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Bio-Gene Technology Ltd. (ASX:BGT)

Blue-Sky insecticide on global launch pad

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KEY POINTS

- **BGT holds key partnerships with BASF, the world's largest chemical company, and Clarke, the world-leader in mosquito control, to develop and commercialise BGT's IP.** BGT is underway with a collaborative research program for the use of its technology for the grain storage market, with BASF, Australian Grains Research and Development Corporation (GRDC) and the Queensland Department of Agriculture and Fisheries. It is concurrently underway with its partnership in public health with Clarke, signed in April 2020. These partnerships validate BGT's technology should led to commercial agreements in the next 18 months.
- **Significant 12-month pipeline of ongoing trials across four key applications (two above + animal health & consumer applications) with a total of eight Material Transfer Agreements (MTAs) in place.** There is a strong pipeline of potential partners across all four of BGT's key target markets, particularly in public health and grain storage.
- **The company is well-funded (cash = \$5.1m) with a low burn-rate, and key partners are contributing funds to R&D efforts.** BGT completed a placement in May 2020 and raised ~\$2.8m to continue the company's plan to commercialisation. We believe BGT is well-funded until FY'22 for the two key commercialisation projects.

INVESTMENT VIEW – HOLD, PT \$0.22/SHARE

Major project milestones with global strategic partners over the next 12 months should drive the share price to the peer medium term EV/Revenue multiple of 4.67x (\$0.22/share). The key milestones are:

BASF (grain storage): Nov'20: Stage 3 trials commence, Aug'21: Stage 3 trials completed, Late 2021: Potential commercial agreement with BASF

Clarke (public health): Jan/Feb 2021: Stage 2 trials completed, Q2'21: Stage 3 commences, Early 2022: Stage 3 completed, Mid-2022: Potential commercial agreement with Clarke.

POINT OF DIFFERENCE

BGT is developing a novel mode of action (MoA), based on affecting the nervous system to allow a new class of insecticides. BGT's tech seeks to combat existing problems of insecticide resistance and regulatory focus on toxicity concerns surrounding existing chemistry. Existing classes of insecticides generate \$1b+ p.a. of sales, and the most recent large-scale class of insecticide was produced in 2008. BGT's technology has the potential to fill the gap.

RISKS

Commercial Viability - BGT's technology (Qcide and Flavocide) has proven small scale efficacy vs. competitors in some applications, but large-scale manufacturing and distribution may not be commercially viable verses long standing incumbents fighting for survival.

Trials and Regulatory Process - BGT's technology must go through the APVMA process to be sold in Australia. The product may be found to lack efficacy or contain toxins which could halt the commercialisation process. On the positive side of regulation, there are potential Government mandates which may speed up use of BGT's products.

Funding - We estimate BGT will be able to continue its operations with its existing funding until FY'22, where we believe it will need to raise ~\$2-3m to continue with its commercialisation program.

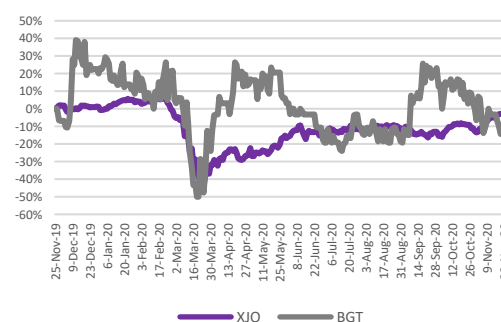
Recommendation	Hold
Previous Recommendation	Initiating Report
Risk Rating	Speculative
Current Share Price	\$0.145
12 Month Price Target	\$0.22/share
Price target Methodology	EV/Revenue Multiple
Total Return (Capital + Yield)	30%
Market Capitalisation	\$22m

Financial Forecasts & Valuation Metrics

Y/e Jun (\$m)	2021F	2022F	2023F	2024F	2025F
Revenue	1.27	2.94	4.10	7.41	12.34
Rev. Growth %	934%	132%	39%	81%	66%
Cash	4.1	4.9	4.2	4.4	8.2
EBITDA	-1.85	-0.82	-0.24	2.03	5.53
EPS (cps)	-0.01	0.00	0.00	0.01	0.03
EV / Revenue	13.8	6.0	4.3	2.4	1.4
EV / EBITDA	-10.0	-25.5	-262.4	7.8	3.0

Source: PAC Partners estimates

BGT 12-month Share Price vs. S&P ASX 200



Source: IRESS, as at 24/11/20

Key Milestones

- **Nov'20** – Commence large scale East Coast Australian field trial of grain storage with BASF/GRDC
- **Early 2021** – Stage 2 public health trials with Clarke complete
- **FY'21** – Conversion of Material Transfer Agreements (MTAs) into partnership agreements with preliminary operational terms (tonnage, BGT's role)
- **FY'22** – Commercial Agreements with BASF & Clarke

DISCLOSURE: PAC Partners has carried out work for the Company over the last 6 months and received fees on commercial terms for the services.

