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# Research Report – Update

*Investors should consider this report as only a single factor in making their investment decision.*

## BioSig Technologies, Inc.

**Speculative Buy**

Howard Halpern

May 31, 2023

**BSGM \$1.55 — (NASDAQ)**

	<u>2021A</u>	<u>2022A</u>	<u>2023E</u>	<u>2024E</u>
Revenues (million)	\$0.4	\$0.3	<b>\$0.1</b>	<b>\$1.2</b>
Earnings (loss) per share	(\$0.95)	\$(0.64)	<b>\$(0.35)</b>	<b>\$(0.26)</b>

52-Week range	\$1.65 – \$0.25	Fiscal year ends:	December
Common shares out as of 5/15/23	70.5 million	Revenue per share (TTM)	\$0.01
Approximate float	58.6 million	Price/Sales (TTM)	155.0X
Market capitalization	\$109.3 million	Price/Sales (FY2024)E	114.8X
Tangible book value/share	\$0.03	Price/Earnings (TTM)	NMF
Price/tangible book value	NMF	Price/Earnings (FY2024)E	NMF

*BioSig Technologies, Inc., headquartered in Westport CT, provides advanced digital signal processing technology that brings never-before-seen insights to the treatment of cardiovascular arrhythmias through its FDA-cleared product PURE EP™, which provides real-time signal visualization allowing physicians to perform insight-based, highly targeted cardiac ablation procedures with increased procedural efficiency and efficacy.*

### **Key investment considerations:**

**Maintaining our Speculative Buy rating twelve-month price target of \$2.00 per share.**

**BSGM’s PURE EP System is a signal processing platform that enables electrophysiologists to see more cardiac signals and analyze them in real-time. The device aims to minimize noise from cardiac recordings thereby improving the fidelity of acquired cardiac signals. The PURE EP™ System has been used in over 3,000 procedures by more than 80 physicians at 21 hospitals across the US.**

**We believe BSGM is in the process of enhancing strategy with regard to how it could generate revenues from its PURE EP System. While still entering evaluation agreements with medical centers, the key to growth is likely be to establishment of a subscription-based recurring quarterly revenue stream where BioSig owns the device and the medical center pays a quarterly fee. The subscription model should result in quicker deployments as the funds necessary to pay for the device will come from a medical centers’ operating budget not its capital budgets.**

**We anticipate awareness of the company’s platform will occur as research findings are published such as in May 2023 by the Cleveland Clinic where they found the PURE EP platform provided real-time tissue-specific feedback that achieved equal lesion quality and dimension in a third of the time as conventional methods. That time saving should enable medical centers to generate a positive ROI within months of a deployment of the company’s system.**

**BSGM reported (10-Q released 5/15/23) IQ23 revenue of \$5,000 from \$8,000 last year. The loss per share was (\$0.12) versus (\$0.22) in IQ22. We projected IQ23 revenue of \$138,000 and a loss of (\$0.10) per share.**

**For 2023 and 2024, we project total revenue of \$135,000 and nearly \$1.2 million, respectively in each period. Revenue growth next year is predicated on new customers adopting the company’s subscription based model.**

**Our price target is reflects a present value calculation of potential revenues begin generated by the company in 2024. With only modest penetration into the estimate 5,000 US catheterization labs revenue could reach \$22 million by 2028.**

***\*Please view our disclosures on pages 14 - 16.***

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## ***Recommendation and Valuation***

### **Maintaining our Speculative Buy rating twelve-month price target of \$2.00 per share.**

The PURE EP™ System has been used in over 3,000 procedures by more than 80 physicians at 21 hospitals across the US.

We believe BSGM is in the process of enhancing strategy with regard to how it could generate revenues from its PURE EP System. While still entering evaluation agreements with medical centers, the key to growth is likely to be establishment of a subscription-based recurring quarterly revenue stream where BioSig owns the device and the medical center pays a quarterly fee. The subscription model should result in quicker deployments as the funds necessary to pay for the device will come from a medical center's operating budget not its capital budgets.

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**Our 12-month price target of \$2.00 per share implies shares could appreciate nearly 30% over the next twelve months.** Our price target anticipates the company generating revenue per share of approximately \$0.23 per share in 2028 based on having at least 200 deployments of the PURE EP system providing quarterly recurring revenue. Our year-ahead revenue per share estimate of \$0.17 reflects a present value calculation of our 2028 forecast. According to finviz.com average price-to-sales multiple for companies with similar market capitalizations in the medical device sector is 13.2X. We applied a price-to-sales multiple of 13.2X to our 2024 present value revenue per share estimate of \$0.17, discounted from execution risk, to obtain a year-ahead price target of approximately \$2.00 per share.

Our price target reflects a present value calculation of potential revenues begin generated by the company in 2024. With only modest penetration into the estimate 5,000 US catheterization labs (according to a January 2023 report published by MarkWide Research) revenue could reach \$22 million by 2028.

