BIOPHARMA

svb Securities

Apples, Oranges, and the First of Many BBIO/BMRN Debates

March 20, 2023

- **Bottom Line:** Last week BMRN (OP, Schwartz) presented updated results from the ongoing BMN 111-301 Phase 3 extension study of Voxzogo in children with achondroplasia, at the 2023 American College of Medical Genetics and Genomics (ACMG) meeting, including a subgroup analysis stratified by baseline annualized height velocity (AHV or AGV) showing greater benefit in children with low baseline AHV. This analysis sparked debate among investors comparing these results to those for BBIO's (OP, Foroohar) infigratinib. We note this cross-trial comparison of a retrospective subgroup analysis of the extension of a completed pivotal study for BMRN to an immature dataset from another ongoing trial with different inclusion/exclusion criteria for BBIO has us hesitant to draw strong conclusions. The subgroup analysis in BMN 111-301 showed a +4.06cm/yr increase from baseline at month-6 for children with baseline AHV ≤ 3.5 cm/yr—an impressive result (overall +1.40 cm/yr reported in the Voxzogo label at 52 weeks) hinting to potential greater benefit for children with the lowest AHV at baseline. While investors have pointed to comparison with infigratinib PROPEL Cohort 5 results (note here), which showed +3.03 cm/yr across all patients treated regardless of baseline AHV as evidence of a potential best-profile for Voxzogo in this subgroup, **in this note we perform a subgroup analysis of the PROPEL Cohort 5 dataset to provide a comparison that is closer to apples-to-apples. We also review the limitations of this (still statistically unsound) comparison, and the limits of its clinical relevance.**
- **Stock Impact:** While these analyses don't justify changes to our models/estimates, this debate has reignited arguments over Voxzogo's durability to potential competition with infigratinib. These companies are likely to continue counter-detailing one another at scientific and investor fora at least until BBIO's Phase 3 results, and we would expect BBIO and BMRN shares to realize elevated volatility into those events (with implications for investors in related derivatives).

Reason for report:
PROPRIETARY INSIGHTS

S&P 500 Health Care Index: **1,462.81**

Companies Highlighted

BBIO, BMRN

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- **What do the data actually show?** In the BMN 111-301 study (Exhibit 1), subgroup analysis of change from baseline AHV at month-6 stratified by baseline AHV showed an increase of +4.06 cm/yr in treated children with baseline AHV ≤ 3.5 cm/yr (n=18), +1.74 cm/yr among children with baseline AHV >3.5 to ≤4.5 cm/yr (n=14), and +0.05 cm/yr for children with baseline AHV >4.5 (n=26). In Cohort 5 (go-forward dose) of the Phase 2 PROPEL study of infigratinib (Exhibit 2), of 12 children treated 8 had baseline AHV ≤ 3.5 cm/yr (including 2 children with only 3 months follow-up), 2 had baseline AHV >3.5 to ≤4.5 cm/yr and 2 had baseline AHV >4.5 cm/yr. Among children with baseline AHV ≤ 3.5 cm/yr, change from baseline was +3.78 cm/yr when including only patients with at least 6 months of follow-up, and +5.04 cm/yr when including all 8 patients.
- **What are the limitations of the analysis?** While comparison in the subgroup with baseline AHV ≤ 3.5 cm/yr shows more favorable height benefit for Voxzogo in Ph.3 vs infigratinib in Ph.2 at month-6 (+4.06 vs +3.78 cm/yr), the mean baseline was 2.55 cm/yr in BMN 111-301, which is lower than the mean of 2.97 cm/yr in the same subgroup in PROPEL, which could indicate that an even greater increase from baseline for infigratinib could have potentially been achieved in a group with a similar mean baseline AHV. We also note that in BMN 111-301, among the 18 patients with baseline AHV ≤ 3.5 cm/yr, 2 patients started with a negative baseline AHV, including one showing the largest AHV increase from baseline (Exhibit 3) vs none in PROPEL, which could have also biased observed results. Lack of details on key confounding factors such as age and sex in these subgroups make comparisons between studies even more fraught, given the known impact of these factors on AHV. Lastly, we view 3.5 cm/yr as an arbitrary threshold with no proven clinical relevance. In conversation, BBIO management highlighted 4 cm/yr as the median AHV reported in natural history studies for achondroplasia children.
- **How could BBIO's infigratinib's Ph.3 data look at month-12 in patients with baseline >3.5 cm/year to ≤4.5 cm/year compared to BMRN at a similar timepoint and patient segment?** Trends observed for Voxzogo in Ph.2 and Ph.3 show that AHV improvement comes down over time (Exhibit 5), with AHV benefit coming down 7% from month-6 to month-12 in Ph.2, then coming down another 28% in Ph.3 at month-12. Given the similar trend seen with BBIO and BMRN for AHV benefit at month-6 based on baseline AHV (exhibit 4), we wonder whether infigratinib may also show a similar pattern of regression as the asset advances from 6 to 12 months and from Ph.2 to Ph.3. A side-by-side comparison of BMRN and BBIO's data suggests (as one would expect) similar baseline AHV in the subset of patients with a baseline AHV >3.5 to ≤4.5 cm/year (Exhibit 6) – although we note that these AHV thresholds are arbitrary and that the small n (n=2) for BBIO limits interpretations of results for this subgroup. In this subgroup, mean baseline AHV was 3.96 cm/yr in BMRN's Ph.3 study and 3.95 cm/yr in BBIO's Ph.2 trial. The change from baseline at month-6 was

