

# **BG MEDICINE, INC. (NASDAQ: BGMD)**

Raising PT from \$8.25 to \$16.50 On Strong Topline Data for CardioSCORE; Still in the Early Inning but Profile of A Sustainable Growth Story Beginning to Emerge.

INVESTMENT RATING Prior rating	BUY
Price Target	\$16.50
Prior Target	\$8.25
Price (2/13/12)	\$8.27
52 Week Range	\$3.25 - \$12.80
Shares Outstanding	19.3 MM
Market Capitalization	\$165 MM
Cash (9/30/11)	\$28.0 MM

FISCAL YEAR END December								
REVENU	JE (MM'S):							
	Current	Prior						
2012E	\$0.9	\$0.8						
2011E	\$1.4							
2010A	\$0.8							
EPS (F	.D.):							
	Current	Prior	P/E					
2012E	(\$0.98)	(\$0.99)	NA					
2011E	(\$1.02)	. NA						
2010A	(\$5.78)		NA					

QUARTI			
2011E Mar A JunA SepA Dec	(\$0.26) (\$0.25) (\$0.25) (\$0.26)	Prior	
2010A Mar Jun Sep Dec	(\$0.27) (\$0.27) (\$0.22) (\$0.24)		

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# **HIGHLIGHTS**

On 2/13/12, BGMD released positive topline data from a 6,600-patient validation study of CardioSCORE (formerly AMIPredict) demonstrating a greater than 2x improvement in predictive power for heart attack and stroke compared to Framingham Risk Score alone. We view these data as a compelling 1<sup>st</sup> step in demonstrating clinical utility in reducing cardiovascular events and are raising our price target for shares of BGMD from \$8.25 to \$16.50. About 28% of patients experiencing a cardiovascular event after 1 year of follow up were classified as high risk with Framingham Risk Score (based on clinical factors). By comparison, 60% of patients with cardiovascular events in year 1 were identified as high risk by a combination of CardioSCORE and Framingham Risk Score (P<0.0001 for increase). At 2 years, the rates were 26% and 54%, respectively (P<0.0001). Specificity was around 60% (adequate for a screening test, in our view). Importantly, CardioSCORE builds on the current gold standard for risk prediction, the Framingham Risk Score, and can simply be added to standard blood work at an annual physical. We believe this ease of use should help drive adoption. We expect publication of the full dataset in 1H12.

- What's New? BGMD presented 2 year follow up on the 6,600-patient BioImage study of CardioSCORE. The test is a 7-marker immunoassay based on a blood draw and interpreted with an algorithm developed by BGMD. Management did not disclose the markers but indicated each marker is FDA cleared as a stand alone test. In total, the markers have a CPT code stack of \$136.55. The CardioSCORE algorithm generates a risk score of 1-10 with each point increase representing a 30% increase in risk. The cut points were 0-3.9 for low risk, 4.0-5.3 for moderate risk and 5.4-10 for high risk. There were 292 cardiovascular events. A high Framingham Risk Score predicted 28% of events at year 1 and 26% at year 2. The combination of high Framingham score and high CardioSCORE predicted 60% at year 1 and 54% at year 2. A 510(k) was filed for CardioSCORE in December 2011. The test has patent protection into 2030.
- Raising PT from \$8.25 to \$16.50: Based on the 2x improvement in predictive power for CardioSCORE over the current gold standard (Framingham Risk Score) and large size of the validation cohort, we believe CardioSCORE has established a firm footing for clinical utility as a screening tool. As such, we are adding the test to our revenue forecast with peak gross sales of \$325M (details of revenue assumption on P. 2). The impact of CardioSCORE economics raises our base year EPS estimate (2017) from \$0.71 to \$1.42. All other valuation assumptions are unchanged (details on P. 3). Separately, the company secured a \$15M loan facility and may be able to fund operations to profitability, in our view.
- Next Step Clinical Outcome Study: We expect BGMD to run additional studies to demonstrate that giving statins or anti-platelet therapy to patient with low-to-medium Framingham score but high CardioSCORE results in fewer cardiovascular events. We view this future study as the second and final step in establishing clinical utility of CardioSCORE.

