

## BioSig Technologies, Inc. (BSGM - \$4.48)

### Vicromax in COVID-19 Development Update with Clinical Study Potentially to Start in May

This morning, BSGM along with management of ViralClear hosted a conference call to update on Vicromax development in COVID-19 treatment.

- Details.** Management indicated during the call that IND filing of Vicromax is scheduled to take place in a few weeks and potentially commence a Phase I/II study this May. The company plans to raise capital for ViralClear Pharmaceuticals to fund the operation. In addition, the Mayo Clinic also showed interest in investing in this endeavor. Andrew D. Badley, M.D., professor of medicine from the Mayo Clinic at Rochester, will be the lead investigator of the study. The company plans to publish more details about Vicromax in the next few days at an on-line publication called bioRxiv.org. We also anticipate more details regarding trial design later this quarter. Management indicated that Vicromax is an oral IMP dehydrogenase (IMPDH) inhibitor that has exhibited antiviral activities. Vicromax also has shown anti-COVID-19 activities against the strains isolated from the first batch of COVID-19 infected patients in the U.S. IMPDH is a critical enzyme used in the *de novo* biosynthesis of guanine nucleotides, which are needed for the rapidly proliferating cells. Several proposed antiviral mechanisms include inhibition of viral RNA transcription/elongation, inhibition of the formation of a guanine pyrophosphate “cap” on the 5prime end of viral mRNA; and the depletion of intracellular GTP and dGTP pools since the *de novo* GTP synthesis is critical in supplying precursors for viral RNA synthesis. BSGM also reported that some of PURE EP system clinical study is halted due to the COVID-19 pandemics but the publication (results from the first 34 patients) will take place shortly
- Implications.** We are encouraged by the rapid progression of Vicromax advancement given that multiple competing programs are in the landscape. Given Vicromax targets a human molecule (IMPDH) instead of a specific viral molecule, it potentially has a different drug resistant profile vs. drugs that target directly against viral molecules. Rapid and frequent mutations of the RNA viruses might render these drugs less effective over time. In addition, there is precedent for an IMPDH inhibitor, Ribavirin, as an approved broad-spectrum antiviral agent for RSV and HCV (in combination with IFN- $\alpha$ ).
- Action.** With the PURE EP system at initial stage of commercialization and a positive outlook for its revenue stream, we believe BSGM shares remain undervalued. We reiterate our Buy rating and 12-month target price of \$13 based on our forward P/E and EP space M&A comparable analyses.

*Healthcare/Biotechnology/MedTech*

Ticker: **BSGM**  
Rating: **Buy**  
Price Target: **\$13.00**

#### Trading Data:

Last Price intraday (4/7/2020)	\$4.48
52-Week High (5/14/2019)	\$9.97
52-Week Low (3/18/2020)	\$2.36
Market Cap. (MM)	\$116.7
Shares Out. (MM)	26.03

#### Earnings Estimates: (per share)

(June)	1Q	2Q	3Q	4Q	FY	P/E
<b>FY-20E</b>	-0.23	-0.23	-0.19	-0.18	-0.82	N.A.
<b>FY-19A</b>	-0.33	-0.38	-0.25	-0.68	-1.67	N.A.
<b>FY-18A</b>	-0.25	-0.44	-0.22	-0.35	-1.25	N.A.
<b>FY-17A</b>	-0.36	-0.31	-0.17	-0.41	-1.24	N.A.

#### Yale Jen, Ph.D.

Managing Director/Senior  
Biotechnology Analyst  
(212) 953-4978  
yjen@laidlawltd.com

Source: Laidlaw & Company estimates

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## Anticipated milestones in 2020 and beyond

Program	Indication	Event	Timing	Impacts
PURE EP system	Arrhythmias catheter ablations	Expand marketing and sales effort at hospitals	2020/2021	***
		Publish first clinical trial results and initiate new studies	2020	****
		Potentially report first clinical trial results	2020	****
		Potentially initiate additional clinical study	2020	***
		Participate medical and industry events	May and Oct. 2020	***
		Potentially receive EU approval	2021	****
Vicromax	COVID-19 infection	Potentially start Phase II study	2Q/3Q20	***