+1.74 cm/yr in BMRN's Ph.3 trial and +2.75 cm/yr in BBIO's Ph.2 trial. If infigratinib shows similar regression as BMRN (Exhibit 5), BBIO's AHV of +2.75 cm/yr at month-6 in Ph.2 would come down to +2.56 cm/yr at month-12 and down to +1.85 cm/year at month-12 in Ph.3, in the subset of patients with AGV baseline between 3.5 to 4.5 cm/yr. Compared to BMRN that showed a +1.83 cm/yr at month-12 in Ph.3 in the same patient population (Exhibit 1), our calculations suggest that the two programs could have similar effects in this subgroup after normalizing for baseline AHV, phase of the trial, and treatment duration (+1.85 cm/yr BBIO vs. +1.83 cm/yr BMRN; Exhibit 7). We acknowledge this is a simplified calculation based on a limited sample size for BBIO, and other factors – random variation, age, and gender mix – could skew the outcome markedly.

- **What's the real-world relevance of these results?** In clinical practice, we see stratification of children with achondroplasia by baseline AHV as highly unlikely. Based on previous KOL discussions (MEDACorp survey link), we believe clinicians will give the best-in-class drug to these patients based on labeled efficacy, regardless of baseline AHV. Hence, while this subgroup analysis has provided additional color on height benefit based on baseline AHV, these results do not change our view on the expected potential commercial success of infigratinib and Voxzogo, vs one another or in absolute terms, when considering aggregate market penetration.

Exhibit 1. AHV Improvement Segmented by Baseline AHV for BMRN in Ph.3

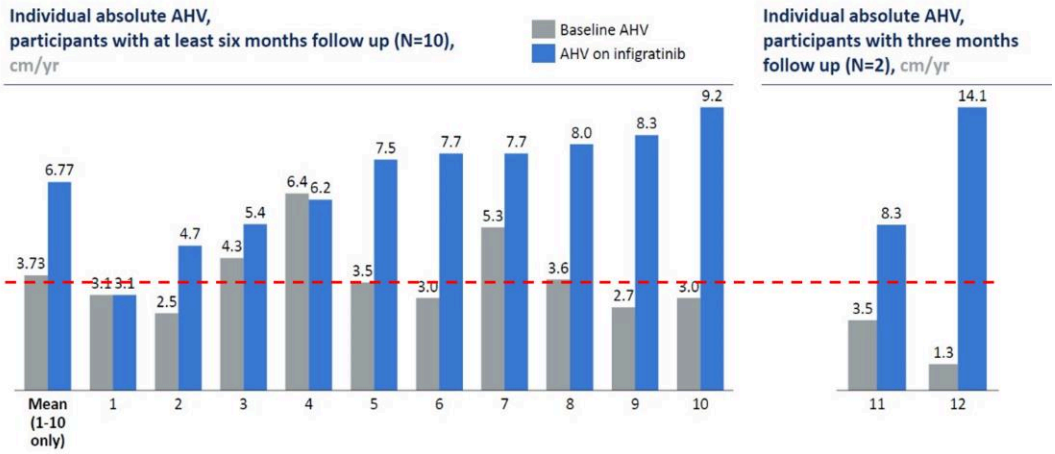
Study 111-301 – Importance of longer term follow-up in growth disorders: Lessons from early data

	Baseline AGV Category (cm/y)					
	Placebo ≤3.5 (n=19)	Vosoritide ≤3.5 (n=18)	Placebo >3.5 to ≤4.5 (n=18)	Vosoritide >3.5 to ≤4.5 (n=14)	Placebo >4.5 (n=24)	Vosoritide >4.5 (n=26)
Baseline AGV Mean (SD)	2.64 (0.67)	2.55 (1.06)	4.03 (0.30)	3.96 (0.24)	5.20 (0.58)	5.61 (0.74)
Change from Baseline in AGV at Week 26 Mean (SD)	+1.63 (1.96)	+4.06 (2.37)	+0.16 (1.18)	+1.74 (0.91)	-1.37 (1.47)	+0.05 (1.60)
Change from Baseline in AGV at Week 52 Mean (SD)	+1.34 (1.77)	+3.07 (1.14)	+0.06 (0.97)	+1.83 (1.05)	-1.40 (1.11)	+0.03 (1.07)

- Lower baseline AGV results in a higher magnitude change from baseline for both vosoritide- and placebo-treated patients, especially during the first 6 months of treatment
- A comprehensive understanding of the treatment effect requires evaluation over a longer duration of time and proper comparison with untreated patients

Source: BMRN poster ACMG 2023.