Disclosures and Analyst Certifications can be found in Appendix A.

NEW YORK, NY MELVILLE, NY PRINCETON, NJ MIAMI, FL BOCA RATON, FL

# **CardioSCORE Market Model**

Our CardioSCORE revenue forecast is divided between three markets – U.S. EU and ROW – based on a target population of men over age 55 and women over age 60, which is consistent with the intended use indication for the CardioSCORE 510(k) application with FDA.

About 38.5 million American men are over age 55 with an additional 32.2 million women are over age 60 for a target population of 70.6M people, according to statistics from the 2010 US Census estimates. Our model defines the theoretical market size on annual testing with CardioSCORE based on the potential of CardioSCORE to offer a dynamic reading of cardiovascular wellness that may rise or fall in response to changes in lifestyle, diet and medications.

Our model calls for the CardioSCORE to capture roughly 2% of the U.S. market based primarily on monitoring of patients based primarily on patients with one well defined risk factor such as family history of cardiovascular disease but with a low or moderate Framingham Risk Score. While we believe the test has significant potential as a general screening test for all men over age 55 and women over age 60, we would like to see outcomes data from these populations before modeling CardioSCORE as a general screening test. Specifically, we want to see if patients at low or medium risk by Framingham Score but high risk by CardioSCORE respond to intervention with statins or anti-platelet therapy (standard of care for Framingham high risk patients). Do the existing tools for intervening in high risk populations demonstrate the same benefit in patients up-staged by CardioSCORE?

BGMD has not disclosed the expected commercial model for CardioSCORE. For modeling purposes, we assume commercial economics similar to Galectin-3. Partners will be responsible for sales and running test volumes while BGMD is responsible for marketing and certain analytical services. The result is essentially a royalty to BGMD with gross margins approaching 90% after license payments.

Our model calls for CardioSCORE to be launched in the U.S. during 4Q12 and to be priced at \$110 (about a 20% discount to the CPT code stack of \$136.55) with BGMD receiving fixed economics \$30 per test. Our peak gross sales estimate is \$190M based on 1.7 million test with BGMD recognizing more than \$52M annually.

For Europe, we assume a target population of 89 million people based on similar demographic considerations as the U.S. Our European market model calls for CardioSCORE to achieve 1% market penetration of roughly 1 million tests in our peak year of 2022 for gross revenues of \$104M and \$26M to BGMD. Our European market model assumes slightly lower pricing than in the U.S. (\$100 sale price with \$25 economics to BGMD) based on price controls in several European countries.

Lastly, we see a role for CardioSCORE in other markets with high rates of cardiovascular disease including South America, Eastern Europe and parts of Southern Asia (collectively grouped as ROW). Our model assumes an average price of \$100 with BGMD receiving \$25 per test. Our model calls for ROW peak test volumes of 280,000 with gross revenues of \$28M and \$7.0M recognized by BGMD. On net, our forecast translates to peak annual sales of roughly \$325M in 2022 with BGMD recognizing \$85.1M.

Table 1.

