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Biocept (Nasdaq/BIOC)

BUY
Liquid Biopsy Gold

Biocept is a molecular oncology diagnostics company that commercializes proprietary assays utilizing standard blood samples, or liquid biopsy

October 3, 2018

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Investment Highlights

1) Biocept is a leader in the burgeoning liquid biopsy diagnostic market, which offers a number of advantages over more traditional surgical tests, most notably lower cost, less invasive treatment, and quicker availability of test results. The Company's product offerings are already among the best in the industry, and current R&D projects are expected to increase this industry leadership, for example a collaboration with Thermo Fisher Scientific to validate its Oncomine NGS (next-generation sequencing) panel and Biocept's CLIA-lab as a Center of Excellence and a quality improvement project underway with Highmark Health in non-small cell lung cancer.

2) While liquid biopsies are used today only in profiling as a companion or in lieu of tissue biopsy for the approximately 700,000 patients diagnosed in the US with metastatic cancer, emerging and future potential uses of liquid biopsies offer even greater market commercialization opportunities for Biocept. These include emerging use in resistance mechanisms and monitoring, perhaps as often as 4-6 times annually for oncology patients, and future use in recurring detection and monitoring of as many as 15 million tumor cancer survivors in the US and screening and early diagnosis in many more patients in the US at high risk of developing cancer.

3) Biocept has also successfully implemented a number of corporate measures this year to improve the attractiveness of its shares to investors. These include completing two financial transactions this year, an \$11.6 million rights offering and a \$2.5 million registered direct equity offering, retiring long-term debt, implementing a cost savings program which is expected to shave \$2 million off of annual cash operating expenses, completing a reverse share split to ensure compliance with Nasdaq share trading requirements, and finally launching the Company's first proprietary blood collection tubes in Q2/18 to new global distributor VWR.

Current Price \$2.69
Price Target \$7.00

Estimates	F2016A	F2017A	F2018E
Revenues(\$000s)	\$3,223	\$5,069	\$3,479
1Q March	221	1,683	807 A
2Q June	663	1,279	822 A
3Q September	1,047	1,111	900 E
4Q December	1,292	995	950 E

EPS (diluted)	(\$57.63)	(\$23.80)	(\$6.05)
1Q March	(22.27)	(6.34)	(3.34) A
2Q June	(17.89)	(6.32)	(2.70) A
3Q September	(17.00)	(5.90)	(1.01) E
4Q December	(8.04)	(5.40)	(0.93) E

EBITDA/Share	(\$49.96)	(\$21.25)	(\$5.58)
EV/EBITDA (x)	N/A	N/A	N/A

Stock Data	
52-Week Range	\$2.59-\$40.50
Shares Outstanding (mil.)	3.0
Shares Outstanding fully diluted (mil.)	5.6
Market Capitalization (mil.)	\$8.1
Enterprise Value (mil.)	\$5.5
Debt to Capital (6/18)	20.8%
Book Value/Share (6/18)	\$0.84
Price/Book	3.2 x
Average Trading Volume (3-month)	543,300
Insider Ownership	2.0%
Institutional Ownership	12.8%
Short interest (Millions)	0.2
Dividend / Yield	\$0.00/0.0%



Price target and ratings changes over the past 3 yrs:
 Initiated - October 3, 2018 - Buy - Price Target \$7.00

Conclusion

Biocept is a leading provider in the growing liquid biopsy cancer diagnostic market, which offers current, emerging and future growth opportunities. Still, due to the Company's small market capitalization, these shares continue to trade at significant valuation discounts to its peer diagnostic products/genomics group. However, with a recently bolstered balance sheet, new product launches, new partnerships signed and a number of near-term milestones anticipated, we believe BIOC shares will soon catch the eye of both long-term value investors and short-term event-driven investors as positive news flow and progress milestones continue, and thus we are initiating coverage on BIOC shares with a BUY rating and 12-18 month price target of \$7.00 per share.

