkt Cap (£m)	260.7
EV (£m)	255.9
Free Float*	89%
Market	ASX

**As defined by ASX Rule 1.1 Condition 7*

Description

Bionomics (BNO) is an Australian biopharmaceutical company specialising in development of ion channel drugs for disorders of the central nervous system. In addition to a strong proprietary pipeline that includes ion channel allosteric modulators for anxiety, BNO offers contract drug development services.

Company information

CEO	Deborah Rathjen
CFO	Steven Lydeamore
Chairman	Errol De Souza

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www.bionomics.com.au

Key shareholders

Directors	0.7 %
BVF Partners	10.2%
Ausbil Investment	8.1%
PPM	5.5%

Diary (calendar year)

Jun-18	Financial year-end
1H'18	BNC101 trial data
2H'18	PTSD trial data
1Q'19	Agitation trial data
1Q'19	Merck trial

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Bionomics Ltd

Third Phase II trial of BNC210 begins

BNO is an Australian biopharmaceutical company specialising in ion channel drug discovery for central nervous system (CNS) disorders such as anxiety and post-traumatic stress disorder (PTSD). BNO also offers contract and partnered drug discovery based on its proprietary technology platforms: MultiCore and ionX. The group sales model includes fees-for-service, licensing income, and royalties from successful partnered products. Its strategic focus is on development of its lead candidate, BNC210, to completion of Phase II in PTSD. It has also recently started a third clinical trial of this candidate, this time in a third CNS indication – agitation.

- **Strategy:** BNO's recently refined strategy is to focus on development of its ion channel drug candidates, particularly allosteric modulators. It intends to partner its priority CNS candidate for late-stage development and commercialisation, and to monetise its clinical-stage, non-ion channel, oncology programmes.

- **New BNC210 trial:** Recruitment for a third Phase II trial of BNC210, this time in agitation, was recently started. One of the big positives of BNC210 is its potential application in a spectrum of underserved patient populations, and this trial follows the Phase IIa trial in GAD that concluded in 2016.

- **Phase II trial in agitation:** The trial has been designed for rapid recruitment and a short treatment duration. Headline data are expected in the first three months of 2019; these will follow those of the PTSD trial, expected in the second half of 2018. Around 40 hospitalised elderly patients with agitation will be treated.

- **Risks:** There are inherent risks in clinical development and commercialisation of medicines, particularly in neurology and with new drug classes. BNO's current strategy is contingent on partnering its candidates for late-stage development and commercialisation and on monetising its clinical oncology assets.

- **Investment summary:** BNO has a clear strategy to invest in developing its drug candidates to a stage that both interests big pharma and generates good potential returns for shareholders. Hardman & Co estimates the post-tax NPV of the two oncology assets to be around A$21m/$16m, and A$651m for the whole pipeline. Our valuation is unchanged on the news of initiation of the new trial.

Financial summary and valuation

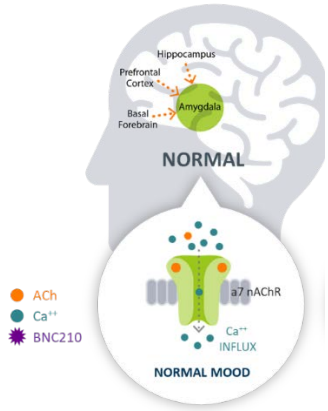
Year-end June (A$m)	2015	2016	2017	2018E	2019E	2020E
Sales	6.79	7.14	5.53	5.90	6.20	6.50
R&D investment	-23.18	-24.77	-24.22	-24.00	-12.00	-12.00
Other income	1.35	2.59	14.62	14.81	34.41	34.60
EBITDA	-22.65	-24.95	-10.11	-10.35	21.25	21.55
Underlying EBIT	-24.37	-26.88	-11.86	-12.09	19.51	19.80
Reported EBIT	-24.35	-27.42	-12.36	-12.60	19.00	19.30
Underlying PBT	-24.28	-26.28	-12.62	-13.16	18.61	19.38
Statutory PBT	-24.27	-26.82	-13.13	-13.67	18.10	18.88
Underlying EPS (¢)	-4.06	-3.51	-1.30	-1.42	4.73	4.90
Statutory EPS (¢)	-3.27	-3.42	-0.14	-1.55	4.60	4.77
Net (debt)/cash	11.78	23.14	24.26	17.68	41.23	65.50
Capital increase	0.27	28.22	0.14	0.00	0.00	0.00