			CardioSCO	RE Worldwid	e Revenue M	larket Model							
	2010A	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E
U.S. CardioSCORE Market													
Men over age 55 *	37,819,890	38,122,449	38,427,429	38,734,848	39,044,727	39,357,085	39,790,013	40,227,703	40,670,208	41,117,580	41,569,873	42,234,991	42,910,751
Women over age 60 *	31,645,448	31,898,612	32,153,800	32,411,031	32,670,319	32,931,682	33,293,930	33,660,163	34,030,425	34,404,760	34,783,212	35,339,744	35,905,180
Growth in Americans over age 60 (total population)	NA	0.8%	0.8%	0.8%	0.8%	0.8%	1.1%	1.1%	1.1%	1.1%	1.1%	1.6%	1.6%
Total Market Opportunity	69,465,338	70,021,061	70,581,229	71,145,879	71,715,046	72,288,767	73,083,943	73,887,866	74,700,633	75,522,340	76,353,086	77,574,735	78,815,931
CardioSCORE U.S. Market													
- Tests Delivered	0	0	2.000	41.000	180,600	457.095	775.738	1,064,978	1.291.776	1.461.806	1,574,297	1.653.012	1,735,662
Growth in Tests Delivered	NA	NA	NA	1950.0%	340.5%	153.1%	69.7%		21.3%	13.2%		5.0%	
- Price per test	\$110.00	\$110.00	\$110.00	\$110.00	\$110.00				\$110.00		\$110.00	\$110.00	
Gross Revenues from CardioSCORE Test (\$M)	\$0.0	\$0.0	\$0.2	\$4.5	\$19.9	\$50.3	\$85.3	\$117.1	\$142.1	\$160.8	\$173.2	\$181.8	\$190.9
- Revenue Per Test to BGMD	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00
U.S. Revenues to BGMD from CardioSCORE (\$M)	\$0.0	\$0.0	\$0.1	\$1.2	\$5.4	\$13.7	\$23.3	\$31.9	\$38.8	\$43.9	\$47.2	\$49.6	\$52.1
T. ( )	40.0	***	***				400.0	***	***	***		410.0	450.4
Total U.S. CardioSCORE Revenues to BGMD (\$M)	\$0.0	\$0.0	\$0.1	\$1.2	\$5.4	\$13.7	\$23.3	\$31.9	\$38.8	\$43.9	\$47.2	\$49.6	\$52.1
EU CardioSCORE Market													
Men over age 55 *	43.500.000	43.761.000	44.023.566	44.287.707	44.553.434	44.820.754	45.190.525	45.563.347	45.939.245	46.318.244	46.700.369	47.260.774	47.827.903
Women over age 60 *	45,500,000	45,864,000	46,230,912	46,600,759	46,973,565	47,349,354	47,870,197	48,396,769	48,929,133	49,467,354	50,011,495	50,811,679	51,624,666
Growth in Europeans over age 60 (total population)	NA.	0.8%	0.8%	0.8%	0.8%	0.8%	1.1%	1.1%	1.1%	1.1%	1.1%	1.6%	1.6%
Total Market Opportunity	89,000,000	89,625,000	90,254,478	90,888,467	91,526,999	92,170,108	93,060,722	93,960,116	94,868,378	95,785,598	96,711,864	98,072,452	99,452,568
EU CardioSCORE Tests													
- Tests Delivered	0	0	0	16.000	126,000	434.000	788,375	919.111	992,033	1,009,325	1.019.418	1.029.612	1.039.908
Growth in Tests Delivered	NA NA			NA	687.5%	244.4%			7.9%			1.0%	
- Price per test	\$100.00	\$100.00		\$100.00	\$100.00	\$100.00			\$100.00		\$100.00	\$100.00	
Gross Revenues from CardioSCORE Test (\$M)	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$700.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00
- Revenue Per Test to BGMD	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
EU Revenues to BGMD from CardioSCORE Test (\$M)	\$25.00	\$25.00 <b>\$0.0</b>	\$25.00	\$25.00 <b>\$0.4</b>	\$25.00 <b>\$3.2</b>	\$25.00 <b>\$10.9</b>	\$25.00 <b>\$19.7</b>	\$23.00	\$25.00 <b>\$24.8</b>	\$25.00	\$25.00 <b>\$25.5</b>	\$25.00 <b>\$25.7</b>	\$25.00 <b>\$26.0</b>
LO Revenues to BOMD Holli CardioSCORE Test (\$M)	φυ.υ	φυ.υ	\$0.0	φ <b>0.</b> 4	φ <b>3.</b> 2	\$10.5	\$15.7	\$25.0	φ <b>24.</b> 0	φ <b>2</b> .5.2	φ <b>2</b> 3.3	φ23.1	φ20.0
ROW CardioSCORE Testing	0	0	0	550	11.700	33,700	65.313	108.783	159.630	202.650	232,799	256.079	281,687
- Growth in CardioSCORE Testing	NA			NA NA					46.7%			10.0%	
- Price per test	\$100.00			\$100.00	\$100.00	\$100.00			\$100.00			\$100.00	
Gross Revenues for CardioSCORE ROW (\$M)	\$0.0	\$0.0	\$0.0	\$0.1	\$1.2	\$3.4	\$6.5	\$10.9	\$16.0	\$20.3	\$23.3	\$25.6	\$28.2
- Revenue Per Test to BGMD	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
CardioSCORE Revenue for ROW to BGMD (\$M)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.3	\$0.8	\$1.6	\$2.7	\$4.0	\$5.1	\$5.8	\$6.4	\$7.0
Caranesco Re Revenue (Caranesco Revenue)	<b>40.0</b>	ψ0.0	<b>\$0.0</b>	<b>40.0</b>	ψο.ο	<b>\$0.0</b>	<b>\$1.0</b>	<b>V2</b>	<b>V</b> 0	ψ0.1	<b>40.0</b>	<b>40.</b>	<b>V.1.0</b>
Total Tests Delivered	0	0	2.000	57.550	318.300	924.795	1.629.425	2.092.872	2.443.438	2.673.781	2.826.514	2.938.703	3.057.258
Total Gross CardioSCORE Revenues	\$0.0	\$0.0	\$0.2	\$6.2	\$33.6	\$97.1	\$170.7	\$219.9	\$257.3	\$282.0	\$298.4	\$310.4	\$323.1
Total CardioSCORE Revenues to BGMD	\$0.0	\$0.0	\$0.2	\$1.6	\$8.9	\$25.4	\$44.6	\$57.6	\$67.5	\$74.2	\$78.5	\$81.7	\$85.1
* 2010 U.S. Census Data Estimates	φυ.υ	φυ.υ	<b>\$0.1</b>	\$1.0	φ0.3	φ <b>2</b> 3.4	φ <del>44.</del> 0	φ31.0	φ01.5	φ14.Z	\$10.5	φ01.7	φ03.1
Source: Ladenburg Thalmann estimates													
Source. Educationing Thailliann Continues													