Company Business/History

Biocept is an early stage molecular oncology diagnostics company that develops and commercializes proprietary circulating tumor cell, or CTC, and circulating tumor DNA, or ctDNA, assays utilizing a standard blood sample, or liquid biopsy. The Company's current and planned assays are intended to provide information to aid healthcare providers to identify specific oncogenic alterations that may qualify a subset of cancer patients for targeted therapy at diagnosis, progression or for monitoring in order to identify specific resistance mechanisms. Sometimes traditional procedures, such as surgical tissue biopsies, result in tumor tissue that is insufficient and/or unable to provide the molecular subtype information necessary for clinical decisions. The Company's assays, performed on blood, have the potential to provide more contemporaneous information on the characteristics of a patient's disease when compared with tissue biopsy and radiographic imaging.

Additionally, beginning in October 2017, the Company's pathology partnership program, branded as Empower TC, provides the unique ability for pathologists to participate in the interpretation of liquid biopsy results and is available to pathology practices and hospital systems throughout the United States. Further, sales to laboratory supply distributors of the Company's proprietary blood collection tubes began in Q2/2018, which allows for the intact transport of liquid biopsy samples for research use only from regions around the world.

The Company operates a clinical laboratory that is CLIA-certified (under the Clinical Laboratory Improvement Amendment of 1988) and CAP-accredited (by the College of American Pathologists), and manufactures cell enrichment and extraction microfluidic channels, related equipment and certain reagents to perform the Company's diagnostic assays in a facility located in San Diego, California. CLIA certification and accreditation are required before any clinical laboratory may perform testing on human specimens for the purpose of obtaining information for the diagnosis, prevention, treatment of disease, or assessment of health. The assays the Company offers are classified as laboratory developed tests under the CLIA regulations. Biocept, Inc. was founded in California in May 1997, and effected a reincorporation to Delaware in July 2013, and is currently headquartered in San Diego, California.

Assays, Products and Services

Biocept currently offers and conducts commercialized diagnostic assays and clinical trial services at the Company's CLIA-certified, CAP-accredited and state-licensed laboratory. Biocept has commercialized its Target-Selector assays for a number of solid tumor indications, including:

- Breast cancer;
- Non Small-Cell Lung Cancer (NSCLC);
- Gastric cancer;
- Colorectal cancer;

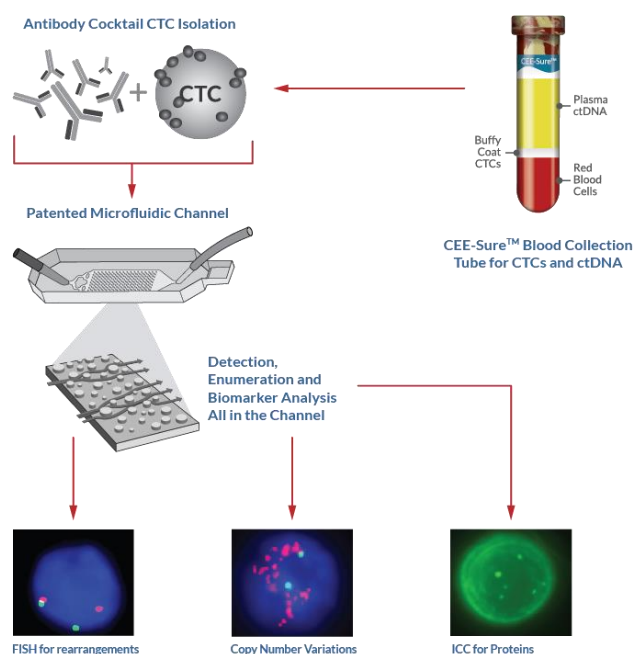
- Prostate cancer;
- Melanoma;
- Pancreatic biliary cancer; and
- Ovarian cancer.