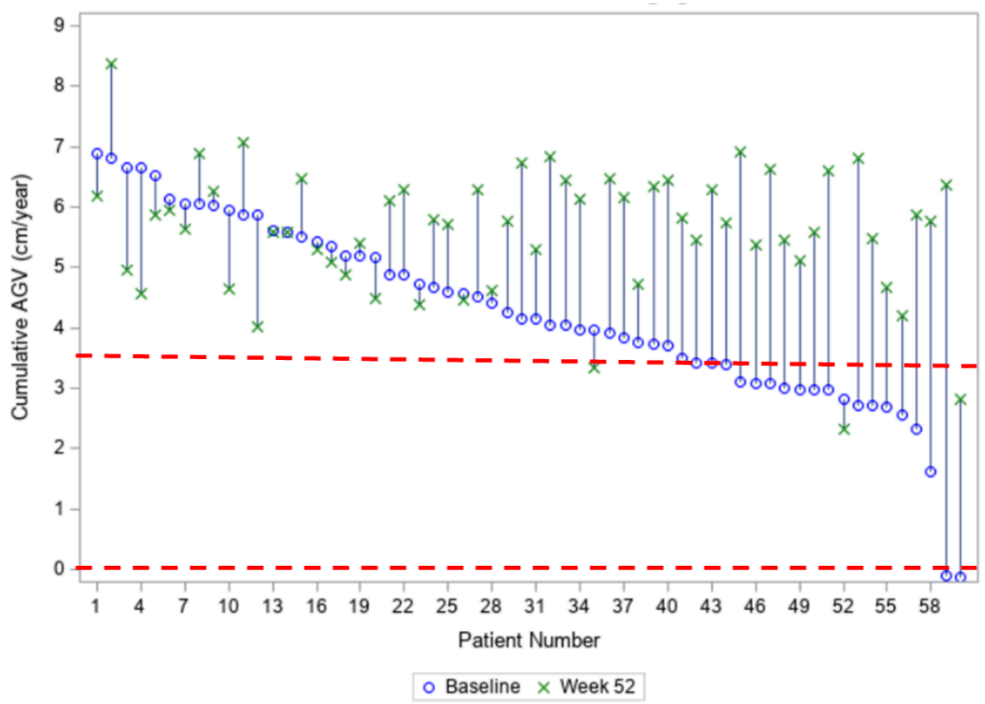
Exhibit 2. AHV data for Ph.2 PROPEL Cohort 5 Patients



	≤3.5 cm/yr	>3.5 to ≤4.5 cm/yr	>4.5 cm/yr
	n=6	n=2	n=2
Mean* Baseline AHV	2.97	3.95	5.85
Mean* 6 months AHV	6.75	6.7	6.95
AHV Change	**+3.78**	**+2.75**	**+1.10**

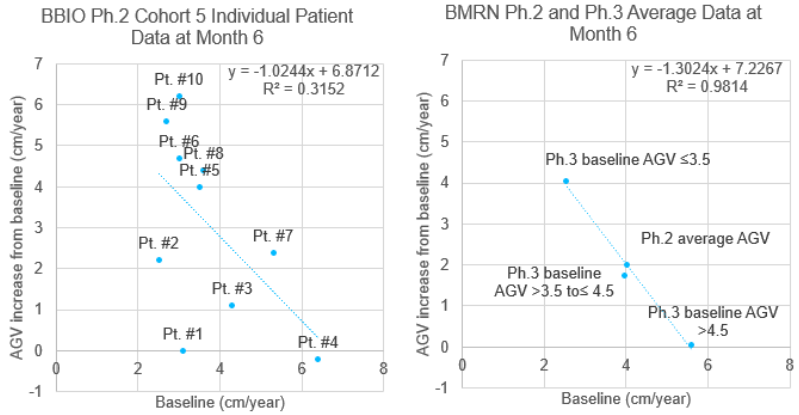
Source: Company press release, SVB Securities research.
*Arithmetic mean.

Exhibit 3. Waterfall Plot of Change in AHV from Baseline in Individual Treated with Voxzogo in Ph.3 BMN 111-301



Source: BMRN FDA filings.