**We believe BioSig Technologies, Inc. is most suitable for risk tolerant investors that seek exposure to an emerging growth company providing its PURE EP System within the electrophysiology market.**

## ***Business Overview***

BioSig Technologies, Inc., headquartered in Westport CT, provides advanced digital signal processing technology that brings never-before-seen insights to the treatment of cardiovascular arrhythmias through its FDA-cleared product the PURE EP™ System. This system provides real-time signal visualization allowing physicians to perform insight-based, highly targeted cardiac ablation procedures with increased procedural efficiency and efficacy. The system helps electrophysiologists treat patients suffering from complex arrhythmias with a procedure called cardiac catheter ablation, a procedure that involves delivery of energy through the tip of a catheter that scars or destroys heart tissue to correct (arrhythmias). BioSig received 510(k) clearance from the US Food and Drug Administration in August 2018 to market its PURE (Precise Uninterrupted Real-time evaluation of Electrograms) EP System.

PURE EP helps to improve the fidelity of acquired cardiac signals, which should improve the accuracy and efficiency of the EP studies and ablation procedures. The device, essentially a digital signal processing system, has been shown in clinical data to give an electrophysiologist a 75% overall improvement in intracardiac signal quality and confidence in interpreting PURE EP signals over conventional sources.

PURE EP's initial focus is on improving intracardiac (inside the heart) signal acquisition and enhancing diagnostic information for cardiac catheter ablation procedures for complex arrhythmias like ventricular

tachycardia, a potentially life-threatening arrhythmia, and atrial fibrillation, the most common cardiac arrhythmia associated with a fivefold risk of stroke.

### ***PURE EP System***

The patented PURE EP System is designed to address long-standing limitations that slow and disrupt cardiac catheter ablation procedures, such as environmental lab noise, signal saturation, and slow signal recovery.

PURE EP is a signal processing platform (pictured below – from April 2023 presentation) that combines advanced hardware and software to address known challenges associated to signal acquisition, to enable electrophysiologists to see more signals and analyze them in real-time. The device aims to minimize noise from cardiac recordings and acquire high-fidelity cardiac signals. Improving fidelity of acquired cardiac signals may potentially increase the diagnostic value of these signals, thereby possibly improving accuracy and efficiency of the electrophysiological (EP) studies and ablation procedures.



Advantages of the system has include noise reduction via its proprietary architecture as it was engineered to enable acquisition of high-fidelity signals in an original, unfiltered format. The system provides a wide dynamic range that retains cardiac signal details and reduces saturation. Customer should experience higher fidelity, which means the system provides a large frequency bandwidth and linear signal acquisition that helps to accurately display complex fractionated signals, even at lower amplitudes and higher frequencies. The system also provides its end users with clear, stable unipolar signals, and a seamless integration process with existing EP labs and workflows and is compatible and complementary with EP recording systems, mapping systems, robotic equipment, and multi-display panels.

The system's software is customizable by providing modules and specialty digital filters to enable electrophysiologists to customize their interface and optimize signals. Released in 4Q22, the company released software Version 6 with its ACCUVIZ™ Module. This is the most advanced iteration of the company's digital signal processing technology, as it delivers a new level of efficiency enabling unlimited, real-time analysis of intra-cardiac signals. Additionally, it introduces advanced signal processing automation, elevated visualization of clear cardiac signal information, and even smarter workflows.

BioSig has a manufacturing and professional services agreement with Plexus Corp. where Plexus will manufacture the PURE EP System and develop a new product pipeline for the company's subsidiary, ViralClear.

The company has 56 worldwide fundamental granted/allowed patents in the field of digital signal processing.

### ***Recently Published Clinical Data***

In May 2023, researchers from Cleveland Clinic presented data from three abstracts at Heart Rhythm 2023 that evaluated an optimized radiofrequency ablation technique for pulmonary vein isolation, which is a type of ablation procedure used to treat atrial fibrillation, as it compares to the existing standard, the Ablation Index™. Researchers used BSGM's proprietary PURE EP™ platform for real-time tissue-specific feedback to achieve equal lesion quality and dimension in a third of the time as conventional methods that rely on surrogate metrics. The data from three abstracts highlight the potential of an optimized radiofrequency ablation technique for

pulmonary vein isolation and preservation of raw unipolar signal using the PURE EP platform guidance enabled real-time tissue-specific feedback when conducting ablation.

Dr. Wazni (section head, cardiac electrophysiology and pacing at Cleveland Clinic and lead researcher) stated that despite past evidence suggesting validation and efficacy, unipolar signals have not been used to help guide lesion and ablation because of their susceptibility to interference from an inherently noisy lab environment. He went on to conclude that these studies presented to Heart Rhythm 2023, suggest that the preservation of raw cardiac signal enables the use of unipolar signals to help guide ablations, while improving lesion precision and reducing procedure time.

The first abstract, entitled "Unipolar Signal Modification-Guided Radiofrequency Ablation," found radiofrequency ablation guided by unipolar signal modification achieved identical transmural lesion dimensions for atrial tissue thickness less than three millimeters, with ablation time being significantly shorter (8 seconds) than ablation index-guided procedures (24 seconds). That is a significant time saving that should result in costs saving for a medical center using the PURE EP platform.

The second abstract, entitled "Feasibility of Unipolar Signal Guided Ablation in Creating Contiguous Lines of Conduction Block: A Proof-of-Concept Study," demonstrated that unipolar electrograms accurately placed and spaced transmural lesions to prevent gaps, creating a successful bidirectional block. In this study, physicians were blinded to the 3D mapping system traditionally used to measure lesion location and spacing and relied entirely on unipolar morphology as seen on the PURE EPTM platform.