These assays utilize the Company's dual CTC and ctDNA technology platforms and provide biomarker analysis from a patient's blood sample. Biocept's current assays and planned near-term cancer diagnostic assays and clinical trial services include:

1. **CTC and ctDNA Testing** - The Company's current assays and other planned cancer diagnostic assays are based on its Target-Selector technologies and are currently intended to be performed only in its clinical laboratory. After completing testing, customers are provided with an easy to understand report that describes the results of the analyses performed, which is designed to help medical oncologists, surgical oncologists, pulmonologists, pathologists and other physicians make better decisions about the treatment of their patients.
2. **Clinical Trial Services** – Biocept plans to utilize its clinical laboratory and translational research capabilities to provide clinical trial and research services to pharmaceutical and biopharmaceutical companies and clinical research organizations to improve the efficiency and economic viability of their clinical trials. The Company's clinical trials and translational research services leverage knowledge of CTCs and ctDNA and the ability to develop and implement new cytogenetic, immune-cytochemical and molecular diagnostic assays. Biocept's current assays can, and the Company's other planned cancer diagnostic assays and biomarker assays are anticipated to be able to, help optimize clinical trial patient selection, and as a result potentially improve the likelihood of success of the clinical trial. With positive results in a clinical trial, these assays would more easily then move into standard clinical practice, helping physicians select the most appropriate therapy for their patients.

CTCs, ctDNA and Cancer

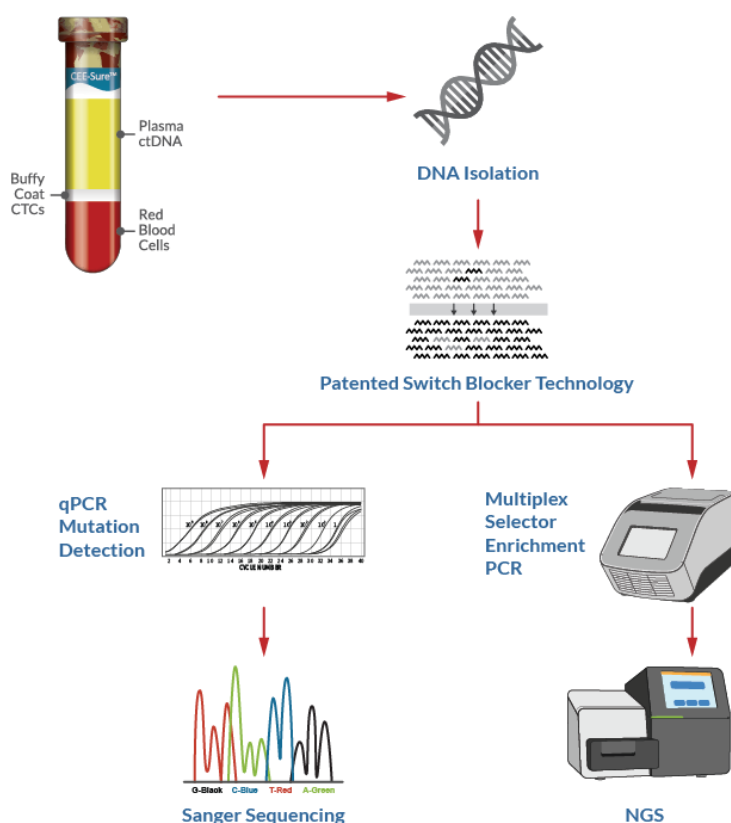
CTCs are cancer cells that have detached from the tumor matrix and entered the patient's blood or other bodily fluids. These cells are representative of the tumor and its metastases and can function as their surrogates. Testing CTCs can complement pathologic information drawn from a biopsy or resected tissue sample, helping to ensure that the analysis is comprehensive and not biased by tumor heterogeneity and sampling issues. They can also provide critical data when a biopsy is not possible. Clinical studies have demonstrated that the presence and number of CTCs provides information on the likely course of certain types of disease for the cancer patient, or in other words they are considered "prognostic." Since CTCs are representative of the tumor, they can also be used for biomarker analysis, such as helping to guide therapy selection. Such analyses are "predictive" in that they offer insight into the likely responsiveness or resistance to particular therapies. After surgery and during any subsequent therapy or monitoring period, blood samples can periodically be drawn in a standard manner and analyzed to evaluate a therapy's continuing effectiveness, as well as to detect other biomarkers such as new genetic mutations that may arise as a result of



selection pressure by a particular therapy or by chance. Physicians can use this information to determine which therapy is most likely to benefit their patients at particular times through the course of their disease. Treatment decisions based on patient-specific information are the foundation of personalized medicine, and assays that guide a physician in the selection of individualized therapy for a patient are termed “predictive assays.”