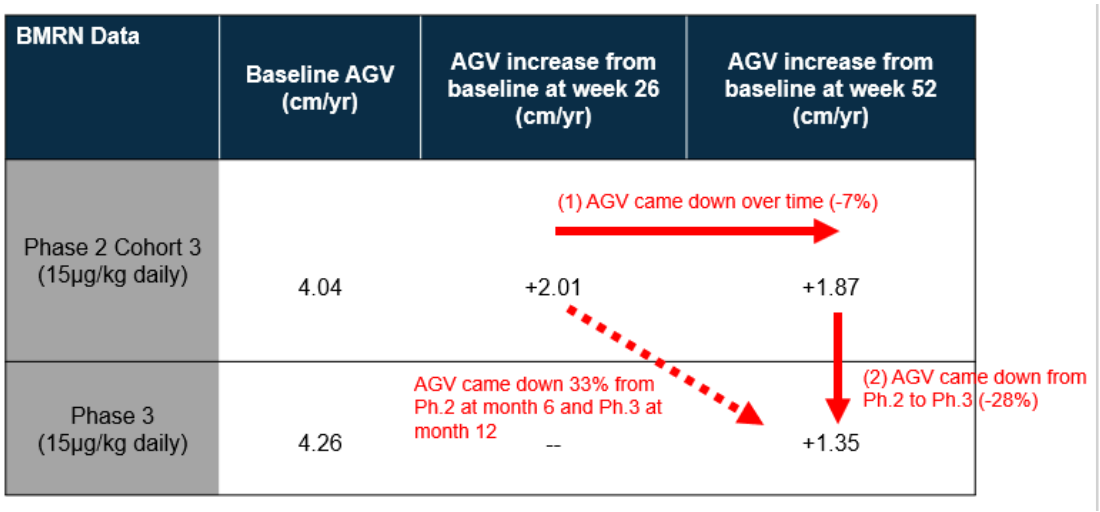
Exhibit 4. BBIO and BMRN Show Similar Trend in AHV Effect Based on Baseline AHV



Note: We do not have individual baseline and AGV increases from baseline for BMRN so we plotted the averages from Ph.2 at month 6 and segmented baseline AGVs from Ph.3 at month 6.

Source: BMRN poster ACMG 2023, BBIO press release, SVB Securities research.

Exhibit 5. Trends Observed in BMRN's Trials Showcase the Regression of AGV in Ph.2 from 6 Months to 12 Months, and Ph.2 to Ph.3



Source: Savarirayan et al., The New England Journal of Medicine, 2019; BMRN presentation, SVB Securities research.

Exhibit 6. Side-By-Side Comparison of the Programs Highlights a Similar Baseline AGV within One of the Subgroups

	BMRN Ph.3 data			BBIO's Ph.2 cohort 5 data	
	Mean baseline AGV (cm/year)	Change from baseline at 6 months (cm/year)	Change from baseline at 12 months (cm/year)	Mean baseline AGV (cm/year)	Change from baseline at 6 months (cm/year)
Baseline AGV ≤3.5 cm/year	2.55	+4.06	+3.07	2.97	+3.78
Baseline AGV >3.5 to ≤ 4.5 cm/year	3.96	+1.74	+1.83	3.95	+2.75
Baseline AGV >4.5 cm/year	5.61	+0.05	+0.03	5.85	+1.1

Source: BMRN poster ACMG 2023, BBIO press release, SVB Securities research.

Exhibit 7. Assuming BBIO's AGV Regression from 6 Months to 12 Months in Ph.2 and Ph.2 to Ph.3 Has a Similar Pattern as BMRN's, the AGVs for the Programs Could Be Similar

Line	Time	BBIO AGV increase from baseline in patients with baseline >3.5 to ≤ 4.5 cm/year	Comments
1	Ph.2 at month 6	+2.75 cm/year	
2	Ph.2 at month 12	+2.56 cm/year	Assuming a -7% decrease from line 1
3	Ph.3 at month 12	+1.85 cm/year	Assuming a -28% decrease from line 2
	Time	**BMRN AGV increase from baseline in patients with baseline >3.5 to ≤ 4.5 cm/year**	**Comments**
--	Ph.3 at month 12	+1.83 cm/year	See exhibit 1

After normalizing for baseline AGV, phase of the trial, and treatment duration, BMRN and BBIO's AGV increase from baseline are similar (+1.83 cm/year BMRN vs. +1.85 cm/year in Ph.3 at month 12 for patients with baseline AGV >3.5 to ≤4.5 cm/year). Assuming BBIO's regression follows a similar pattern as BMRN's, our calculations suggest that AGV improvement for both programs could be similar.

Source: BMRN poster ACMG 2023, BBIO presentation, SVB Securities research.