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The information contained in this report is to be read in conjunction with other important disclosures at the end of this document.

Company Overview

Bio-Gene Technology Limited (ASX:BGT) is an Australian agriculture technology company which focuses on developing a novel solution to global insecticide resistance to existing technology and environmental concerns around the toxicity of existing products. Bio-Gene is developing a new technology platform via a class of naturally occurring plant compounds, known as beta-triketones, to counteract the effects of increasing insecticide resistance and reducing efficacy of existing technologies. BGT's beta-triketones affect the nerve system of a range of insects in a significantly different way to "nerve active" peers (and is very different to modes of action affecting insect's stomachs and other parts of body). BGT is seeking to commercialise its intellectual property for four key applications: public health, grain storage, animal health and consumer applications. Bio-Gene Technology Ltd. was listed on the ASX in 2017 and is based in Melbourne, Australia.

BGT's technology has the potential to become a brand-new class of insecticides

BGT'S TECHNOLOGY OFFERING

A broad range of modes of action (MoAs) for insecticides have been developed over the past century (see page 7). Over time, insects develop resistance to insecticides that are used continuously or misused, and thus new MoAs must be developed to counteract the decreasing efficacy of existing technologies. The most widely used MoA currently are neonicotinoids, which is facing increasing regulatory pressure due to its impact on beneficial insects. The EU has already moved to ban most chemistries within this class, with other major regulators also investigating the toxicity harm. This leaves a gaping hole in the insect control market. The last novel MoA developed for widespread use was commercialised in 2008 by Japanese chemical producer Nihon Nohyaku. All of the largest existing classes of insecticides have recorded resistance, and as a result BGT has developed a new class of technology, known as beta-triketones.

Qcide & Flavocide

BGT is developing two products under their new novel MoA, Qcide and Flavocide. BGT believes the most effective way to use their product would be in combination with other compounds, ensuring the opportunity for synergy with other modes of action.

Qcide is a naturally occurring extract from a cultivar of eucalypt unique to Queensland, and its active ingredient is tasmanone.

Flavocide is a synthetic equivalent of the molecule flavone, developed in conjunction with the CSIRO to be able to manufacture the product to scale in commercial quantities.

	Qcide	Flavocide
Type	Natural Compound	Synthetic Compound, with nature equivalent
Origin	Extract from a sub-cultivar of Gympie Messmate, found in QLD	Developed in conjunction with the CSIRO
Applications	Consumer Applications	Public Health, Grain Storage & Animal Health
Class	Beta-Triketones	Beta-Triketones

APVMA approval a key medium-term goal for BGT

Trials & Regulatory Process

Insecticides being registered for use in Australia must undergo a regulatory approvals process through the Australian Pesticides and Veterinary Medicines Authority (APVMA). The duration of this process can vary, but typically takes around 2-4 years. Early toxicity studies undertaken by BGT have provided strong results and the natural properties of Qcide should work in BGT's favour. BGT has undertaken successful trials with Purdue University, demonstrating the efficacy of Flavocide against different species of mosquito. Bio-Gene continues to seek the leverage of its partnerships to further trials into the efficacy of Flavocide.

Clarke is the largest company combatting the public health impacts of vector-borne disease, including malaria, Zika and Dengue virus

PARTNERSHIPS & COMMERCIALISATION PROGRAM

Public Health – Clarke

In August 2019, BGT signed a licenced material transfer agreement (MTA) with Clarke, an American company which is a world-leader in mosquito control and counteracting vector diseases such as malaria and the zika virus. Clarke undertook initial testing of Flavocide and Qcide and achieved positive results and signed a partnership in April 2020 to further develop BGT's technology for mosquito control in North, Central and South America. This partnership strongly validates the strength of BGT's technology. Stage 2 trials are currently ongoing and are expected to be completed in early 2021, before progressing to field trials (stage 3).

Grain Storage – BASF, GRDC & DAF

BGT completed Stage 1 of their four-way collaborative research program for pest control in stored grain in April 2020. This partnership includes BASF, the world's largest chemical producer, the Grains Research and Development Corporation (GRDC) and the Queensland

BASF is the world's largest chemical producer

Converting collaborative research partnerships into commercial agreements pivotal for commercial viability

Government Department of Agriculture and Fisheries (DAF). The Stage 1 phase of this program undertook research to identify the optimum combination of Flavocide with existing compounds for pest control. Stage 2 was completed in September, successfully demonstrating control over all resistant strains of the major grain storage pests. Stage 3 (field trials) began in November 2020 and will take approx. nine months to complete. BASF is offering its funding, market access and regulatory expertise to aiding the commercialisation program of BGT's technology, and we see such a company as a potential takeover suitor for BGT in the future.

Consumer Applications & Animal Health

Bio-Gene has additional MTAs in place with companies in the consumer applications and animal health markets. BGT has a total of eight MTAs in place across its four target markets. We see BGT continuing to seek a market-leading partner in both verticals as a key strategic objective for the company.