The third abstract, entitled "Comparison of Unipolar Electrogram Monitoring during Radiofrequency Ablation in Viable and Ablated Myocardium: Loss of the S-component" showed that unipolar electrogram monitoring can differentiate between healthy and scarred tissue in both singular isolated lesions and contiguous lesions that constitute an ablation line. This information is critical to inform lesion placement in a clinical setting where the lesion diameter can vary based on the catheter orientation.

### ***Previously Established Clinical Data***

Clinical data acquired by the PURE EP system in a multi-center study at Texas Cardiac Arrhythmia Institute at St. David's Medical Center in Austin, Texas, Mayo Clinic in Jacksonville, Florida, and Massachusetts General Hospital in Boston, Massachusetts was published in September 2021 in the Journal of Cardiovascular Electrophysiology. The background of the study relates to intra-cardiac electrogram data remaining one of the primary diagnostic inputs guiding complex ablation procedures. However, the technology to collect, process, and display intracardiac signals has known shortcomings and has not advanced in several decades. The purpose of the study was to evaluate a new signal processing platform (PURE EP), in a multi-center, prospective study.

*Results* were a total of 93% of question responses showed consensus amongst the blinded reviewers. Based on the ratings for each pair of signals, a cumulative total of 164 PURE signals out of 218 (75.2%) were statistically rated as Superior for this data set ( $p < .001$ ). Only 14 PURE signals out of 218 were rated as Inferior (6.4%).

The conclusion of the study indicated that the PURE EP platform signals were statistically rated as superior when compared to conventional systems.

### ***Growth Strategy***

The company growth strategy is centered on commercializing its PURE EP system (see chart on the right). The strategy includes BioSig's presence (in-person and virtually) at leading industry events and scientific sessions, both nationally and internationally, for the purposes of physician education,



demonstrations, and select presentations of advanced R&D product pipeline.

We believe BSGM is in the process of pivoting how it markets and will generate future revenue from its PURE EP System. While still entering into 60-day evaluation agreements with medical centers, the key to growth will be to establish a subscription-based recurring quarterly revenue stream where BioSig owns the device (so it can be redeployed if returned) and the medical center pays a quarterly fee. The move to subscription sales should mean quicker deployments as the funds necessary to pay for the device will come from a medical centers' operating budget not its capital budgets.

The sales process will include the May 2023 findings published by the Cleveland Clinic where they found that the PURE EP platform provided real-time tissue-specific feedback that achieved equal lesion quality and dimension in a third of the time as conventional methods. That time saving should enable medical centers to generate a positive ROI within months of a deployment of the company's system.

The PURE EP™ System has been used in over 3,000 procedures by more than 80 physicians at 21 hospitals across the US.

Entering 2023, the company has ongoing collaborations with US medical centers such as the Mayo Clinic, Texas Cardiac Arrhythmia Institute, Cleveland Clinic, and Kansas City Heart Rhythm Institute. Having those medical centers and new published data presented at Heart Rhythm 2023 conference in May 2023 should aid in obtaining new medical centers signing up for 60-day evaluation agreements for BioSig PURE EP system and quickly transitioning to a quarterly recurring revenue subscription.

**Electrophysiology (EP) Market**

Electrophysiology is a branch of physiology (science that treats the functions of living organisms and their parts, and of the physical and chemical factors and processes involved) that studies the relationship between electric phenomena and bodily processes. The electrophysiology market was \$6.8 billion in 2021 and is anticipated to grow 9.4% annually reaching \$11.6 billion in 2027 between 2021 and 2027 (Source: MarketsandMarkets Research – December 2022). A growing number of cases of cardiac arrhythmia globally owing to the adoption of unhealthy lifestyles will help drive the market growth. Acceptance of technological advanced products to enhance treatment will thereby accelerate the demand for electrophysiology products in the coming years.



The chart above from Global Market Insights indicates the atrial fibrillation segment to grow 12.5% annually through 2027 as acceptance of ablation procedures increases for the treatment of atrial fibrillation. According to the CDC, around 12.1 million people are slated to be diagnosed with atrial fibrillation in the US by 2030.

The hospital segment of the EP market is poised to expand at more than a 12.3% CAGR till 2027 with the increased spending capacity of hospitals on innovative EP products along with the presence of skilled expertise helping to drive this segment's growth. In addition, an increasing number of patient visits to hospitals well-equipped with electrophysiology departments should help to drive growth.

The North American electrophysiology market accounted for 51.2% of total market share in 2021 followed by 24.8% market share for Europe. According to the report published by American Heart Association Research, in 2017, approximately 92.1 million American adults suffered from some form of cardiovascular disorder or the post-effects of stroke. Also, the increasing number of ablation centers and procedures, coupled with the growing use of electrophysiology devices, should help drive growth in North America.

## ***Projections***

2023 Forecast - We project total revenue of \$135,000 (prior was \$925,000), and a net loss of \$24.1 million or (\$0.35) per share on 68.3 million average common shares outstanding. We previously projected a net loss of \$24.3 million or (\$0.36) per share on 68.2 million average common shares outstanding. Our revenue forecast reflects 1Q23 results and minimal increases in adoption of the company's PURE EP System in medical centers. However, revenue should growth in 2H23 compared to 1H23 as the company achieves a modest level of customer deployments utilizing its new recurring revenue subscription model.