DCF Model

Basic shares out 4Q22	186.0
Net Cash 4Q22	530.4
Discount rate commercial	9%
Discount rate pipeline	15%
Terminal growth rate	2%

DCF Valuation	Per share	Val. ($MM)	Proportion
Total	$ 130	24,178	100%
Naglazyme	$ 17	3,136	13%
Kuvan	$ 0	31	0%
Aldurazyme	$ 5	919	4%
Vimizim	$ 25	4,679	19%
Firdapse	$ 0	25	0%
Palynziq/PEG-PAL	$ 17	3,115	13%
Voxzogo	$ 20	3,664	15%
Brineura	$ 11	2,096	9%
Roctavian/Valrox (p/w 75% US and 100% EU)	$ 31	5,840	24%
BMN331 (HAE) (p/w 30%)	$ 0	0	0%
Eteplirsen royalty	$ 0	39	0%
Early Pipeline/Platform	$ 1	104	0%
Net Cash	$ 2.85	530	2%

Source: Company reports and SVB Securities LLC

svb Securities

Biomarin Pharmaceuticals P&L

Income Statement - GAAP ($MM)	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23E	2Q23E	3Q23E	4Q23E	2023E	2024E	2025E
Milestones, Collaboration and Royalties	6.1	1.5	1.5	1.5	1.5	6.1	1.5	1.5	1.5	1.5	6.1	6.1	6.1
Naglazyme (MPS VI)	380.4	128.0	115.8	99.5	100.5	443.8	116.5	118.3	110.3	108.5	453.7	471.2	492.8
Aldurazyme (MPS I; Royalty Revenues)	122.8	24.4	37.3	29.0	37.6	128.3	36.5	36.8	37.2	37.6	148.1	149.6	151.1
Vimizim/GALNS (MPS IVA)	623.3	183.0	173.3	155.5	152.1	663.9	183.4	188.5	158.2	152.2	682.2	708.0	727.0
Firdapse (LEMS)	-	-	-	-	-	-	-	-	-	-	-	-	-
Kuvan (PKU)	285.8	59.3	57.6	57.0	53.6	227.5	42.9	34.3	27.4	20.6	125.2	62.6	31.3
Palynziq (PKU)	237.5	54.9	61.6	66.2	72.3	255.0	72.9	80.4	81.6	86.9	321.8	383.0	409.7
BMN-331 (HAE)	-					-					-	-	-
Voxzogo (Achondroplasia)	5.9	19.7	34.4	48.3	66.8	169.2	73.8	80.1	91.8	104.3	350.0	403.5	492.5
Brineura (CLN2)	127.9	36.2	37.7	37.8	42.6	154.3	40.9	42.8	44.7	46.6	175.0	206.5	236.9
Eteplirsen (DMD; Royalty Revenues)	56.6	12.4	14.6	10.5	10.5	48.0	10.6	11.2	12.0	13.0	46.9	-	-
Valrox (Hemo A)	-	-	-	-	-	-	4.9	9.1	38.2	58.9	111.1	277.2	547.2
Total Revenue	**1,846.3**	**519.4**	**533.8**	**505.3**	**537.5**	**2,096.0**	**583.8**	**603.1**	**603.0**	**630.2**	**2,420.1**	**2,667.7**	**3,094.5**
COGS	470.5	117.0	123.1	116.3	127.3	483.7	131.5	135.8	135.6	141.6	544.5	638.8	710.3
R&D	628.8	160.8	158.2	157.8	172.8	649.6	183.0	188.9	188.6	197.0	757.5	851.7	988.3
SG&A	759.4	194.6	196.8	216.8	245.7	854.0	217.3	224.3	224.0	234.0	899.5	1,011.4	1,111.8
Intangible asset charges/(gains)	69.9	17.6	16.5	16.8	16.3	67.2	-	-	-	-	-		
Other	-	(108.0)	-		-	(108.0)					-	-	-
Total Operating Expenses	**1,928.6**	**382.0**	**494.6**	**507.8**	**562.0**	**1,946.5**	**531.7**	**549.0**	**548.2**	**572.6**	**2,201.5**	**2,502.0**	**2,810.5**
Operating Income	(82.3)	137.4	39.2	(2.5)	(24.5)	149.6	52.1	54.1	54.8	57.7	218.6	165.8	284.0
Total other	7.0	(3.1)	(4.3)	0.5	6.9	0.0	0.4	0.4	0.4	0.4	1.5	16.0	16.0
Pretax income	(75.4)	134.2	34.9	(1.9)	(17.6)	149.6	52.5	54.4	55.2	58.0	220.1	181.8	300.0
Income taxes	(11.3)	13.4	7.2	4.7	(17.3)	8.0	8.9	9.3	9.4	9.9	37.4	30.9	51.0
GAAP Net Income (Loss)	**(64.1)**	**120.8**	**27.7**	**(6.7)**	**(0.3)**	**141.6**	**43.6**	**45.2**	**45.8**	**48.2**	**182.7**	**150.9**	**249.0**
GAAP EPS (Basic)	**($0.35)**	**$0.66**	**$0.15**	**($0.04)**	**($0.00)**	**$0.76**	**$0.23**	**$0.24**	**$0.25**	**$0.26**	**$0.98**	**$0.80**	**$1.32**
GAAP EPS (Diluted)	**($0.35)**	**$0.63**	**$0.15**	**($0.04)**	**($0.00)**	**$0.75**	**$0.23**	**$0.24**	**$0.25**	**$0.26**	**$0.98**	**$0.79**	**$1.29**
Reconciliation of GAAP to non-GAAP													
Interest income (expense), net	4.8	2.0	1.4	(0.3)	(5.1)	(2.0)	-	-	-	-	-		
Provision for (benefit from) income taxes	(11.3)	13.4	7.2	4.7	(17.3)	8.0	-	-	-	-	-		
Depreciation expense	46.1	11.7	9.5	8.7	8.7	38.6	-	-	-	-	-		
Amortization expense	61.9	15.6	15.6	15.9	15.7	62.8	13.0	13.0	13.0	13.0	52.0	52.0	52.0
Stock-based compensation expense	197.4	47.8	47.1	54.7	46.8	196.4	32.0	33.1	33.0	34.5	132.6	149.1	168.0
Contingent consideration expense	8.0	2.0	0.9	0.9	0.6	4.4	-	-	-	-	-		
Severance and reorganization costs	-	-	-	4.8	18.2	23.0	-	-	-	-	-		
Gain on sale of nonfinancial assets, net	-	(108.0)	-	-	-	(108.0)	-	-	-	-	-		
Non-GAAP Net Income	**242.8**	**105.3**	**109.4**	**82.7**	**67.3**	**364.8**	**88.6**	**91.2**	**91.8**	**95.6**	**367.3**	**351.9**	**469.0**
Non-GAAP EPS (basic)	**$1.33**	**$0.57**	**$0.59**	**$0.45**	**$0.36**	**$1.97**	**$0.48**	**$0.49**	**$0.49**	**$0.51**	**$1.97**	**$1.88**	**$2.49**
Non-GAAP EPS (diluted)	**$1.31**	**$0.54**	**$0.58**	**$0.45**	**$0.36**	**$1.94**	**$0.48**	**$0.49**	**$0.49**	**$0.51**	**$1.97**	**$1.84**	**$2.44**
Wtd. Avg. Shares Outstanding	182.2	184.0	185.3	185.6	186.0	185.2	186.2	186.4	186.6	186.8	186.5	187.6	188.4
Shares Outstanding (Diluted)	185.3	194.9	187.4	185.6	186.0	188.5	186.2	186.4	186.6	186.8	186.5	191.6	192.4