Commercialisation Strategy

Bio-Gene will continue to pursue its strategy of finding key partners in each of its target markets. The strategy that BGT has pursued thus far is to find a strong partner to contribute funding and collaboration for research and development for both Flavocide and Qcide, with a view to signing commercial deals with these partners to begin production. Both partnerships in public health (Clarke) and grain storage (BASF, GRDC & DAF) are leading to partnership trials and BGT seeks to convert these into commercial deals at the conclusion of these trials subject to positive results.

Our cost-distribution model for these partnerships includes a \$60k-\$100k initial fee for the purchase of Flavocide for initial testing, contributed R&D spending of \$600k-\$1m and an equivalent licence fee payable at development stage. Should the partnership result in an exclusive supply agreement, we would expect a royalty of 3-6% of ongoing sales. The large-scale manufacturing of the product would either be toll-processed through existing chemical manufacturers or undertaken by one of BGT's commercial partners.

SHORT-TERM REVENUE CATALYST – GRAIN STORAGE OPPORTUNITY

Research into the use of Flavocide for grain storage applications are the furthest advanced of all potential markets for the product. PAC sees grain storage as the paramount priority for BGT to drive short-term revenues and validate the potential of Bio-Gene's novel mode of action.

Potential Market

The use of insecticides for grain storage globally is varies based on geographical factors. Australia, Latin America and Africa, as well as parts of Asia, specifically the Indian subcontinent, generally have significant pest infestation problems that greatly affect crop yields. Parts of the United States and Europe do not suffer from pest infestations in grain siloes due to their winter harvesting of crops, and as a result are not potential markets for using Flavocide.

PAC has undertaken channel checks with its contacts in the grain industry and believe ~75-80% of Australian grain siloes use fumigation as the primary method of controlling pest populations. As a result, the use of insecticides within Australian grain storage is roughly 15-20% of all pest control methods. There would also be a blue-sky opportunity for finding potential markets in South America and Africa.

Whilst there are ultimately blue-sky potential markets for Flavocide, particularly the Indian market, we believe the first real medium-term revenue catalyst for BGT is the Australian market.

If BGT's development and commercialisation of Flavocide is successful, PAC sees a pathway to revenue in the Australian grain storage insecticide market, assuming the 20% metric as above. We have assumed an insecticide cost to grain siloes at \$2/t.

	2020	2021	2022	2023	2024	2025
Total Grain Storage Market (Mt)	11.0	11.6	11.3	10.8	11.1	11.4
Flavocide Potential Market (Mt)	2.2	2.3	2.3	2.2	2.2	2.3
Ramp up	0%	0%	10%	25%	60%	100%
Flavocide \$/t	2	2	2	2	2	2
Revenue	0.0	0.0	0.5	1.1	2.7	4.6

Source: PAC Partners Estimates, IBISWorld

These forecasts are highly risked, as they are contingent upon the efficacy of trials, a commercial agreement with BASF and manufacturing and distributing at-scale. Validation of BGT's technology through Phase 3 trials and by signing a commercial agreement with BASF would prove to the grain storage industry that Flavocide is more effective than existing technologies and would allow BGT to start penetrating the market.

BOARD AND MANAGEMENT

The Board is led by Non-Executive Chairman Don Brumley, who has served in this role since 2017. Mr. Brumley has a strong background in equity capital markets and audit, having served for over 30 years as a senior partner of EY Oceania. He was the IPO Leader at EY and aided listings on Australian, American, British and Asian stock exchanges, and has experience in biotechnology. He is a former director of Murray River Organics Group Ltd (ASX:MRG).

CEO and Managing Director Richard Jagger has over 20 years' experience in agriculture and the AgChem industries, working for some of the world's largest companies. Mr. Jagger worked as senior executive manager of Monsanto (Aus/NZ) and co-created the Australian subsidiary of Sinochem as Managing Director. He possesses unique experience in the field of crop protection and biotechnology and can leverage extensive industry knowledge in his role at BGT.

Other board members include ex-CEO Robert Klupacs, a registered patent and trademark attorney who brings extensive experience in founding and serving on boards of a vast array of biotechnology companies, having previously served as Managing Director of Circadian Technologies (now Opthea Ltd. ASX:OPT).

Additionally, Peter May serves as the Executive Director of Research & Development, possessing vast experience in the pesticides and crop protection markets, working for Incitec, Orica and Crop Care Australasia. Mr. May also has listed company experience, having worked for BioProspect Limited (ASX:BPO) as CEO and subsequently Non-Executive Chairman.

Kevin Rumble is the founder of BGT and currently serves as a Non-Executive Director.