# Raising PT from \$8.25 to \$16.50

Our basic valuation methodology for BGMD is unchanged. We continue to value the company on a discounted EPS analysis. In our view, a discounted EPS analysis more accurately captures the value of companies, such as BGMD, that are crossing the inflection point to profitability than price/sales-based valuation metrics. Our model calls for BGMD to be cash flow breakeven and report a small profit of \$0.46 per share in 2015. The base year for our discounted EPS valuation continues to be the second full year of profitability (2017), which we believe offers a more appropriate picture of the company's earnings power.

Our previous price target of \$8.25 price target assumed a 26x multiple on pro forma fully taxed 2017 EPS of \$0.71 discounted back at a 20% cost of capital. Our new price target of \$16.50 maintains the same 26x multiple on pro forma fully taxed 2017. However, our 2017 EPS estimate increases from \$0.71 to \$1.42 based on increased economics for CardioSCORE.

Prior to release of topline data this week, BGMD had provided no detailed performance data on CardioSCORE. We included a modest proxy in our financial model of \$11.5M in economics for the product in 2017. With the release of topline data, we have added an explicit market model for CardioSCORE to our revenue model which results in 2017 revenues of \$57.6M to BGMD (details of CardioSCORE revenue described in market model section on Page 2). The higher revenues for CardioSCORE are partially offset by additional marketing expenses associated with building awareness of the test (\$19.5M in 2017).

All of other revenue and operating expense estimates are substantially unchanged.

Table 2.