Source: Company reports and SVB Securities LLC

Balance Sheet ($MM)	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23E	2Q23E	3Q23E	4Q23E	2023E	2024E	2025E
Cash & Equivalents	**1,521.7**	**1,519.1**	**1,522.3**	**1,646.1**	**1,625.4**	**1,625.4**	**1,701.0**	**1,779.2**	**1,858.0**	**1,940.7**	**1,940.7**	**1,745.6**	**2,162.6**
Convertible Notes due 2017	-					-					-	-	-
Convertible Notes due 2018	-					-					-	-	-
Convertible Notes due 2020	-					-					-	-	-
Convertible Notes due 2024	495.0	495.0	495.0	495.0	495.0	495.0	495.0	495.0	495.0	495.0	495.0	-	
Convertible Notes due 2027	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0
Interest Rate Earned on Cash	*0.2%*	*0.1%*	*0.2%*	*0.3%*	*0.5%*	*0.3%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
Interest Rate Paid on Convertible Debt	*-0.8%*	*-0.8%*	*-0.8%*	*-0.9%*	*-0.7%*	*-0.8%*	*-0.7%*	*-0.7%*	*-0.7%*	*-0.7%*	*-0.7%*		

Cash Flow ($MM)	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23E	2Q23E	3Q23E	4Q23E	2023E	2024E	2025E
Net Income (Loss)	(64.1)	120.8	27.7	(6.7)	(0.3)	141.6	43.6	45.2	45.8	48.2	182.7	150.9	249.0
Share based comp	166.6	47.8	47.1	54.7	46.7	196.3	32.0	33.1	33.0	34.5	132.6	149.1	168.0
Equity Issuance	-					-					-	-	-
Convertible Bond Issuance (buyback)	-					-					-	(495.0)	
Other	(195.0)	(150.5)	(82.1)	115.5	(83.5)	(200.6)					-		
Change in Cash	(92.5)	18.2	(7.3)	163.4	(37.1)	137.2	75.6	78.2	78.8	82.6	315.3	(195.1)	417.0