Converting collaborative research partnerships into commercial agreements pivotal for commercial viability

Board of Directors			
Individual	Position	Appointed	Background
Don Brumley	Non-Executive Chairman	2017	Equity Capital Markets and Biotechnology
Richard Jagger	CEO & Managing Director	2017	Agriculture and AgChem
Robert Klupacs	Non-Executive Director	2015	IP & Biochemistry
Peter May	Executive Director (Research & Development)	2015	Agriculture and AgChem
Kevin Rumble	Founder & Non-Executive Director	2004	Advertising & Biotechnology

Strong agriculture and ag-chem experience behind the board

Doug Rathbone, former CEO of Nufarm Limited (ASX:NUF), serves as an advisor to the board and was pivotal in securing the BASF relationship for BGT.

The Senior Management team is small, comprising only CEO/Managing Director Richard Jagger and Executive Director Peter May, alongside CFO Roger McPherson and Program Manager Dr. James Wade. Mr. McPherson has over 20 years’ experience in finance and accounting roles, and Dr. Wade holds a PhD in cell and developmental biology. BGT tends to contract much of its R&D efforts to external parties whilst retaining overall control of IP.

Senior Management

Individual	Position	Appointed	Background
Richard Jagger	CEO & Managing Director	2017	Above
Roger McPherson	CFO & Company Secretary	2017	Accounting & Finance
Peter May	Executive Director (Research & Development)	2015	Above
Dr. James Wade	Program Manager	2018	Biological Research

Market

Global pest control market growing at CAGR of 5% p.a.

Increased focus on public health post-COVID

GLOBAL PEST CONTROL MARKET

The global pest control market was valued at US \$20.5b in 2019 and is expected to grow at a CAGR of 5% through to 2025, where it will reach a market value of US \$27.5b (Markets & Markets). The key drivers behind the market are the increasing number of fatal vector-borne diseases, which accounts for 7m deaths worldwide annually (WHO), or 17% of all infectious diseases around the world. Focus and expenditure (particularly public expenditure) on public health is expected to be rapidly increased in the post-COVID environment, as governments recognise the catastrophic impact of “black swan” public health events. Moreover, increasing global population and adverse impacts of climate change on agriculture are necessitating an increase in crop yield.



*RoW include South America and the Middle East.

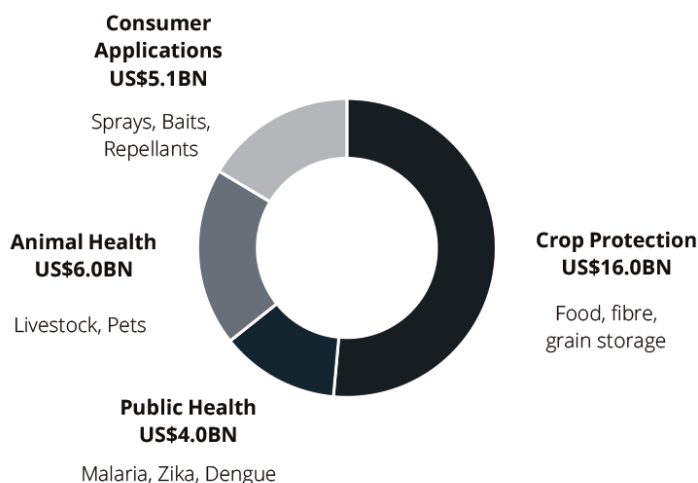
Source: Markets & Markets

By Segment

The largest application for insecticides by segment is the crop protection market, accounting for over 50% of the end-uses for insecticide products. Crop protection includes the spraying of insecticides on food and fibre crops, as well as in storage settings such as grain storage.

Insecticide Market by Application, US \$ Billion p.a. (2017)

Crop protection largest market for insecticides



Source: Bio-Gene Technology website

Industry Players

Industry largely concentrated among biggest players

The pest control, particularly the insecticide market, has been an industry with voluminous M&A activity. The industry now is concentrated between large industry heavyweights. The top seven global insecticide producers account for around 40% of the overall market.

Company	MCap USD	Insecticide Sales (2019) USD	Notes
Syngenta AG	Unlisted Subsidiary	\$2.1b	Acquired by ChemChina (2017)
Corteva Inc. (NYSE:CTVA)	\$21.4b	\$1.7b	Spun-off from DowDuPont (2019)
Bayer AG (OTC:BAYRY)	\$66.9b	\$1.7b	
UPL Ltd. (NSE:UPL)	\$5.8b	\$1.6b	
BASF SE (ETR:BAS)	\$56.4b	\$944m	

Sources: IRESS, Statista, Annual Reports of Respective Companies. As at 26/8/20.

Many of these large industry players have come under public criticism for the prevalence of toxins within their insecticide products, and as a result there is an increasing push to find less harmful alternatives.