ctDNA is nucleic acid that is released into blood by dying tumor cells. Cell death occurs in all tissues, especially those that are rapidly dividing. In cancer, where cell growth is not only rapid but also uncontrolled, parts of tumors often outgrow their blood supply, resulting in cell death. Tumor cells dying as a result of therapy also release nucleic acid into blood. As a consequence, ctDNA is common in cancer patients and scientists believe that like CTCs, it may be more representative of a patient’s entire tumor than a few thin sections from a tissue biopsy, thus reducing the heterogeneity problem. ctDNA is found in the plasma component of blood and is readily accessible in a standard blood sample. Analyzing ctDNA for mutations that are used as biomarkers for therapy selection shows great promise. One of the strengths of this approach, in addition to not requiring a tissue biopsy, is that it is not dependent on capturing rare tumor cells from blood to

provide a sample for testing. The difficulty with this approach is that the cellular context is lost since the ctDNA is mixed with a much larger amount of circulating DNA from normal cells that are continuously dying and being replaced in the body, thus making analysis challenging. This requires a mutation detection methodology with enhanced sensitivity and specificity, to distinguish mutations in particular gene regions in cancer cells from the normal gene sequence present in those same genes in normal cells which co-exist in blood as normal cells die and are replaced in the body. Biocept’s Target-Selector technology provides this necessary sensitivity and specificity and creates an opportunity for ctDNA analysis to complement CTC analysis, or potentially to serve as the platform for stand-alone assays. The graphic to the left depicts Biocept’s technology platform for obtaining and analyzing ctDNA.



Source: Biocept

Biomarker Analysis Products

In the case of breast and gastric cancer offerings, biomarker analysis involves fluorescence in situ hybridization, or FISH, for the detection and quantitation of the human epidermal growth factor receptor 2, or HER2, gene copy number as well as immuno-cytochemical, or ICC, analysis of estrogen receptor, or ER, protein, progesterone receptor, or PR, protein, and androgen receptor, or AR, protein, which are currently commercially available. A patient’s HER2 status provides the physician with information about the appropriateness of

therapies such as Herceptin or Tykerb. ER and PR status provides the physician with information about the appropriateness of endocrine therapies such as tamoxifen and aromatase inhibitors.

The Company's lung cancer biomarker analysis offering currently includes FISH testing for ALK, ROS1, RET, MET and FGFR1 gene rearrangements, as well as analysis for the T790M, Deletion 19, and L858R mutations of the epidermal growth factor receptor, or EGFR gene, as well as BRAF, KRAS and NRAS. The L858R mutation of the EGFR gene and Exon 19 deletions as activators of EGFR kinase activity are associated with the use of the drugs Tarceva, Gilotrif and Iressa. For lung cancer, the Company also offers a resistance profile assay consisting of the biomarkers MET, HER2 (both of which are performed using proprietary technology for CTCs), KRAS, and T790M (both of which are performed using ctDNA in plasma). These assays can be used by physicians to identify the mechanism causing disease progression for patients with NSCLC who are being treated with tyrosine kinase inhibitor, or TKI, therapy and therefore may qualify patients for inclusion in a clinical trial. In November 2015, Tagrisso was approved by the FDA, providing another biomarker-based therapy for the treatment of patients with EGFR-related lung cancer. Tagrisso is indicated for the treatment of patients with metastatic disease, who have progressed on or after EGFR TKI therapy, and who have acquired a T790M resistance mutation. Recently, the FDA approved the combination of Novartis' Tafenlar (dabrafenib) and Mekinist (trametinib) for the treatment of patients with metastatic NSCLC whose tumors express the BRAF V600E mutation, an FDA "breakthrough therapy" designation for patients who have received prior chemotherapy. This combination was approved in Europe for the same indication in March 2017. BRAF mutations, which appear in approximately 1-3% of NSCLC cases globally, are associated with Zelboraf and Tafenlar treatment, as these BRAF inhibitors are both approved for the treatment of patients with melanoma.