Gross profit should equal revenue due primarily to revenue coming from a subscription based model. General and administration expenses are projected to decrease to \$19.9 million from \$21.4 million in 2022. Research and development expenses are projected to decrease to \$4.3 million from \$5.8 million in 2022. The overall decreases in operating expenses stems from the company continuing to streamline operations and manage costs.

In 2023, we project \$11.3 million cash used in operations from a cash loss of \$15.4 million and a \$4.1 million decrease in working capital. We project \$110,000 cash used in investing primarily from capital expenditures. Cash provided by financing of \$11.7 million should primarily come from proceeds from sales of common stock and cash received from the exercise of warrants. We project a \$294,000 increase in cash to \$651,000 at the end of 2023.

2024 Forecast - We project total revenue of nearly \$1.2 million (prior was \$4.5 million), up from \$135,000 projected for 2023 and the net loss narrowing to \$22.1 million or (\$0.26) per share on 85 million average common shares outstanding from \$24.1 million or (\$0.35) per share on 68.3 million average common shares outstanding. The growth in revenue should be driven by the increasing adoption of the PURE EP platform by catheterization labs within medical centers utilizing a quarterly recurring revenue payment model. As customer growth occurs on a recurring revenue based model, we anticipate the company experiencing sequential quarterly revenue growth in 2024.

Gross profit should equal revenue due to the recurring revenue model. General and administration expenses are projected to decrease to \$18.7 million from \$19.9 million in 2023 as the company should be setup to leverage its operations to support sales growth. Research and development expenses are projected to remain at \$4.3 million.

In 2024, we project \$10.8 million cash used in operations from a cash loss of \$12.3 million and a \$1.5 million decrease in working capital. We project \$120,000 cash used in investing primarily from capital expenditures. Cash provided by financing of \$10.5 million should primarily come from proceeds from sales of common stock and cash received from the exercise of warrant. We project a \$405,000 decrease in cash to \$246,000 in 2024.

## 2028 Revenue Potential

We anticipate the company building a sustained and growing recurring revenue customer base for its PURE EP platform offering. With only modest penetration into the estimate 5,000 US catheterization labs revenue could reach \$22 million by 2028. We anticipate a recurring revenue customer base that should average 200 in 2028.

## ***1Q23 Financial Results***

In 1Q23, total revenue decreased to \$5,000 from \$8,000 in 1Q22. The only revenue recorded in each period was service revenue. The net loss narrowed to \$7.3 million or (\$0.12) per share on average shares outstanding of 61.4 million compared to a loss of \$8 million or (\$0.22) per share on average shares outstanding of 36 million in the year-ago-period. We projected a net loss of \$6 million or (\$0.10) per share on total revenue of \$138,000.

Gross margin in each period was 100%.

The loss from operations narrowed to \$7.4 million from \$8.1 million last year. General and administrative expenses decreased to \$6.2 million from \$6.4 million in 1Q22 period due primarily to reduction in the activities of the company's ViralClear segment, partly offset by an increase in employee performance pay and staff and

service provider fees. Research and development expenses decreased to \$1.1 million from \$1.6 million last year due primarily to a reduction in salaries and consulting fee, as well as lower travel and supply costs. D&A expense increased to \$84,000 from \$55,000 due to additional manufacturing and testing equipment purchased in 2022.

In 1Q23, interest income was \$4,000 compared zero in the year-ago-period.

The company recorded preferred stock dividends and deemed dividends of \$2,000 in each period.

**In 1Q23**, the company used \$5.6 million cash from operations from a cash loss of \$5.1 million and a \$570,000 increase in working capital. BSGM used \$45,000 cash in investing activities consisting solely of capital expenditures. Cash provided by financing activities of \$6.7 million consisted of proceeds from the sale of common stock. Cash increased by nearly \$1.1 million to \$1.4 million as of March 31, 2023.

*Liquidity* – As of March 31, 2023, BioSig had \$1.1 million in cash, no debt, and shareholder's equity of \$1.9 million.

As of March 31, 2023 the company had 105 shares of Series C Preferred stock issued and outstanding. The conversion price of the Series C Preferred stock is \$0.25 per share.

Between January 1, 2023 and March 31, 2023, BioSig entered into multiple securities purchase agreements with certain institutional and accredited investors to which they sold approximately 8.5 million shares of common stock and issued nearly \$4.3 million warrants. Net processed were nearly \$6.8 million after deducting expenses of approximately \$481,000.

Pursuant to certain engagement agreements, dated October 11, 2022 and February 24, 2023 the company had entered into with Laidlaw & Company, BSGM issued to Laidlaw in connection with the 2023 PIPEs, warrants to purchase an aggregate of 400,525 shares of common stock at an average exercise price of nearly \$0.79 per share. The Laidlaw warrants become exercisable six months after the date of issuance and expire in five and one-half years.

On April 18, 2023, BioSig entered into a securities purchase agreement with certain accredited and institutional investors, pursuant to which it sold over 792,400 shares of common stock at a purchase price of approximately \$1.19 per share for gross proceeds of approximately \$945,000.