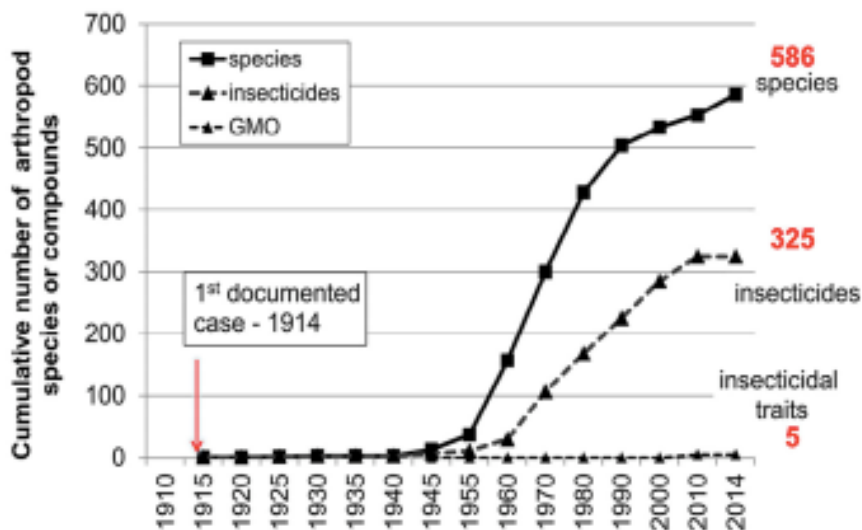
INSECTICIDE MODES OF ACTION (MOAS)

Insecticide Resistance

Through natural selection and a widespread overuse and misuse (sub-lethal dosages) of insecticides, pests are quickly increasing their resistance to all currently-used classes of insecticides. All existing classes of insecticides have recorded resistance, greatly reducing the efficacy of existing forms of insecticides. Resistance develops in four ways: metabolic (immune defence), target site (evolution to block the entry of toxins), slowing penetration and behavioural (learning to evade toxins). Once a pest develops resistance to one chemistry of insecticides, it will usually become resistant to the entire class of insecticides. That indicates that through an overuse of one existing class of insecticides, it will have a decreasing rate of efficacy, and thus it is very valuable to develop a new class of insecticides.

Increasing Instance of Insecticide Resistance

Overuse of insecticides is greatly increasing resistance to existing technologies



Source: Sparks & Nauan,(2015)

Existing Products & Modes of Action

Classification governed by IRAC

Only five key classes of insecticides make up a majority of the global sales market. Classification as a MoA is administered by the Insecticide Resistance Action Committee (IRAC):

Class	Year Discovered	IRAC Type	Global Sales (\$US)	% of Total Insecticide Sales
Organophosphates	1944	1A	~\$1.9b	11%
Carbamates	1950	1B	~\$700m	4%
Pyrethroids	1977	3	~\$2.7b	16%
Neonicotinoids	1990	4	~\$4.6b	27%
Diamides	2008	28	~\$1.4b	8%

Source: Sparks & Nauan, 2015, IRAC, Agranova. Sales data is only current at 2013.

If BGT was able to achieve IRAC certification to have Flavocide approved as a Novel MoA, there would be significant commercial opportunities attached as Novel MoAs do not have any prior recorded resistance. Most of the major existing MoA's provide \$1b+ p.a. in revenue and this would provide a significant long-term annuity-style revenue stream.

Most recent class discovered in 2008 – now achieves ~\$1.4b in annual revenue

Case Study – Nihon Nohyaku: Diamides

Japanese chemical manufacturer Nihon Nohyaku discovered, and subsequently co-developed with Bayer AG the insecticidal compound of diamides beginning from 2008. Nihon Nohyaku's extraordinary breakthrough led to competitors such as DuPont and Syngenta adding further research to this new class of insecticides to be able to launch their own products. Diamide products are now sold by Corteva, Syngenta and Bayer and generated ~\$1.4b in global sales (2013).

The diamides model is one that BGT would seek to emulate, developing the new technology in conjunction with one of its major partners, whom would contribute funding and expertise to the commercialisation process of beta-triketones. BGT would seek to follow the diamides model and achieve a recurring annuity-style royalty stream, of which the industry standard is between 3-5% of total sales. If beta-triketones gained a similar market share to diamides, this would indicate annual revenues of ~\$40-50m from grain storage & crop protection.

Corporate and Peers

TOP SHAREHOLDERS

Rank	Shareholder	Shares Held (m)	%
1	Kevin Rumble	8.67	5.72%
2	Richard Jagger	5.39	3.56%
3	Robert Klupacs	3.56	2.36%
4	Russell Hancock	3.19	2.11%
5	Dead Knick Pty. Ltd.	3.0	1.98%
6	Magdajano Pty. Ltd.	2.87	1.90%
7	Altor Capital Management Pty. Ltd.	2.50	1.65%
8	Peter May	2.30	1.52%
9	Jb Toro Pty. Ltd.	2.19	1.44%
10	Mark Lochtenberg	2.09	1.38%

Source: IRESS – As at 30/09/2020

Bio-Gene's has a diverse share register, comprising of mainly company management and directors and retail shareholders. The top three shareholders all currently serve on the board of directors, and the top 20 shareholders account for 30.75% of the ownership of the company. Both the CEO Richard Jagger and Exec. Director Peter May sold shares in September. There are no institutional investors on the register.