					BG I	Medicine Inc	come Statem	ent								
(in \$ millions except per share)	2010A	1Q11A	2Q11A	3Q11A	4Q11E	2011E	1Q12E	2Q12E	3Q12E	4Q12E	2012E	2013E	2014E	2015E	2016E	2017E
Galectin-3 sales	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.2	\$0.2	\$4.3	\$15.5	\$31.1	\$44.8	\$54.2
CardioSCORE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.6	8.9	25.4	44.6	57.6
HRP	0.0	0.8	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
License revenues	8.0	0.9	0.2	0.2	0.2	1.4	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6
Total Revenue	\$0.8	\$0.9	\$0.2	\$0.2	\$0.2	\$1.4	\$0.2	\$0.2	\$0.2	\$0.4	\$0.9	\$6.6	\$25.0	\$57.1	\$90.0	\$112.4
cogs	0.8	0.2	0.2	0.1	0.1	0.5	0.1	0.1	0.1	0.1	0.4	0.7	1.8	3.2	3.9	4.6
Gross profit	\$0.0	\$0.7	\$0.0	\$0.1	\$0.1	\$0.9	\$0.1	\$0.1	\$0.1	\$0.3	\$0.5	\$5.8	\$23.1	\$53.9	\$86.1	\$107.8
SG&A	8.1	2.0	2.5	3.1	3.0	10.6	3.1	3.1	3.2	4.0	13.3	21.0	26.2	31.4	36.6	42.0
Research & development	6.5	1.7	2.4	1.9	2.2	8.2	2.2	2.2	2.2	2.2	8.8	9.6	10.4	11.2	12.0	12.4
Operating profit (loss)	(\$14.6)	(\$3.0)	(\$4.8)	(\$4.9)	(\$5.1)	(\$17.9)	(\$5.2)	(\$5.2)	(\$5.3)	(\$5.9)	(\$21.6)	(\$24.7)	(\$13.5)	\$11.3	\$37.5	\$53.4
Interest income (expense)	(2.6)	(0.1)	0.0	0.0	0.0	(0.1)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	(0.1)	0.1	0.5
Taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(19.4)
Net profit (loss)	(17.2)	(3.1)	(4.8)	(4.9)	(5.1)	(17.9)	(5.2)	(5.2)	(5.3)	(5.8)	(21.5)	(24.6)	(13.4)	11.2	37.7	34.5
Earnings (loss) per share	(\$5.78)	(\$0.26)	(\$0.25)	(\$0.25)	(\$0.26)	(\$1.02)	(\$0.27)	(\$0.27)	(\$0.22)	(\$0.24)	(\$0.98)	(\$1.01)	(\$0.55)	\$0.46	\$1.55	\$1.42
One-time gain (loss) Accretion of redeemable convertible preferred stock	\$0.00 (\$0.35)	\$0.00 (\$0.01)	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 (\$0.01)	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Net income (loss) as reported Profit (loss) per share as reported	(18.2) (\$6.13)	(3.2) (\$0.27)	(4.8) (\$0.25)	(4.9) (\$0.25)	(5.1) (\$0.26)	(18.1) (\$1.03)	(5.2) (\$0.27)	(5.2) (\$0.27)	(5.3) (\$0.22)	(5.8) (\$0.24)	(21.5) (\$0.99)	(24.6) (\$1.01)	(13.4) (\$0.55)	11.2 \$0.46	37.7 \$1.55	34.5 \$1.42
Weighted average common shares	3.0	12.2	19.2	19.3	19.3	17.5	19.3	19.3	24.3	24.3	21.8	24.3	24.3	24.3	24.3	24.3

Source: Company reports and Ladenburg Thalmann estimates

# Overview of Biolmage Validation Study for AMIPredict

In June 2009, the industry cooperative group HRP Initiative completed enrollment of 6,822 patients (males ages 55-80 and females ages 60-80) in a screening study known as the Biolmage Study. All participants submitted to a physical exam and provided a blood sample to screen for potential biomarkers. This information was compared to results from imaging procedures to identify correlation between biomarkers and the imaging data from ultrasound of the carotid arteries and a CT-scan to measure coronary calcification. BGMD retains rights to use samples collected in the Biolmage study and to the data for its product discovery and development studies. Samples from this large study were used in BGMD's validation study of AMIPredict.

US Population ~ 303 million Humana membership ~11 million Excluded - Humana members outside target markets Control Group 1 Humana membership in Chicago IL, Ft. Lauderdale FI, Control Group 2 ~ 1.1 million Excluded - Humana members who do not meet age, coverage or claims eligibility criteria Approximate pool of potential study candidates - Chicago IL  $\sim 38,000$ Ft. Lauderdale FL ~ 48,000 Eligibility survey \$\begin{align\*} \text{by phone or Internet} \end{align\*} BioImage Study N = 7.687~ 80% with ≥ 1 claims risk indicator Randomization Baseline plus Telephone Baseline -CACS, Carotid and survey only no Imaging Abdominal US and ABI N = 865N = 718N = 6,104 Advanced Imaging CTA (380), MRI (525) or ≥ 3 years PET-CT (180) Target N = 600 Atherothrombotic events

Table 3.