In September 2017, Biocept launched an assay for mutations of the NRAS oncogene, which can be used to detect and monitor an actionable biomarker associated with multiple cancer types such as metastatic melanoma, colorectal and lung cancer. As a result, the Company now offers 15 CLIA-certified liquid biopsy tests utilizing its Target-Selector platform to determine the status of key cancer biomarkers listed in the National Comprehensive Cancer Network (NCCN) Guidelines. The NRAS assay combines proprietary switch blocker technology for improved mutation detection with next generation sequencing, or NGS, resulting in ultra-high sensitivity.

Fibroblast growth receptor 1, or FGFR1, amplification is offered using the Company's CTC technology. FGFR1 is present in several tumor types, including both NSCLC and small cell lung cancer, or SCLC, and has been shown to be a prognostic indicator of progression. FGFR1 is also a key target for several drugs undergoing clinical development.

In 2016, the Company analytically validated PD-L1 testing utilizing its CTC technology. PD-L1 is a biomarker that is informative for immuno-oncology therapies currently marketed for lung cancer and melanoma, as well as therapies in development for multiple tumor types. On the analytical development of this assay, Biocept collaborated with Dr. David Rimm, a pathologist at Yale Medical School and one of the Company's scientific advisors.

Further, Biocept plans to release additional blood-based biomarker assays, such as those that test for ESR1, to augment its current menu of liquid biopsy assays using blood samples. In addition, the Company plans to complete the development and offer multiplexed biomarker tests, which will allow the detection and quantitative monitoring of multiple biomarkers in a single assay.

In August 2017, Biocept announced that the Company had executed a distribution agreement for its proprietary CEE-sure blood collection tubes with VWR International, LLC which can preserve intact cells (such as CTCs) for up to 96 hours and ctDNA for up to 8 days, allowing for the intact transport of RUO liquid biopsy samples from regions around the world.

The chart below summarizes Biocept's Target Selector biomarker platform featuring a range of liquid biopsy tests and tests under development to assess NCCN guideline-driven-clinically actionable cancer biomarkers from a patient's blood sample:

Cancer	Target Selector CTC	Target Selector ctDNA
Breast	HER2*, ER*, FGFR1, AR, PDL1, PR*	ESR1 mutations
Gastric	HER2*, FGFR1	
Lung	ALK*, ROS1*, MET*, FGFR1, PDL1*, RET	EGFR*, KRAS*, BRAF* mutations, ALK mutations
Colon	EGFR amplification	KRAS*, BRAF*, NRAS* mutations
Prostate	AR, ARv7	
Melanoma		BRAF*, NRAS* mutations

* In NCCN guidelines

- Biomarkers currently available for clinical use
- Biomarkers under development

Source: Biocept

In October 2017, Biocept launched its tech-only liquid biopsy pathology partnership initiative, branded as Empower TC, expanding access of the Company's proprietary liquid biopsy testing to community pathologists and hospitals throughout the United States. The aim of this program is to incorporate community pathologists into the review of biomarkers found in liquid biopsy for patients diagnosed with cancer. Pathologists are now enabled to interpret the liquid biopsy results locally, while patient specimens will continue to be sent to the Company for processing in its CLIA-certified, CAP-accredited high complexity laboratory. The graphic below outlines the Company's introductory materials for its Empower TC initiative:

The first in the industry to offer cancer biomarker testing using both ctDNA AND CTCs.

Biocept offers specialized tests for approved NCCN biomarkers, including targeted therapy AND immunotherapy markers.

ctDNA

- BRAF
- EGFR
- KRAS
- NRAS

CTC

- ALK
- AR
- ER
- FGFR1
- HER2
- MET
- PD-L1
- PR
- RET
- ROS1
- CTC Count

Our World-Class Lab. Your Expertise.

Partner with Biocept for **Tech-Only Services** that combine our leading CTC Testing Technology with Your Local Knowledge.

ALK Gene Rearrangement by FISH: DETECTED (1 CTC/16 mL)
Case Study: Biocept's Liquid Biopsy Enables Personalized Treatment for Non-Small Cell Lung Cancer (NSCLC) Patient After Tissue Biopsy Proves Inadequate.