BGT'S COMPETITORS

There is no direct competition in producing a novel beta-triketone MoA for insecticides and BGT's proprietary technology is protected by patents. Competition is minimal as insecticides are largely used in a "rotational" fashion as complementary technologies, rather than as a substitute for existing methods. The only other ASX-listed companies involved in the R&D and manufacturing of agricultural chemical products are Terragen Biotech (ASX:TGH) and Nufarm (ASX:NUF). TSX-listed Bee Vectoring Technologies (TSX:BEE) is an international comparison with its focus on developing naturally-occurring insecticide technology.

	Bio-Gene	Terragen	Nufarm	BeeVT
Ticker	ASX:BGT	ASX:TGH	ASX:NUF	TSX:BEE
MCap (\$m)	22.3	69.8	1609.9	29.3
Headquartered	Melbourne, VIC	Coolum Beach, QLD	Melbourne, VIC	Mississauga, Canada
Primary Focus	Insecticides	Soil & Animal Production	Seed & Crop Protection	Insecticides
Cash Balance	5.5	16.4	423.9	0.8
Revenue (FY'20A)	0.1	1.5	1603.9	0.1
EBITDA (FY'20A)	-2.1	-4.8	-391.7	-3.0
Enterprise Value	16.8	53.8	2463.0	28.6
EV/Revenue	136.5	35.2	1.5	438.5
EV/EBITDA	-8.2	-11.3	-6.3	-9.7

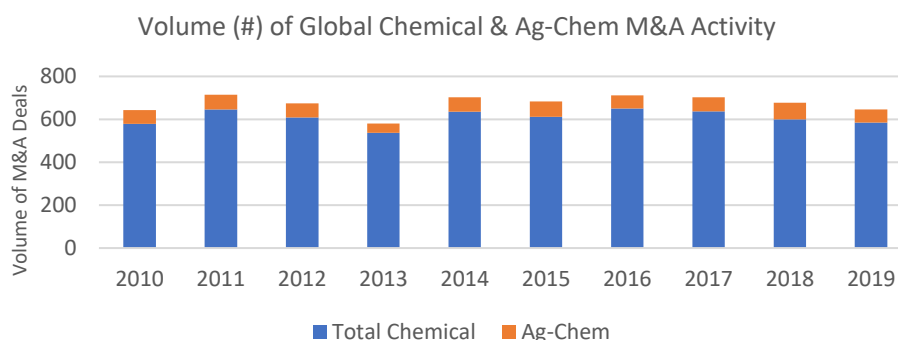
Source: Company reports, IRESS, Sentieo. All figures quoted in millions of AUD and as at 24/11/2020.

SECTOR M&A ACTIVITY

The ag-chem industry has seen high levels of M&A activity, especially in the past five years. The activity has been characterised by a period of consolidation by the largest industry players, including Bayer AG's \$66b acquisition of Monsanto (2018), and BASF's \$7b acquisition of Bayer's crop science division (2018). Chem-China's acquisition of Syngenta for \$43b in 2017 and DowDuPont's spinoff (known as Corteva) has consolidated the hold of the market by the largest players.

No direct competitors – product to be used in “rotational” strategy with existing technologies

Strong M&A activity in ag-chem sector



BGT a likely acquisition target

Source: Deloitte, S&P Capital IQ

We expect M&A activity to focus on the acquisition of smaller players with niche technology in the short-medium term due to recent consolidation among the larger players, making BGT in our opinion a prime takeover possibility in the medium-term.

Valuation, Next Steps & Risks

INVESTMENT VIEW – HOLD, P.T. \$0.22/SHARE

We initiate on BGT with a Hold and a price target of \$0.22/share. We believe this is a very speculative stock, as we don't believe it can achieve concrete medium-term revenues, and will remain reliant on external funding for the foreseeable future. The key value proposition derives from Bio-Gene's intellectual property and partnership arrangements, and the key drivers are further advancements along the commercialisation process with BASF & Clarke, as well as finding new partners across other applications.

VALUATION – EV / REVENUE MULTIPLE – P.T. \$0.22/SHARE

Our valuation is performed by using an EV / Revenue multiple to assess BGT as the company does not have any prior or near-term earnings, thus making it difficult to forecast using a DCF or EV / EBITDA multiple.

We examined the two closest M&A transactions in the small-cap insecticide industry, Sumitomo's acquisition of pyrethrins insecticide producer Botanical Resources Australia in 2017 and Quoram's acquisition of American ag-biotech firm Plant Healthcare Plc.

Date	Target	Acquirer	Value (A\$m)	Implied TEV/LTM Revenue
22/11/2017	Botanical Resources Australia	Sumitomo Chemical Co. Ltd.	177.09	2.14
16/04/2013	Plant Healthcare Plc.	Quoram Ltd.	40.9	7.2
		Mean		4.67

Source: S&P Capital IQ

We forecasted BGT revenues to FY'25F (\$12.3m), based on potential market share in the Australian grain storage and Americas public health market, and applied the 4.67x multiple and discounted with a WACC of 11.1%. We have attached a speculative risk rating as this valuation is dependent on Qcide and Flavocide reaching commercial viability by the end of our forecast period.