Source: American Heart Journal (July 2010)

Table 4.

Expected Near-term Events		
Event	Time	Importance
Present Framingham Validation Study for Galectin-3 as Risk Marker for HF	March 2012	High
1st FDA Filing for Automated Galectin-3 Test	1Q12	Low
2nd FDA Filing for Automated Galectin-3 Test	2Q12	Low
Publication of Framingham Validation Study for Galectin-3 as Risk Marker	1H12	Moderate
EMEA Filing CardioSCORE	1H12	Low
EMEA Filing for 1 or More Automated Galectin-3 Tests	1H12	Low
Publication on Use of Galectin-3 for Predicting CRT Response (high risk patients)	1H12	Low
FDA Filing for Expanded Galectin-3 use to include Risk Assessment	1H12	Low
Meeting to Discuss Reimbursement Levels for Galectin-3 CPT Code	July 2012	Moderate
Publication on Use of Galectin-3 for Predicting CRT Response (low risk patients)	2H12	Moderate
FDA clearance for CardioSCORE	2H12	Low
FDA clearance for 1st automated Galectin-3 Test	2H12	Moderate
FDA clearance for 2nd automated Galectin-3 Test	2H12	Low
EMEA clearance of CardioSCORE	2H12	Low
EMEA clearance of 1 or more Automated Galectin-3 Tests	2H12	Low
Launch of CardioSCORE	4Q12	Moderate
FDA Clearance of Expanded Label Indication for Galectin-3	4Q12	High
Announcement of Reimbursement Levels for Galectin-3 in 2013 Fee Schedule	4Q12	High
3rd FDA Filing for Automated Galectin-3 Test	4Q12	Low

Source: Ladenburg Thalmann estimates

# APPENDIX A: IMPORTANT RESEARCH DISCLOSURES

# **ANALYST CERTIFICATION**

I, Kevin DeGeeter, attest that the views expressed in this research report accurately reflect my personal views about the subject security and issuer. Furthermore, no part of my compensation was, is, or will be directly or indirectly related to the specific recommendation or views expressed in this research report.

The research analyst(s) primarily responsible for the preparation of this research report have received compensation based upon various factors, including the firm's total revenues, a portion of which is generated by investment banking activities.

#### **COMPANY BACKGROUND**

BG Medicine commercializes diagnostic tests based on content discovered by its biomarker discovery research group. The Waltham, MA-based company's lead program, a test for the galectin-3 biomarker, is FDA-cleared for use in staging of heart failure patients. The pipeline includes tests for predicting heart attack risk and for predicting risk of lipid disorders. BG Medicine sells its tests through commercial partners and has no plans for a significant direct sales effort.

#### **VALUATION METHODOLOGY**

We currently rate BGMD shares at BUY with a price target of \$8.25 based on 26x multiple on our fully taxed 2017 EPS estimate of \$1.42 discounted back at a 20% cost of capital.