Margins	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23E	2Q23E	3Q23E	4Q23E	2023E	2024E	2025E
COGS / Sales	26%	23%	23%	23%	24%	23%	23%	23%	23%	23%	23%	24%	23%
Gross margins	74%	77%	77%	77%	76%	77%	77%	77%	78%	78%	77.5%	76%	77%
R&D / Sales	34%	31%	30%	31%	32%	31%	32%	32%	32%	32%	32%	32%	32%
SG&A / Sales	41%	37%	37%	43%	46%	41%	38%	38%	38%	38%	38%	38%	36%
Operating Margin	-5%	26%	7%	0%	-5%	7%	9%	9%	9%	9%	9%	6%	9%
Taxes	-17%	-10%	-21%	244%	-99%	29%	17%	17%	17%	17%	17%	17%	17%
Net Margin	-4%	23%	5%	-1%	0%	7%	7%	7%	8%	8%	8%	6%	8%

Source: Company reports and SVB Securities LLC

SVB Securities Catalyst Tracker

Stock (Ticker Symbol)	Lateral Impact (Other companies /stocks)	Drug (Brand or chemical name) / Instrument / Area	Indication / Product Class	Type of Event	Event or Trial Details	Expected Timing	Specific Event Date if known or specified	Impact: H(igh) > 9% M(edium) 3 - 9% L(ow) < 2%	Estimated Stock Up/Down % on Best/Worst Outcomes	SVB Securities View of Expected Outcome
BMRN		Roctavian	Hemophilia A	Phase 3 Results Announcement	Ph.3b study 270-303 prophylactic steroid regimen one year data	2Q23		M		Positive
BMRN		Roctavian	Hemophilia A	Other Legal/Regulatory	PDUFA action target date	2Q23	6/30/2023	H		Positive
BMRN		Voxzogo	Genetic short stature conditions	Phase 2 Data Announcement	Ph.2 data and next clinical/regulatory steps	2Q23	Mid-2023	M		Positive
BMRN		Voxzogo	Achondroplasia	Other Legal/Regulatory	PDUFA action target date (children < 5 years old)	4Q20	10/21/2023	M		Positive
BMRN				Other Event	R&D Day	3Q23	September 2023	M		

Source: SVB Securities LLC Equity Research and Company Filings

Disclosures Appendix

Completion: March 20, 2023 6:00 A.M. EDT.
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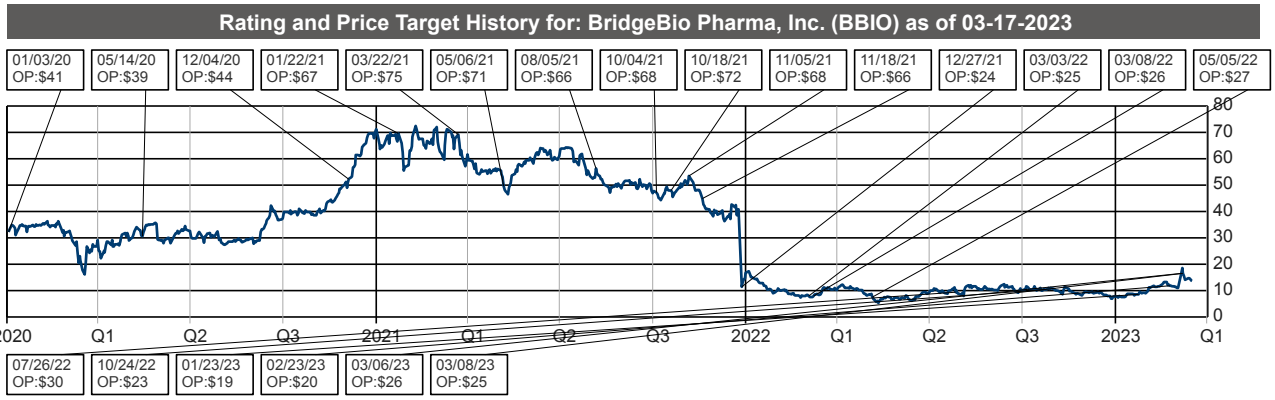
Analyst Certification

I, Mani Foroohar, M.D., certify that the views expressed in this report accurately reflect my views and that no part of my compensation was, is, or will be directly related to the specific recommendation or views contained in this report.

I, Joseph P. Schwartz, certify that the views expressed in this report accurately reflect my views and that no part of my compensation was, is, or will be directly related to the specific recommendation or views contained in this report.



OP = Outperform MP = Market Perform UP = Underperform D = Drop Coverage I = Initiate SC = Suspended Coverage