NEXT STEPS

The key short-to-medium term catalysts for BGT are the ongoing trials into the efficacy of Flavocide for the grain storage and public health markets.

Grain Storage

- Nov'20: Stage 3 trials commence
- Feb'21: First preliminary assessment of trial
- Aug'21: Stage 3 trials completed
- Late 2021: Potential commercial agreement with BASF

BGT's progress in the grain storage market is the key catalyst for the company. Trials into grain storage are more advanced than other applications, and the partnership with BASF is a strong relationship for Bio-Gene. There is a pathway to strong \$10m+ p.a. grain storage revenues, first by focusing strongly on the Australian market. Successful trial results are the near-term milestone and positive results could either lead to a commercial agreement or a takeover attempt by BASF. The success of this timeline in the grain storage application is the major driver behind the medium-term financial viability of the company.

Public Health

- Jan/Feb 2021: Stage 2 trials completed
- Q2'21: Stage 3 commences
- Early 2022: Stage 3 completed
- Mid-2022: Potential commercial agreement with Clarke

Whilst slightly further away than grain storage, BGT's immediate focus is on the ongoing stage 2 trials of Flavocide for the public health market in collaboration with Clarke. The conversion of this work into a commercial agreement is the second significant driver behind BGT's medium-term earnings. Obtaining these two commercial agreements are BGT's predominant focus.

Other

- Late 2020: Toxicology studies complete
- FY'21 – Conversion of Material Transfer Agreements (MTAs) into partnership agreements with preliminary operational terms (tonnage, BGT's role)

Bio-Gene will continue its focus on R&D and ongoing trials into the efficacy of Flavocide across different applications in FY'21. BGT is actively seeking new partnerships, particularly for the use of Qcide for consumer applications, and we believe this is a short-term price catalyst for the company.

The commercial viability of Flavocide remains uncertain, but positive steps towards advancing these trials and converting into commercial agreements are the largest de-risking events for the company. Our view of BGT has upside once PAC has a clearer picture of the efficacy of the product and the production and distribution model.

RISKS

Commercial Viability

BGT's ability to generate revenue and earnings depends on the successful development, regulatory approval and largescale production and distribution of Flavocide. All of these steps have not yet been rigorously tested for viability and as such we attach a speculative risk rating to this report.

Funding

BGT will remain reliant on external funding for the medium term. We project BGT will have adequate cash to self-fund until FY'22, where it will need to raise more funds.

Testing Process

Ongoing trials into grain storage and public health applications for Flavocide may prove ineffective and render it uncommercial. This would heavily affect BGT's future earnings prospects.

Trials and Regulatory Process - BGT's technology must go through the APVMA process to be sold in Australia. The product may be found to lack efficacy or contain toxins which could halt the commercialisation process. On the positive side of regulation, there are potential Government mandates which may speed up use of BGT's products.

Financial Model

Model	Bio-Gen Technology	Mcap (A\$M)	\$23
Date	2/09/2020	Premium	48%
Price	0.15	Price Target	0.22
Shares	153.63		

Income Statement	FY20A	FY21F	FY22F	FY23F	FY24F	FY25F
Revenue	0.1	1.3	2.9	4.1	7.4	12.3
CoGs	-0.2	-0.3	-0.6	-0.8	-1.5	-2.5
Gross Profit	-0.1	1.0	2.4	3.3	5.9	9.9
OpEx	-1.1	-1.2	-1.3	-1.4	-1.6	-1.7
EBITDA	-2.1	-1.8	-0.8	-0.2	2.0	5.5
D&A	-0.1	0.0	-0.1	-0.1	-0.2	-0.2
Operating Profit	-2.1	-1.8	-0.8	-0.2	2.1	6.2
Interest Expense, Net	0.0	0.0	0.0	0.0	0.0	0.0
Unusual Items	0.0	0.0	0.0	0.0	0.0	0.0
EBT	-2.1	-1.8	-0.7	-0.2	2.1	6.2
Tax Expense	0.0	0.5	0.2	0.0	-0.6	-1.6
NPAT underlying	-2.1	-1.2	-0.5	-0.1	1.5	4.6