# **RISKS**

We think the primary risks of an investment in BGMD shares include, but are not limited to: Intellectual Property. The company's business model is based on identifying and commercializing tests based on proprietary biomarkers. BGMD has several filed and issued patents pertaining to the role of galectin-3 in diagnosing and staging heart failure patients and methods for developing diagnostic kits and tests based on galectin-3. There can be no assurance changes to U.S. patent law or interpretation will not adversely impact the company's future revenues. Regulatory. Each of BGMD's IVD partners expects to submit a 510(k) application to FDA for automated versions of the galectin-3 test. There can be no assurance validation studies and subsequent registration studies will be adequate to support 510(k) clearance of galectin-3 as an automated prognostic test for heart failure. Additionally, the predictive value of galectin-3 in assessing risk of heart failure following acute coronary injury is an important source of potential future market expansion. There can be no assurance galectin-3 will win FDA clearance in this indication. Additionally, the company may seek to launch its CardioSCORE multivariate test as a laboratory developed test (LDT) under CLIA regulations. There can be no assurance that CardioSCORE will receive a CLIA waiver or that FDA will continue to exercise regulatory discretion over LDTs. Reimbursement. Galectin-3 is not currently covered by most private insurance payers, Medicare or state health plans in Europe. In the U.S., clinicians and their patient can seek reimbursement through submission under miscellaneous codes on an out-of-network basis. BGMD has received a unique CPT code for galectin-3 and hopes to have the new code included in the 2013 clinical laboratory fee schedule. There can be no assurance Medicare or private payers will reimburse for the test or that reimbursement levels will be adequate to meet the terms of license agreements with IVD manufacturers or for BGMD to earn a profit, Additionally, the timing of future reimbursement coverage from both private payers, state health plans in Europe and Medicare is not certain. Partnership. Four equipment vendors have licensed rights to sell galectin-3 tests both in the United States and certain ex-U.S. markets. There can be no assurance these partners can process the test in a commercially reasonable time period. Additionally, effective positioning of galectin-3 may require promotion to primary care doctors, which is outside of many of the partners' commercial focus and beyond the means of BGMD to address, in our view. There can be no assurance BGMD will identify an appropriate commercial partner to maximize the value of BGMD or that a partner will provide the required commitment of commercial resources. Financing. The company believes current financial resources will fund the company through 2012. However, successful commercial launch of automated galectin-3 tests will require significant marketing expense and development of CardioSCORE may require substantial direct research funding from BGMD. There can be no assurance BGMD will have access to private capital in the future on adequate terms, or at all.

# STOCK RATING DEFINITIONS

Buy: The stock's return is expected to exceed 12.5% over the next twelve months.

Neutral: The stock's return is expected to be plus or minus 12.5% over the next twelve months.

Sell: The stock's return is expected to be negative 12.5% or more over the next twelve months.

Investment Ratings are determined by the ranges described above at the time of initiation of coverage, a change in risk, or a change in target price. At other times, the expected returns may fall outside of these ranges because of price movement and/or volatility. Such interim deviations from specified ranges will be permitted but will become subject to review.

# RATINGS DISPERSION AND BANKING RELATIONSHIPS (AS OF 1/31/12)

Buy: 76% (31% are banking clients)
Neutral: 24% (10% are banking clients)
Sell: 0% (0% are banking clients)

# PERSONALIZED MEDICINE STOCKS UNDER AUTHOR ANALYST COVERAGE ("The Universe")

BG Medicine (BGMD), Exact Sciences (EXAS), Genetic Technologies (GENE), Genomic Health (GHDX), Myriad Genetics (MYGN), Navidea Biopharmaceuticals (NAVB), NeoGenomics (NGNM), OPKO Health (OPK), Response Genetics (RGDX), Sequenom (SQNM) and Vermillion (VRML).

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With the exception of Navidea Biopharmaceuticals, Inc. (NAVB) and Opko Health, Inc. (OPK), Ladenburg Thalmann & Co. Inc. makes a market in all of the stocks listed in the Universe. Ladenburg Thalmann & Co. Inc. acted as a co-manager in a securities offering for Opko Health, Inc. (OPK) and acted in an advisory capacity on a private securities transaction for Genetic Technologies, LTD. (GENE) in the last 12 months. Ladenburg Thalmann and Co. received compensation related to investment banking services from Opko Health, Inc. (OPK) and Genetic Technologies, LTD. (GENE) in the last 12 months. Ladenburg Thalmann & Co. Inc. expects to receive or intends to seek compensation for investment banking services during the next 3 months for all companies listed in the Universe. Neither the Analyst, nor members of the Analyst's household own any securities issued by any company in the Universe or other companies mentioned in this report. A member of the Board Of Directors of Sequenom Inc. has an affiliation with members of the Board of Directors of companies in which the Chairman of Ladenburg Thalmann Financial Services Inc., the parent company of Ladenburg Thalmann & Co. Inc. has a beneficial interest. Genomic Health Inc. (GHDX) and Teva Pharmaceuticals Industries (TEVA) have joint distribution interests. The Chairman of Ladenburg Thalmann Financial Services Inc., the parent company of Ladenburg Thalmann & Co. Inc. is the Chairman of the Board, CEO and Director and Controlling shareholder of Opko Health Inc. Members of the Board of Directors of OPK have a non-investment banking securities related relationship with Ladenburg Thalmann & Co. Inc.

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