Source: Hardman & Co Life Sciences Research

A new trial in agitation

BNC210 clinical development

Normal mood



Source: Bionomics

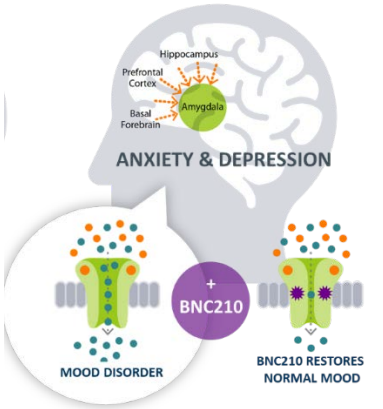
BNC210 is a small molecule negative allosteric modulator of the α7 nicotinic acetylcholine receptor (α7 nAChR). It selectively and specifically reduces opening of the α7 receptor, having an effect only when the naturally occurring agonist is bound; since it does not affect the active site or desensitise the receptor to acetylcholine, this should potentially reduce the side effects of treatment.

Because α7 receptors are highly expressed in the brain and have been implicated as key mediators of emotional and memory responses, BNC210 has potential in the treatment of a spectrum of psychiatric and neurological disorders. In particular, elevated acetylcholine neurotransmission is thought to underpin the symptoms of anxiety – if BNC210 treatment can normalise receptor activity, then it can be used to treat the many CNS disorders in which anxiety is a comorbidity.

BNC210 target market

Bionomics estimates that, in the US, there are 75 million people who suffer from anxiety-related disorders (see chart below). Of these, BNC210 has an eligible population of 7.1 million patients (8% market share) and the potential to achieve up to $20.6bn per year. Revenues in agitation could reach $1.6bn p.a. given a 10% market penetration rate.

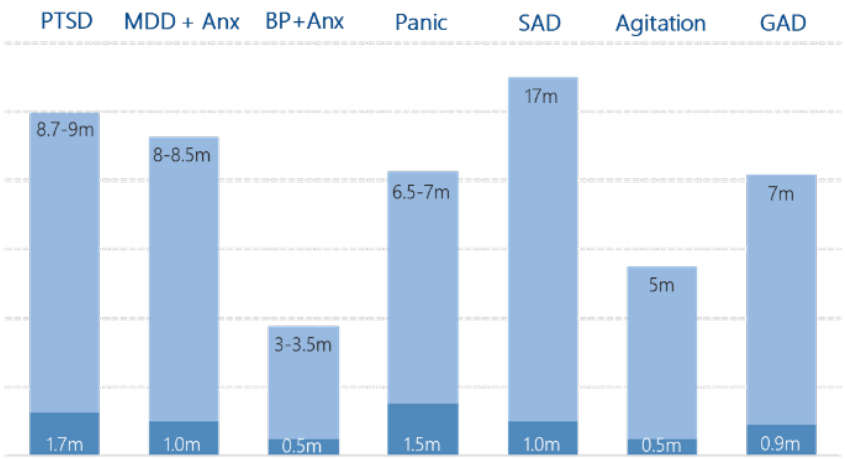
Effect of BNC210 on α7 receptor



Source: Bionomics

Characterised by emotional liability, restlessness and aggressive behaviours, agitation is a set of symptoms related to anxiety that, in the elderly, is often associated with diseases such as Alzheimer's (45% of patients). There are no approved medications – in addition to the general complications of benzodiazepines, antipsychotics have a 'Black Box Warning' in elderly patients. Moreover, the disorder is thought to account for >10% of the healthcare and societal costs of Alzheimer's treatment, so BNC210's reimbursement potential is increased by its secondary benefit to carers.