Balance Sheet	FY20A	FY21F	FY22F	FY23F	FY24F	FY25F
Cash & Equivalents	5.5	4.1	4.9	4.2	4.4	8.2
Total Receivables	0.5	0.4	0.9	1.3	2.3	3.9
Inventory	0.0	0.0	0.1	0.1	0.1	0.2
Other	0.2	0.0	0.0	0.0	0.0	0.0
Current Assets Total	6.2	4.5	5.9	5.6	6.9	12.3
PPE, Net	-0.1	-0.1	0.0	0.1	0.3	0.6
Goodwill	0.0	0.0	0.0	0.0	0.0	0.0
Intangible, Net	0.4	0.5	0.7	0.9	1.2	1.8
Other	0.0	0.0	0.0	0.0	0.0	0.0
Non-Current Assets Total	0.2	0.4	0.7	1.0	1.5	2.4
Total Assets	6.4	4.9	6.6	6.6	8.4	14.7
Short Term Debt	0.0	0.0	0.0	0.0	0.0	0.0
Accounts Payable	0.3	0.1	0.1	0.2	0.4	0.6
Unearned Revenue	0.0	0.1	0.1	0.2	0.4	0.6
Other	0.1	0.1	0.1	0.1	0.1	0.4
Current Liabilities	0.4	0.2	0.3	0.5	0.8	1.6
Long Debt, & Similar	0.0	0.0	0.0	0.0	0.0	0.0
DTL	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.2	0.2	0.2	0.2	0.2	0.2
Total Non-Current Liabilities	0.2	0.2	0.2	0.2	0.2	0.2
Total Liabilities	0.6	0.3	0.5	0.6	1.0	1.8
Common Stock	14.5	14.5	16.5	16.5	16.5	16.5
Retained Earnings	-9.5	-10.7	-11.2	-11.4	-9.9	-3.5
Minority	0.0	0.0	0.0	0.0	0.0	0.0
Comp. Income	1.0	1.0	1.0	1.0	1.0	1.0
Total Equity	6.0	4.8	6.2	6.1	7.6	14.0

Cash Flow Statement	FY20A	FY21F	FY22F	FY23F	FY24F	FY25F
EBIT	-2.1	-1.8	-0.8	-0.2	2.1	6.2
Taxes	0.0	0.5	0.2	0.0	-0.6	-1.6
Interest Expense	0.0	0.0	0.0	0.0	0.0	0.0
D&A	0.1	0.0	0.1	0.1	0.2	0.2
Change Working Capital	0.0	0.0	-0.4	-0.3	-0.8	-1.1
Other	-0.6	0.0	0.0	0.0	0.0	1.8
Cash Flow from Operations	-1.6	-1.2	-0.8	-0.3	0.9	4.9
Capital Expenditure,	0.0	-0.2	-0.4	-0.4	-0.7	-1.1
Cash Acquisitions	0.0	0.0	0.0	0.0	0.0	0.0
Cash Flow from Investing	0.0	-0.2	-0.4	-0.4	-0.7	-1.1
Movement Debt, Net	0.0	0.0	0.0	0.0	0.0	0.0
Equity Issue, Net	2.7	0.0	2.0	0.0	0.0	0.0
Dividends, Incl. Special	0.0	0.0	0.0	0.0	0.0	0.0
Cash Flow from Financing	2.7	0.0	2.0	0.0	0.0	0.0
Valuation Multiples						
EV / Revenue	145.3	14.0	6.1	4.4	2.4	1.4
EV / EBITDA	-8.7	-10.2	-25.9	-267.0	7.9	3.1
EV / EBIT	-8.5	-9.9	-23.3	-95.1	8.6	2.9
EV / FCFF	-8.8	-12.4	-14.4	-26.0	105.6	7.2
P / E	NM	-18.8	-44.8	-204.5	15.9	5.1
Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross Margin	(70.0%)	80.0%	80.0%	80.0%	80.0%	80.0%
EBITDA	(1670.5%)	(137.7%)	(23.4%)	(1.6%)	30.3%	47.2%
EBIT	(1707.1%)	(141.6%)	(26.0%)	(4.6%)	28.0%	50.0%
PBT margin	(1688.9%)	(139.4%)	(25.3%)	(4.0%)	28.3%	50.2%
Effective Tax Rate	30.0%	30.0%	30.0%	30.0%	30.0%	26.0%
Net Profit	(1688.9%)	(97.6%)	(17.7%)	(2.8%)	19.8%	37.2%
Valuation Ratios						
ROIC	-38%	-24%	-10%	-2%	21%	42%
ROE	-38%	-23%	-9%	-2%	21%	43%
EPS	-0.01	-0.01	0.00	0.00	0.01	0.03
DPS	0.00	0.00	0.00	0.00	0.00	0.00
Solvency Ratios						
Debt / Equity	0%	0%	0%	0%	0%	0%
Net Debt / Equity	-92%	-86%	-78%	-69%	-58%	-58%
Debt / Total Capital	0%	0%	0%	0%	0%	0%
Net Debt / Total Capital	-92%	-86%	-78%	-69%	-58%	-58%
EBITDA / Interest	92.8 x	67.4 x	39.9 x	9.8 x	96.2 x	250.2 x
EBITDA - Capex / Interest	92.8 x	59.7 x	21.2 x	6.6 x	128.4 x	301.8 x
EBIT / Interest	93.5 x	65.6 x	37.2 x	7.7 x	98.1 x	279.5 x

Source: PAC Partners

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Buy	Hold	Sell
>20%	20% – 5%	<5%

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