\*\*\*\* / \*\*\*\*\* Major catalyst event that could impact share price very significantly while \*\*\* event is more informative

Source: Laidlaw & Company and company presentation

## Major Risks

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**Commercial risks remain difficult to handicap.** Although BSGM has started to commercialize the PURE EP system in the U.S., with a promising start, it remains too early to have absolute confidence that product sales could go very smoothly and without significant challenges. Although electrophysiologists' user experiences are very positive, the transaction decision is still in a hospital administrator's hand. Budget constraints and the budgeting cycle could potentially limit the pace or whether or not a purchase or lease is carried out. As such, the revenue projection could change materially. Macro factors, such as the U.S. economy and third-party payer attitude toward certain medical procedures could also impact on the revenue outlook of PURE EP system sales. A material change of the PURE EP system sales projection could have substantial impact on BSGM share value.

**Competition might not be easy to gauge.** Although the PURE EP system is the current leader in signal processing for providing optimal visualized signals to electrophysiologists carrying out catheter ablation, competition might still take place, even if not coming from the two weak European companies mentioned on the report. Major EP players with a suite of product offerings in this space could also try to develop a like-minded or even further improved product that might circumvent the IP protection of the PURE EP system and achieve a similar outcome as the PURE EP system. If so, the commercial outlook as well as BSGM share value could be challenged. Such a competing product could be used in-house for the developer as part of improved product offering. The company also could sell such product to other companies and create a direct competition for BSGM. If so, this could have substantial impact on BSGM share value.

**Additional financings could dilute shareholder value.** The company currently has ~ cash ~\$20MM (proforma). BSGM would likely need more financial resources going forward if they have not yet reached cash breakeven or profitability. Unless the company can successfully explore non-dilutive financial sources, additional equity offerings might reduce the value to current shareholders unless the share price increases or any upside created due to greater financial source could offset the dilution of current shareholders.

**COVID-19 pandemic infection could be a wildcard creating significant uncertainties.** As the COVID-19 pandemic infection is just in its early phase in the U.S. and many parts of the world, it is very difficult to gauge its impact on many aspects of the business and personal life. As such, the validity of many projection could be weakened until much greater visibility of the duration and the specific impact on various business sectors by the COVID-19 pandemic infection becomes available.