On May 16, 2023, the company sold to certain institutional and accredited investors nearly 1.8 million shares (the common stock at a purchase price of approximately \$1.39 per share for gross proceeds of over \$2.5 million.

### ***Competition***

BioSig is currently marketing its PURE EP system as an additional information system for the electrophysiology (EP) lab. In general, the EP market is characterized by intense competition. There are four large companies that share the majority of the EP recording market in the US and produce the following electrophysiology recording systems with an average selling price of approximately \$160,000 (source: DRG Medtech 360 Millennium report on EP Devices, June 2019):

- GE Healthcare's family of CardioLab Recording Systems were initially developed in the early 1990s by Prucka Engineering, which was acquired by General Electric Company in 1999.
- The LabSystem PRO EP Recording System was originally designed in the late 1980s by C.R. Bard. C.R. Bard's electrophysiology business was acquired by Boston Scientific Corporation in 2013.
- HeNan HuaNan Medical Science and Technology Co., LTD. offers the GY-6000 multi-channel physiological recorder (not FDA approved).

- St. Jude Medical, Inc.'s EP-WorkMate Recording System was acquired from EP MedSystems, Inc. in 2008, which had received clearance for the product from the FDA in 2003. In January 2017, Abbott Laboratories acquired St Jude Medical, Inc.

CathVision is developing an EP recording system, ECGenius System™ which is not yet cleared for sale in the US and not authorized for sale in Europe.

## ***Risks***

In our view, these are the principal risks underlying the stock.

Going concern issues – As of March 31, 2023, the company had cash of \$1.4 million and working capital deficit of \$664,000. In 2022, BSGM used cash in operating activities of \$21.7 million. These conditions raise substantial doubt about the company's ability to continue as a going concern.

Operating losses expected to continue – BSGM is an early commercialization stage company that is expected to incur substantial additional operating expenses over the next several years as its marketing, commercialization, and customer development along with additional R&D expenses increase. The company's products have generated minimal commercial revenue, and, although revenue is expected increase in 2024 from the commercial sale of the PURE EP System, it is unlikely to be enough to fund operating expenses.

Product development and commercialization uncertainty - Although the PURE EP System, received FDA 510(k) clearance from the FDA, the company is currently conducting clinical trials and may conduct additional clinical trials, which may require substantial further capital expenditure, to establish the safety and efficacy data needed to obtain acceptance by the medical community and coverage by third-party payors. There can be no assurance that the company's current or future product candidates will be successfully developed or commercialized.

Regulatory risks - Medical devices are subject to extensive and rigorous regulation by the FDA pursuant to the Federal Food, Drug, and Cosmetic Act, by comparable agencies in foreign countries, and by other regulatory agencies and governing bodies. Under the Federal Food, Drug, and Cosmetic Act and associated regulations, manufacturers of medical devices must comply with certain regulations that cover the composition, labeling, testing, clinical study, manufacturing, packaging and distribution of medical devices. In addition, medical devices must receive FDA clearance or approval before they can be commercially marketed in the U.S., and the FDA may require testing and surveillance programs to monitor the effects of approved products that have been commercialized and can prevent or limit further marketing of a product based on the results of these post-market evaluation programs.

The process of obtaining marketing clearance or approval from the FDA for new products could take a significant period of time, require the expenditure of substantial resources, involve rigorous pre-clinical and clinical testing, require changes to the products and result in limitations on the indicated uses of the product. There can be no assurance that BSGM will be able to obtain the necessary regulatory approvals in a timely manner, or at all.

The company received 510(k) clearance to market its current lead product, the PURE EP System in the US. If the company intends to market the PURE EP System for additional medical uses or indications, it may need to submit additional 510(k) applications to the FDA that are supported by satisfactory clinical trial results specifically for the additional indication. The failure to obtain FDA marketing clearance for any additional indications for the PURE EP System or any other future product would have a material adverse effect on the company's business.

Competition - The EP market is highly competitive. There are a number of groups and organizations, such as healthcare, medical device and software companies in the EP market that may develop a competitive offering to BSGM's. Should a superior offering come to market, this could negatively impact the company's operations.

Reimbursement concerns – Widespread adoption of the PURE EP System, and any other products the company may develop in the future by the medical community, is unlikely to occur without a financial incentive from third-



party payors for the use of these products. Third-party payors include but are not limited to governmental programs such as Medicare and Medicaid, commercial health insurers and private payors, workers' compensation programs, and other organizations. PURE EP System does not receive separate reimbursement from any third-party payor. Instead, healthcare providers typically receive reimbursement for the procedure in which the company's product is used. If healthcare providers are unable to obtain sufficient reimbursement from healthcare payers product sales could be materially adversely affected.

Dependence on collaboration – BSGM depends on its collaboration with the Mayo Clinic and Cleveland Clinic for the research and development of additional advanced features of PURE EP platform. If the collaborations are not successful, the company may not be able to realize the market potential of such features and may not have the rights to use any such developed advanced features.

Potential dilution – BSGM's stockholders may experience substantial dilution as a result of the exercise of outstanding options or warrants to purchase shares of the company's common stock, or upon conversion of the Series C preferred stock or warrants into shares of BSGM common stock. Additional dilution may also come from the company's sale of common stock through security purchase agreements.