Customer Service 888-332-7729 • FAX 877-300-1761
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www.biocept.com

Source: Biocept

The Company intends to continue to commercialize cancer diagnostic assays in the United States as LDTs performed in its CLIA-certified, CAP-accredited, and state-licensed laboratory. Biocept plans to evaluate potential opportunities for the commercialization of its products in other countries, as the Company believes the Target-Selector technology can someday be used as a stand-alone test for molecular biomarker screening, marked as IVD test kits. Additionally, Biocept plans to evaluate opportunities for licensing of its products and proprietary technologies to partners in the United States and abroad.

Pharmaceutical and Research Collaborations and Studies

Biocept continues to execute on its strategies intended to expand its business globally, as well as to engage with pharmaceutical companies on clinical trials and assay development. The Company has preferred provider agreements in place in Mexico with Quest Diagnostics to support testing for Astra Zeneca, and has distribution agreements in place in Mexico, Uruguay, Turkey, the Czech Republic, the Philippines, Lebanon, Columbia, Israel and Canada. The chart below outlines the Company's collaborative and strategic initiatives:

- Collaborations with major cancer centers
- Participating in medical meetings and symposia
- Engaging KOL Advisors
- Building relationships with patient advocacy groups
- Expanding strategic partnerships with pharma and biotech for personalized diagnostics



Source: Biocept

Biocept is currently contracted with nine preferred provider organization networks, three large health plans, and five regional independent physician associations, and expects to continue to gain contracts in order to be considered as an “in-network” provider with additional plans. The chart below outlines many of the managed care agreements signed by the Company:



- Managed Care agreements in place covering >200 million lives
- Dedicated managed care leadership with years of experience from GE, LabCorp and Quest
- Payors have positive coverage for biomarkers listed in guidelines
- Aligns with goals of healthcare reform
- Improved outcomes while reducing costs
- Utilize established CPT codes

Source: Biocept

Research and Development

In addition to developing new CTC and ctDNA assays for different cancers to be offered through its CLIA laboratory and adapting additional predictive biomarkers to these assays as their importance is demonstrated by the scientific and clinical research communities, the Company continues to focus on improving the base technologies underlying its assays and processes. Biocept is exploring various ways to improve CTC capture efficiency and detection, as well as approaches to sub-categorize CTCs into different populations that may have clinical relevance. For example, by determining which antigens individual CTCs expressed that enabled their capture, these could differentiate, and enumerate, various CTC phenotypes, for example, epithelial versus mesenchymal. Biocept is also working to simplify the assay process, and in general to provide a broader range of useful data on a patient's cancer to assist the physician in determining an appropriate treatment. Some of these projects and initiatives include:



- **Improve Ability to Capture CTCs** - Continued modification and optimization of the microfluidic channel as a way to further enhance CTC capture efficiency. Capture efficiency directly impacts sensitivity, informative rate, and the ability to perform accurate and reliable biomarker analyses on the CTCs, all of which increase the value of offerings. Biocept is utilizing some of its early research experience to improve CTC capture rates and reduce background contamination from normal white blood cells;
- **Automation of the Assay Process** - Development of automation throughout the assay process, but particularly at the visual evaluation steps, which include enumeration, any ICC for biomarkers beyond those used to identify CTCs, for example protein biomarkers, and FISH analysis, is a way to drive efficiencies, reduce costs, speed up turnaround time, and generate more reliable, uniform, and in some cases more sensitive data. The Company has implemented an automation solution for the visual analysis, which has been validated and implemented in its CLIA laboratory. Biocept has also adapted a semi-automated system for the separation, processing and washing steps before running a sample on the

microfluidic channel, which has also been validated and implemented in the CLIA laboratory. The Company is currently evaluating further steps in automation, including pipetting. These measures will reduce costs and time as well as allow for higher-throughput as sample volumes increase;