BNC210 eligible patient populations (US by 2050)



Source: Bionomics

Clinical trials

To date, there have been seven trials of BNC210 in CNS disorders, the biggest being the RESTORE trial in PTSD[1]. This is due to report within the next seven months (and likely quite soon), given that dosing is complete (announced 11 April 2018).

The strategy is to partner BNC210 once it is 'Phase III ready' – completion of the agitation trial may not push the timeline for partnership further out than the market had previously thought, given the short duration of treatment and its relatively small size. The company has said that both the agitation and PTSD trials represent rapid potential routes to market. This trial in agitation is a follow-up to the Phase IIa trial in Generalised Anxiety Disorder (GAD), which, unlike the GAD trial, will measure clinician-measured symptoms as primary and secondary endpoints. Finally, given the potential size of the eligible Seasonal Affective Disorder (SAD) and Major Depressive Disorder (MDD) populations in the chart above, it would seem likely that trials in these indications could also be in the pipeline.

Agitation trial design

The trial has been designed for rapid recruitment and a short duration (five days) of treatment. Around 40 hospitalised elderly patients with agitation will be treated under the care of a geriatrician, with treatment double-blinded and placebo-controlled, and with parallel dosing in a 1:1 ratio. Secondary endpoints will be the benefits of BNC210 compared with placebo on global function as measured by the Clinical Global Impression Scale (CGI-S/I). Headline data are expected in the first three months of 2019; these will follow PTSD results, expected in the second half of 2018.

BNC210 clinical trials

Identifier	Indication	Phase	Location	Primary endpoints	Data (calendar year)
Multiple (x6)	Healthy volunteers	Phase I	Australia, France, USA	Safety, tolerability, dosing	2010-14
	GAD	Phase IIa	UK	Cerebral perfusion (arterial spin labelling); task-related brain activity (fMRI)	Reported 2016
BNC210.007	PTSD	Phase II	Australia, USA	Treatment vs. placebo (CAPS-5 score)	2H'18
BNC210.008	Agitation	Phase II	Australia	Time course of resolution (Pittsburgh Agitation Scale)	Q1'19

Source: Hardman & Co Life Sciences Research

Investment conclusion

There are inherent risks in clinical development and commercialisation of medicines, particularly in neurology and with new drug classes. BNO's current strategy is contingent on partnering its candidates for late-stage development and commercialisation and on monetising its clinical oncology assets. We have not updated our valuation on the announcement of this third Phase II trial because our original NPV calculations are already based on royalties of drugs used for multiple anxiety-related disorders. The next major value inflection point will be the announcement of the results of the PTSD trial in the second half of this year, or the announcement of a deal concerning monetisation of the two oncology assets. Our next note will cover the potential of these oncology assets.

[1] http://www.hardmanandco.com/docs/default-source/company-docs/bionomics-ltd-documents/07.02.18-channelling-expertise-in-cns-drugs.pdf

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In particular, Article 12(3) of the Directive states: 'The following benefits shall qualify as acceptable minor non-monetary benefits only if they are' (b) 'written material from a third party that is commissioned and paid for by an[sic] corporate issuer or potential issuer to promote a new issuance by the company, or where the third party firm is contractually engaged and paid by the issuer to produce such material on an ongoing basis, provided that the relationship is clearly disclosed in the material and that the material is made available at the same time to any investment firms wishing to receive it or to the general public;'

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The full detail is on page 26 of the full directive, which can be accessed here: http://ec.europa.eu/finance/docs/level-2-measures/mifid-delegated-regulation-2016-2031.pdf

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