Material weakness in internal controls – At December 31, 2022, BSGM has identified a material weakness in its internal control over inadequate identification, recording and reporting of stock based compensation due under consulting or other third-party contracts but not yet ratified by the company's Board of Directors. As of March 31, 2023, the company added additional measures including multiple reviews of contract language with all future contracts to ensure that any stock-based compensation is subject BioSig's board of directors approval. The company anticipates the added contract revision reviews will remediate the underlying deficiencies as identified. The remediation efforts will include an ongoing review of the implementation of additional controls to ensure all risks have been addressed. We believe the added contract revision reviews, as well as implementation of additional levels of reviews of stock-based compensation will remediate the underlying deficiencies as identified. The material weaknesses will not be considered remediated until the applicable controls operate for a sufficient period of time and management has concluded, through testing, that these controls are operating effectively.

Liquidity risk - Shares of BSGM have risks common to those of the microcap segment of the market. Often these risks cause microcap stocks to trade at discounts to their peers. The most common of these risks is liquidity risk, which is typically caused by small trading floats and very low trading volume and can lead to large spreads and high volatility in stock price. There are 58.6 million shares in the float and the average daily volume is approximately 317,000 shares.

Miscellaneous risk - The company's financial results and equity values are subject to other risks and uncertainties including competition, operations, financial markets, regulatory risk, and/or other events. These risks may cause actual results to differ from expected results.

BioSig Technologies, Inc.

Consolidated Balance Sheets  
(in thousands \$)

	2021A	2022A	1Q23A	2023E	2024E
Cash	11,659	357	1,412	651	246
Accounts receivable	-	9	17	20	25
Inventory	1,881	336	345	300	350
Net investment in leases, short-term	-	101	101	101	101
Prepaid expenses and vendor deposits	354	325	275	500	550
Total current assets	13,894	1,128	2,150	1,572	1,272
Property and equipment	652	665	630	625	620
Right-to-use assets	604	705	634	634	634
Other	369	1,612	1,783	1,783	1,783
Total assets	15,519	4,110	5,197	4,614	4,309
Accounts payable and accrued expenses	2,179	2,852	2,392	6,500	8,000
Customer deposits	-	-	8	8	8
Deferred revenue	32	5	-	-	-
Dividends payable	82	91	93	93	93
Lease liability	283	313	321	321	321
Total current liabilities	2,576	3,261	2,814	6,922	8,422
Deferred revenue	5	-	-	-	-
Lease liability	373	452	368	600	700
Total liabilities	2,954	3,713	3,182	7,522	9,122
Series C convertible preferred stock	105	105	105	105	105
Non-controlling interest	219	(21)	(66)	(66)	(66)
Total stockholders' equity	12,460	292	1,910	(3,013)	(4,918)
Total liabilities & stockholders' equity	15,519	4,110	5,197	4,614	4,309

Source: Company filings and Taglich Brothers' estimates

BioSig Technologies, Inc.

Income Statements for the Fiscal Years Ended  
(in thousands \$)

	<u>FY21A</u>	<u>FY22A</u>	<u>FY23E</u>	<u>FY24E</u>
Product sales	414	254	-	-
Service	<u>27</u>	<u>32</u>	<u>135</u>	<u>1,150</u>
Total revenue	441	286	135	1,150
Cost of goods sold	<u>199</u>	<u>57</u>	-	-
Gross profit	242	229	135	1,150
Research and development	5,602	5,821	4,257	4,330
General and administration	27,853	21,380	19,895	18,650
Depreciation and amortization	<u>198</u>	<u>293</u>	<u>330</u>	<u>314</u>
Operating income (loss)	(33,411)	(27,265)	(24,347)	(22,144)
Interest income	2	3	4	-
Gain on settlement of debt	<u>553</u>	-	-	-
Income (loss) before income taxes	(32,856)	(27,262)	(24,343)	(22,144)
Income taxes (benefit)	-	-	-	-
Net income / (loss)	<u>(32,856)</u>	<u>(27,262)</u>	<u>(24,343)</u>	<u>(22,144)</u>
Non-controlling interest	939	210	245	260
Preferred stock dividend / deemed dividend	<u>(9)</u>	<u>(219)</u>	<u>(8)</u>	<u>(8)</u>
Net income (loss) to common	<u>(31,926)</u>	<u>(27,271)</u>	<u>(24,106)</u>	<u>(21,892)</u>
EPS	<u>(0.95)</u>	<u>(0.64)</u>	<u>(0.35)</u>	<u>(0.26)</u>
Shares Outstanding	33,512	42,633	68,332	85,044
<u>Margin Analysis</u>				
Gross margin	54.9%	80.1%	100.0%	100.0%
Operating margin	NMF	NMF	NMF	NMF
<u>Year / Year Growth</u>				
Total Revenues	NMF	(35.1)%	(52.8)%	751.9%

Source: Company filings and Taglich Brothers' estimates

BioSig Technologies, Inc.