Figure 1: Income Statement

## BioSig Technologies – Income Statement

('000 \$)	2017	2018	2019					F2020E	2021E	2022E	2023E	2024E	2025E
				1Q20E	2Q20E	3Q20E	4Q20E						
<b>Revenues</b>													
Product revenues	0	0	0	-	-	1,870	2,471	4,341	15,090	33,784	59,232	88,233	121,826
PURE EP system revenue	0	0	0	-	-	1,870	2,471	4,341	15,090	33,784	59,232	88,233	121,826
Other revenue	0	0	0	-	-	-	-	0	0	0	0	0	0
<b>Total Revenue</b>	0	0	0	-	-	1,870	2,471	4,341	15,090	33,784	59,232	88,233	121,826
<b>COGS</b>													
Research and development	4,756	4,369	9,739	1,820	1,856	1,930	1,986	7,592	8,731	9,691	10,466	10,885	11,320
General and administrative	8,138	12,881	24,811	3,859	4,091	4,303	4,488	16,741	17,411	18,003	18,615	19,248	19,902
Depreciation and amortization	12	12	54	18	20	21	22	81	83	84	82	88	93
<b>Operating expense</b>	12,906	17,262	34,604	5,697	5,967	6,254	6,497	24,414	26,225	27,778	29,163	30,221	31,316
<b>Operating incomes (losses)</b>	(12,906)	(17,262)	(34,604)	(5,697)	(5,967)	(4,852)	(4,643)	(21,158)	(14,907)	(2,440)	15,261	35,954	60,054
Gain on change in fair value of derivatives	210		0										
Interest income, net	0	11	133	38	39	40	40	157	161	169	178	186	196
<b>Income (loss) before taxes</b>	(12,696)	(17,251)	(34,471)	(5,659)	(5,928)	(4,812)	(4,603)	(21,001)	(14,746)	(2,271)	15,438	36,141	60,250
Income tax expense	-	-	-	-	-	-	-	-	-	-	(3,860)	(9,035)	(15,062)
<b>Net income</b>	(12,696)	(17,251)	(34,471)	(5,659)	(5,928)	(4,812)	(4,603)	(21,001)	(14,746)	(2,271)	11,579	27,106	45,187
Preferred stock dividend	(120)	(885)	(25)	(6)	(7)	(8)	(8)	(29)	(29)	(29)	(29)	(29)	(29)
Non-controlling interest			416	20	21	22	21	84	84	84	84	84	84
<b>Net income attributable to common shareholders</b>	(\$12,816)	(\$18,136)	(\$34,080)	(\$5,645)	(\$5,914)	(\$4,798)	(\$4,590)	(\$20,946)	(\$14,691)	(\$2,216)	\$11,634	\$27,161	\$45,242
Net Earnings (Losses) Per Share—Basic/Diluted	(\$1.24)	(\$1.25)	(\$1.67)	(\$0.23)	(\$0.23)	(\$0.19)	(\$0.18)	(\$0.82)	(\$0.50)	(\$0.08)	\$0.38	\$0.87	\$1.43
Shares outstanding—basic/diluted	10,220	14,504	20,695	24,949	25,349	25,749	26,149	25,549	29,549	30,049	30,549	31,049	31,549
<b>Margin Analysis (% of Sales/Revenue)</b>													
COGS						25%	25%	25%	25%	25%	25%	25%	25%
R&D	NA	NA	NA	NA	NA	103%	80%	175%	58%	29%	18%	12%	9%
G&A	NA	NA	NA	NA	NA	230%	182%	386%	115%	53%	31%	22%	16%
Operating Income (loss)	NA	NA	NA	NA	NA	-259%	-188%	-487%	-99%	-7%	26%	41%	49%
Pretax	NA	NA	NA	NA	NA	-257%	-186%	-484%	-98%	-7%	26%	41%	49%
Tax Rate	NA	NA	NA	NA	NA	NA	NA	NA	NA	25%	25%	25%	25%
Net Income	NA	NA	NA	NA	NA	-257%	-186%	-483%	-97%	-7%	20%	31%	37%
<b>Financial Indicator Growth Analysis (YoY%)</b>													
Total Revenue		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	248%	124%	75%	49%	38%
R&D expenses		-8%	123%	22%	2%	17%	-59%	-22%	15%	11%	8%	4%	4%
General and administrative		58%	93%	-12%	-34%	12%	-57%	-33%	4%	3%	3%	3%	3%
Sales and marketing												7%	6%
Operating expense		34%	100%	-3%	-25%	14%	-57%	-29%	7%	6%	5%	4%	4%
Operating Incomes (Losses)		34%	100%	-3%	-25%	-12%	-70%	-39%	-30%	-84%	-725%	136%	67%
Pretax Income		36%	100%	-4%	-25%	-12%	-70%	-39%	-30%	-85%	-780%	134%	67%
Net Income		36%	100%	-4%	-25%	-12%	-70%	-39%	-30%	-85%	-610%	134%	67%
EPS - Basic		1%	33%	-31%	-39%	-25%	-74%	-51%	-39%	-85%	-602%	130%	64%
Yale Jen, Ph.D. 212-953-4978													

Source: Bloomberg LP; Company reports; Laidlaw &amp; Company estimates

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Date	Rating	Closing Price (\$)
03/29/2018	Buy (B)	3.93

**3 Year Price Change History**

Date	Target Price (\$)	Closing Price (\$)
03/29/2018	8.75**	3.93
02/20/2019	10.50	5.25
03/18/2020	13.00	2.56

\*\* Split Adjusted

Source: Laidlaw & Company

Created by: Blue-Compass.net

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			Investment Banking	Brokerage
<b>Strong Buy (SB)</b>	Expected to significantly outperform the sector over 12 months.	0.00%	0.00%	0.00%
<b>Buy (B)</b>	Expected to outperform the sector average over 12 months.	46.27%	20.90%	2.99%
<b>Hold (H)</b>	Expected returns to be in line with the sector average over 12 months.	1.49%	1.49%	0.00%
<b>Sell (S)</b>	Returns expected to significantly underperform the sector average over 12 months.	0.00%	0.00%	0.00%

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