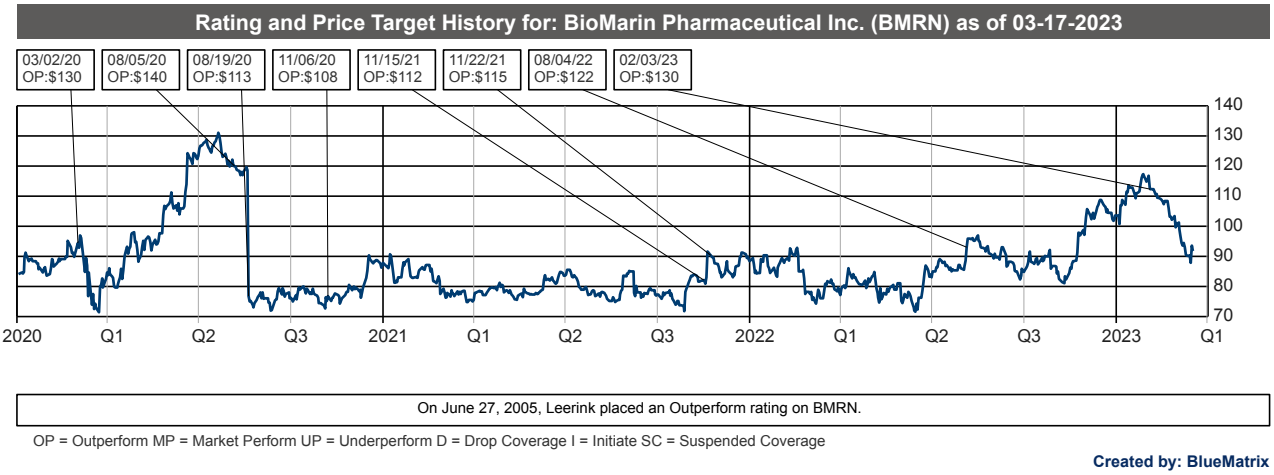
Created by: BlueMatrix

Valuation

Our 12-month price target for BBIO is $25/share based on discounted cash flow methodology, forecasting cash flows through 2030, assigning a 0% terminal growth rate and a 10% discount rate, and factoring in BBIO's net cash balance. We project sales of infigratinib and other pipeline assets on a risk-adjusted basis.

Risks to Valuation

The risks to our view, outlook, and valuation for BridgeBio include any major change in pricing or reimbursement coverage in the United States or Europe that would affect key pipeline drugs acoramidis (AG10) and infigratinib. Eidos and QED Therapeutics are the two largest valuing-driving subsidiary companies in BBIO, and potential clinical setbacks or commercial underperformance of acoramidis (AG10) or infigratinib would disproportionately decrease our valuation estimates. As additional subsidiary companies are integrated into BridgeBio, management complexity may grow over time and increase risk. Additionally, new or unmodeled competitive entrants could potentially compete for market share with BBIO's developmental candidates and reduce future cash flows from our projections.



Valuation

We estimate a $130 fair value in 12 months for BMRN shares which assumes a 9% discount rate for commercial products, 15% discount rate for pipeline products, and 2% terminal growth rate. A sum-of-parts DCF analysis attributes $17/share to Naglazyme, $0/share for Kuvan, $5/share for Aldurazyme, $25/share for Vimizim/GALNS, $0/share for Firdapse, $17 to Palynziq/PEG-PAL, $20 to Voxzogo, $11 to Brineura (BMN-190), $31 to Valrox (probability-weighted 100% EU and 75% US), and the remainder to potential early pipeline products/BMRN's platform and net cash.

Risks to Valuation

Risks include the success of marketing initiatives to identify patients for Naglazyme, Kuvan, Brineura, Vimizim, and Voxzogo. BMRN is dependent on SAN FP (OP, Risinger) for the marketing of Aldurazyme. Other programs are at an earlier stage of development, so they entail higher clinical and regulatory development risk.

Distribution of Ratings/Investment Banking Services (IB) as of 12/31/22

			IB Serv./Past 12 Mos.	
Rating	**Count**	**Percent**	**Count**	**Percent**
BUY [OP]	229	64.1	51	22.3
HOLD [MP]	113	31.7	8	7.1
SELL [UP]	15	4.2	1	6.7

Explanation of Ratings

Outperform (Buy): We expect this stock to outperform its benchmark over the next 12 months.

Market Perform (Hold/Neutral): We expect this stock to perform in line with its benchmark over the next 12 months.

Underperform (Sell): We expect this stock to underperform its benchmark over the next 12 months.

The degree of outperformance or underperformance required to warrant an Outperform or an Underperform rating should be commensurate with the risk profile of the company.

For the purposes of these definitions the relevant benchmark for "SVB Securities" branded healthcare and life sciences equity research will be the S&P 600® Health Care Index for issuers with a market capitalization of less than $2 billion and the S&P 500® Health Care Index for issuers with a market capitalization over $2 billion. For "MoffettNathanson" branded technology, media and telecommunications equity research the relevant benchmark will be the S&P 500® Index.

Important Disclosures

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SVB Securities LLC makes a market in BridgeBio Pharma, Inc. and BioMarin Pharmaceutical Inc.

In the past 12 months, an affiliate of SVB Securities LLC has received compensation for providing non-securities services to BridgeBio Pharma, Inc.

MEDACorp performed this survey on behalf of a SVB Securities LLC analyst. The analyst in conjunction with MEDACorp developed the questions contained in the survey.

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