	<u>3/22A</u>	<u>6/22A</u>	<u>9/22A</u>	<u>12/22A</u>	<u>FY22A</u>	<u>3/23A</u>	<u>6/23E</u>	<u>9/23E</u>	<u>12/23E</u>	<u>FY23E</u>	<u>3/24E</u>	<u>6/24E</u>	<u>9/24E</u>	<u>12/24E</u>	<u>FY24E</u>
Product sales	-	-	127	127	254	-	-	-	-	-	-	-	-	-	-
Service	8	8	8	8	32	5	5	50	75	135	100	175	375	500	1,150
Total revenue	8	8	135	135	286	5	5	50	75	135	100	175	375	500	1,150
Cost of goods sold	-	-	30	27	57	-	-	-	-	-	-	-	-	-	-
Gross profit	8	8	105	108	229	5	5	50	75	135	100	175	375	500	1,150
Research and development	1,617	1,351	1,733	1,120	5,821	1,062	1,060	1,065	1,070	4,257	1,075	1,080	1,085	1,090	4,330
General and administration	6,401	4,302	4,774	5,903	21,380	6,245	4,500	4,550	4,600	19,895	4,625	4,650	4,675	4,700	18,650
Depreciation and amortization	55	71	84	83	293	84	83	82	81	330	80	79	78	77	314
Operating income (loss)	(8,065)	(5,716)	(6,486)	(6,998)	(27,265)	(7,386)	(5,638)	(5,647)	(5,676)	(24,347)	(5,680)	(5,634)	(5,463)	(5,367)	(22,144)
Interest income	-	-	1	2	3	4	-	-	-	4	-	-	-	-	-
Gain on settlement of debt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Income (loss) before income taxes	(8,065)	(5,716)	(6,485)	(6,996)	(27,262)	(7,382)	(5,638)	(5,647)	(5,676)	(24,343)	(5,680)	(5,634)	(5,463)	(5,367)	(22,144)
Income taxes (benefit)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net income / (loss)	(8,065)	(5,716)	(6,485)	(6,996)	(27,262)	(7,382)	(5,638)	(5,647)	(5,676)	(24,343)	(5,680)	(5,634)	(5,463)	(5,367)	(22,144)
Non-controlling interest	102	(43)	113	38	210	50	65	65	65	245	65	65	65	65	260
Preferred stock dividend / deemed dividend	(2)	(111)	(19)	(87)	(219)	(2)	(2)	(2)	(2)	(8)	(2)	(2)	(2)	(2)	(8)
Net income (loss) to common	(7,965)	(5,870)	(6,391)	(7,045)	(27,271)	(7,334)	(5,575)	(5,584)	(5,613)	(24,106)	(5,617)	(5,571)	(5,400)	(5,304)	(21,892)
EPS	(0.22)	(0.13)	(0.14)	(0.16)	(0.64)	(0.12)	(0.08)	(0.08)	(0.07)	(0.35)	(0.07)	(0.07)	(0.06)	(0.06)	(0.26)
Shares Outstanding	35,997	44,814	45,016	45,025	42,633	61,427	66,900	70,000	75,000	68,332	85,000	85,025	85,050	85,100	85,044
<u>Margin Analysis</u>															
Gross margin	100.0%	100.0%	77.8%	80.0%	80.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Operating margin	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF
<u>Year / Year Growth</u>															
Total Revenues	NMF	NMF	25.0%	NMF	(35.1)%	NMF	NMF	NMF	-44.4%	(52.8)%	NMF	NMF	NMF	566.7%	751.9%

Source: Company filings and Taglich Brothers' estimates

BioSig Technologies, Inc.

Statement of Cash Flows for the Periods Ended  
(in thousands \$)

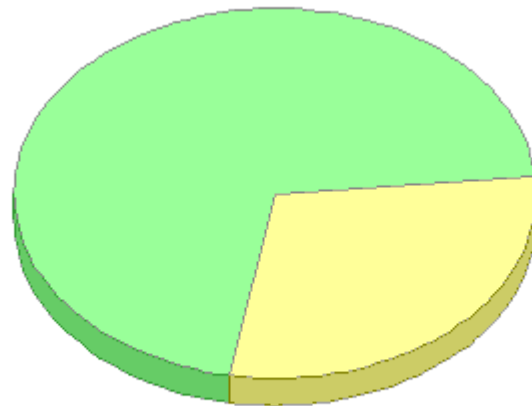
	<u>FY21A</u>	<u>FY22A</u>	<u>1Q23A</u>	<u>FY23E</u>	<u>FY24E</u>
Net income (loss)	(32,856)	(27,262)	(7,382)	<b>(24,343)</b>	<b>(22,144)</b>
Depreciation and amortization	198	293	84	<b>330</b>	<b>314</b>
Non-cash lease expense	441	373	71	<b>500</b>	<b>550</b>
Equity based compensation	9,500	4,412	2,149	<b>8,149</b>	<b>9,000</b>
Gain on settlement of debt	(553)	-	-	-	-
Change in fair value of modified options	<u>321</u>	<u>15</u>	<u>-</u>	<u>-</u>	<u>-</u>
Cash earnings (loss)	(22,949)	(22,169)	(5,078)	<b>(15,364)</b>	<b>(12,280)</b>
<i>Changes in assets and liabilities</i>					
Accounts receivable	-	(9)	(8)	<b>(11)</b>	<b>(5)</b>
Lease receivable	-	(220)	25	-	-
Inventory	(1,114)	284	(9)	<b>36</b>	<b>(50)</b>
Prepaid expenses and other	(50)	30	(151)	<b>(175)</b>	<b>(50)</b>
Deferred revenue	38	(32)	(5)	<b>(5)</b>	-
Deposits	60	-	8	-	-
Accounts payable and accrued expenses	(1,988)	776	(355)	<b>4,108</b>	<b>1,500</b>
Operating lease liabilities	<u>(396)</u>	<u>(365)</u>	<u>(75)</u>	<u><b>156</b></u>	<u><b>100</b></u>
(Increase) decrease in working capital	(3,450)	464	(570)	<b>4,109</b>	<b>1,495</b>
Net cash provided by (used in) operations	(26,399)	(21,705)	(5,648)	<b>(11,255)</b>	<b>(10,785)</b>
Purchase of property and equipment	<u>(542)</u>	<u>(168)</u>	<u>(45)</u>	<u><b>(110)</b></u>	<u><b>(120)</b></u>
Net cash provided by (used in) investing	(542)	(168)	(45)	<b>(110)</b>	<b>(120)</b>
Proceeds from sale of common stock	9,004	8,283	6,748	<b>7,800</b>	<b>6,500</b>
Proceeds from sale of common stock (at-the-market)	1,300	2,070	-	-	-
Proceeds from exercise of options	28	218	-	<b>500</b>	<b>500</b>
Proceeds from exercise of warrants	<u>-</u>	<u>-</u>	<u>-</u>	<u><b>3,359</b></u>	<u><b>3,500</b></u>
Net cash provided by (used in) financing	10,332	10,571	6,748	<b>11,659</b>	<b>10,500</b>
Net change in cash	(16,609)	(11,302)	1,055	<b>294</b>	<b>(405)</b>
Cash - beginning of period	<u>28,268</u>	<u>11,659</u>	<u>357</u>	<u><b>357</b></u>	<u><b>651</b></u>
Cash - end of period	<u><u>11,659</u></u>	<u><u>357</u></u>	<u><u>1,412</u></u>	<u><u><b>651</b></u></u>	<u><u><b>246</b></u></u>

Source: Company filings and Taglich Brothers' estimates

**Price Chart**



**Taglich Brothers' Current Ratings Distribution**



70.83 % Buy | 29.17 % Hold

<b>Investment Banking Services for Companies Covered in the Past 12 Months</b>		
Rating	#	%
Buy	5	26
Hold		
Sell		
Not Rated		

### **Important Disclosures**

As of the date of this report, we, our affiliates, any officer, director or stockholder, or any member of their families do not have a position in the stock of the company mentioned in this report. Taglich Brothers, Inc. does not currently have an Investment Banking relationship with the company mentioned in this report and was not a manager or co-manager of any offering for the company within the last three years.

All research issued by Taglich Brothers, Inc. is based on public information. The company paid a monetary fee of \$6,000 (USD) in July 2022 for the creation and dissemination of research reports for the first three months. After the first three months from initial publication, the company began paying a monthly monetary fee of \$2,000 (USD) to Taglich Brothers, Inc., for a minimum of twelve months for the creation and dissemination of research reports.

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**I, Howard Halpern, the research analyst of this report, hereby certify that the views expressed in this report accurately reflect my personal views about the subject securities and issuers; and that no part of my compensation was, is, or will be, directly, or indirectly, related to the specific recommendations or views contained in this report.**

Public companies mentioned in this report:

Abbott Labs (NYSE: ABT)  
Boston Scientific (NYSE: BSX)  
General Electric (NYSE: GE)  
Johnson & Johnson (NYSE: JNJ)  
Medtronic (NYSE: MDT)

### **Meaning of Ratings**

**Buy** – The growth prospects, degree of investment risk, and valuation make the stock attractive relative to the general market or comparable stocks.

**Speculative Buy** – Long term prospects of the company are promising but investment risk is significantly higher than it is in our BUY-rated stocks. Risk-reward considerations justify purchase mainly by high risk-tolerant accounts. In the short run, the stock may be subject to high volatility and could continue to trade at a discount to its market.

**Neutral** – Based on our outlook the stock is adequately valued. If investment risks are within acceptable parameters, this equity could remain a holding if already owned.

**Sell** – Based on our outlook the stock is significantly overvalued. A weak company or sector outlook and a high degree of investment risk make it likely that the stock will underperform relative to the general market.

**Discontinued** – Research coverage discontinued due to the acquisition of the company, termination of research services (includes non-payment for such services), diminished investor interest, or departure of the analyst.

#### **Some notable Risks within the Microcap Market**

**Stocks in the Microcap segment of the market have many risks that are not as prevalent in Large-cap, Blue Chips or even Small-cap stocks. Often it is these risks that cause Microcap stocks to trade at discounts to their peers. The most common of these risks is liquidity risk, which is typically caused by small trading floats and very low trading volume which can lead to large spreads and high volatility in stock price. In addition, Microcaps tend to have significant company specific risks that contribute to lower valuations. Investors need to be aware of the higher probability of financial default and higher degree of financial distress inherent in the microcap segment of the market.**

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From time to time our analysts may choose to withhold or suspend a rating on a company. We continue to publish informational reports on such companies; however, they have no ratings or price targets. In general, we will not rate any company that has too much business or financial uncertainty for our analysts to form an investment conclusion, or that is currently in the process of being acquired.