- **Development of Second Generation Platform for CTC Testing** – Biocept continues to evaluate and develop techniques for CTC capture that take advantage of the Company's antibody enrichment cocktail and staining technology to modify current CTC processes into a simpler IVD testing kit format. In addition to reducing internal costs, such an advance would enable the offering of a testing kit format that can access the worldwide CTC testing market. The distribution of such kits could create a new business opportunity;
- **Utilization of ctDNA Technology for Highly Multiplexed Mutation Testing** - The ctDNA technology should enable the Company to multiplex mutation testing such that larger panels of genes can be analyzed in a single step and interfaced with genetic sequencing. This should position the Company for the analysis at the molecular level of whole signaling pathways or enzyme cascades. Biocept plans to take advantage of the sensitivity and specificity of the ctDNA technology and leverage interest in the clinical research community for detecting any actionable biomarker in a particular tumor, as opposed to only those that are known to occur at relatively higher frequencies in that type of tumor. Such multiplexed mutation assays, relying on ctDNA technology, could provide a more global evaluation of a tumor through analysis of either CTCs or ctDNA. This would offer a broader range of potential treatment options as well as enable the monitoring of the effectiveness of those treatments over time; and
- **Development of Single Cell CTC Isolation Techniques for Molecular Analysis** - Tumor heterogeneity is a well-recognized problem for tissue analysis and is in part addressed by focusing on CTCs, which may provide a more universal sampling of a tumor. One result of this can be a diverse population of CTCs in a sample, with different phenotypes and genotypes represented. Biocept is working with a collaborator on techniques for subsequent sorting of its highly enriched CTC samples released from microfluidic channels into pools of CTCs with similar phenotypes, and ultimately to single CTCs, for molecular analysis.

Sales and Marketing

Biocept's sales organization consists of 10 sales representatives and 1 sales manager placed in strategic locations around the country that have high concentrations of cancer patients. Further, the Company has been considering growing its internal team to 20-25 sales representatives within two years and to 30-35 within five years, depending on assay volume. Biocept has established defined sales territories and has hired sales professionals with extensive and successful experience in clinical oncology sales or oncology diagnostic testing sales from leading biopharmaceutical, pharmaceutical or specialty reference laboratory companies. The Company plans on growing its specialized, oncology-focused sales force and supporting it with clinical specialists who bring significant technical knowledge in the use of CTC and ctDNA assays. The Company has also invested in sales headcount focusing on biopharma clinical trial opportunities. Finally, Biocept has invested in a managed care sales and marketing expert in order to pursue favorable payment and coverage for its liquid biopsy testing services. The key value proposition for these customers will be focused on clinical utility and cost savings by offering the Company's assays as alternatives to expensive surgeries when tumor biopsy tissue is insufficient or not available. The chart below compares the Company's liquid biopsy panels with traditional surgical biopsy procedures on a cost/benefit basis:

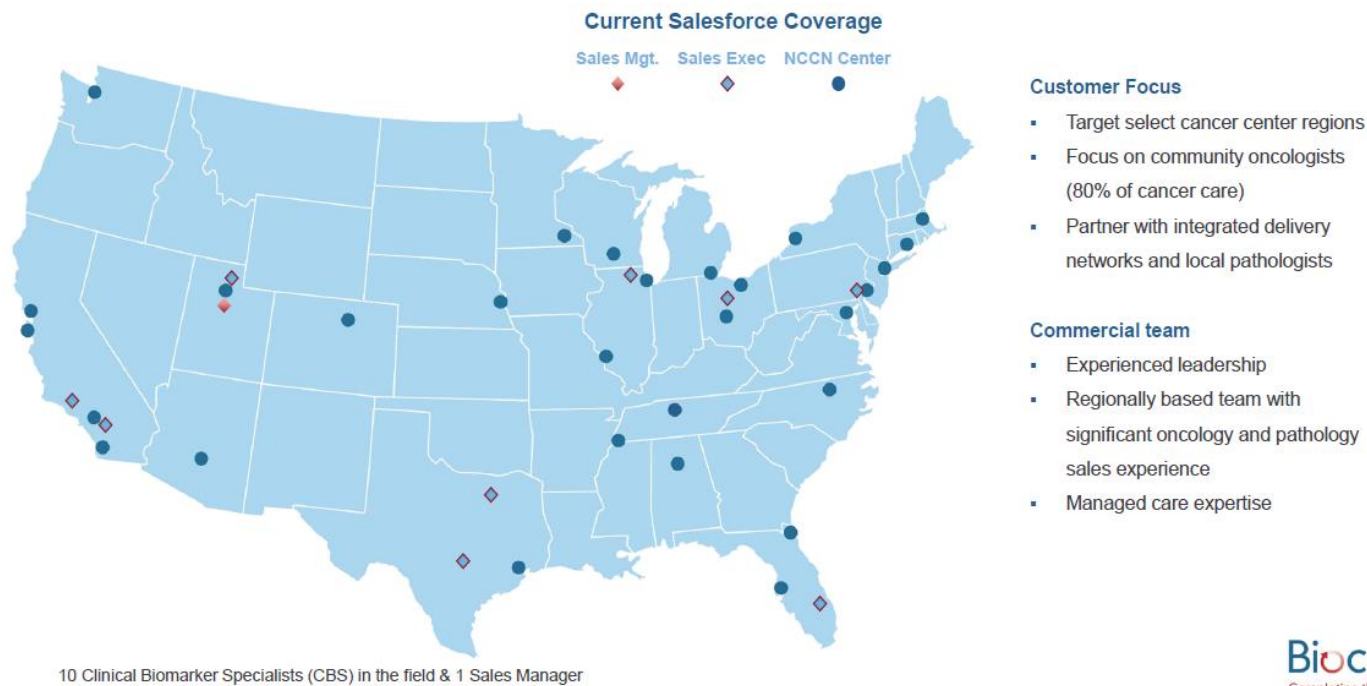
	Advantages	Disadvantages	Cost
 <p>Traditional Surgical Biopsy</p>	<ul style="list-style-type: none"> ▪ Required for diagnosis ▪ Considered standard of care ▪ Source of cancer (histology) ▪ Results for all known oncogenic alterations ▪ Analysis of whole cells 	<ul style="list-style-type: none"> ▪ Invasive – not appropriate for monitoring ▪ Risk of adverse events ▪ Expensive ▪ Often inadequate for complete molecular profiling ▪ Only 57% of tissue biopsies have sufficient tissue for analysis ▪ Can take as much as 30 days for results ▪ Heterogeneity of tumor can lead to false negatives ▪ Does not account for evolving cancer over time – snapshot view 	<p>\$15,000 to \$45,000</p>
 <p>NGS Based Liquid Biopsy Panels</p>	<ul style="list-style-type: none"> ▪ Real time ▪ Non-invasive – appropriate for profiling ▪ Faster availability of results 	<ul style="list-style-type: none"> ▪ Cannot deliver information on all biomarkers ▪ Varying sensitivity and specificity by biomarker ▪ Expensive ▪ Non-clinically actionable information ▪ One size fits all approach – not individualized ▪ Based solely on DNA fragments – ctDNA ▪ Target market – medical oncology only 	<p>\$3,000 to \$6,800</p>

Source: Biocept

Biocept's sales and marketing efforts are based on a five-part marketing strategy:

- Working with oncologists, other physicians and group practices at community hospitals and cancer centers to educate them on the advantages and opportunities that CTC and ctDNA assays provide for better information, allowing them to select the most appropriate therapy for their patients, and how and when these assays are most effectively used;
- Building relationships with key thought leaders in oncology, specifically in the cancer types for which the Company is offering or plans to offer assays, to educate and support community oncologists;
- Collaborating with leading research universities and institutions that enable the validation of new assays, as well as the generation of clinical utility data;
- Partnering with pharmaceutical companies for clinical trial work focusing on CTC and ctDNA testing and analysis; and
- Adding value for the payer community by delivering clinically actionable information and providing a cost-effective alternative to access clinically actionable information through the use of a simple blood test.

Biocept also strives to take advantage of customary marketing channels commonly used by the diagnostic and pharmaceutical industries, such as medical meetings, broad-based publication of scientific and clinical data, and the Internet. In addition, the Company provides easy-to-access information to customers through its website and a data portal for physicians who wish to access test results electronically. The Company's customers value secure and easily accessible information in order to quickly review their patients' information and begin developing a treatment protocol. The graphic below further describes Biocept's customer focus and salesforce coverage in the US by geography:



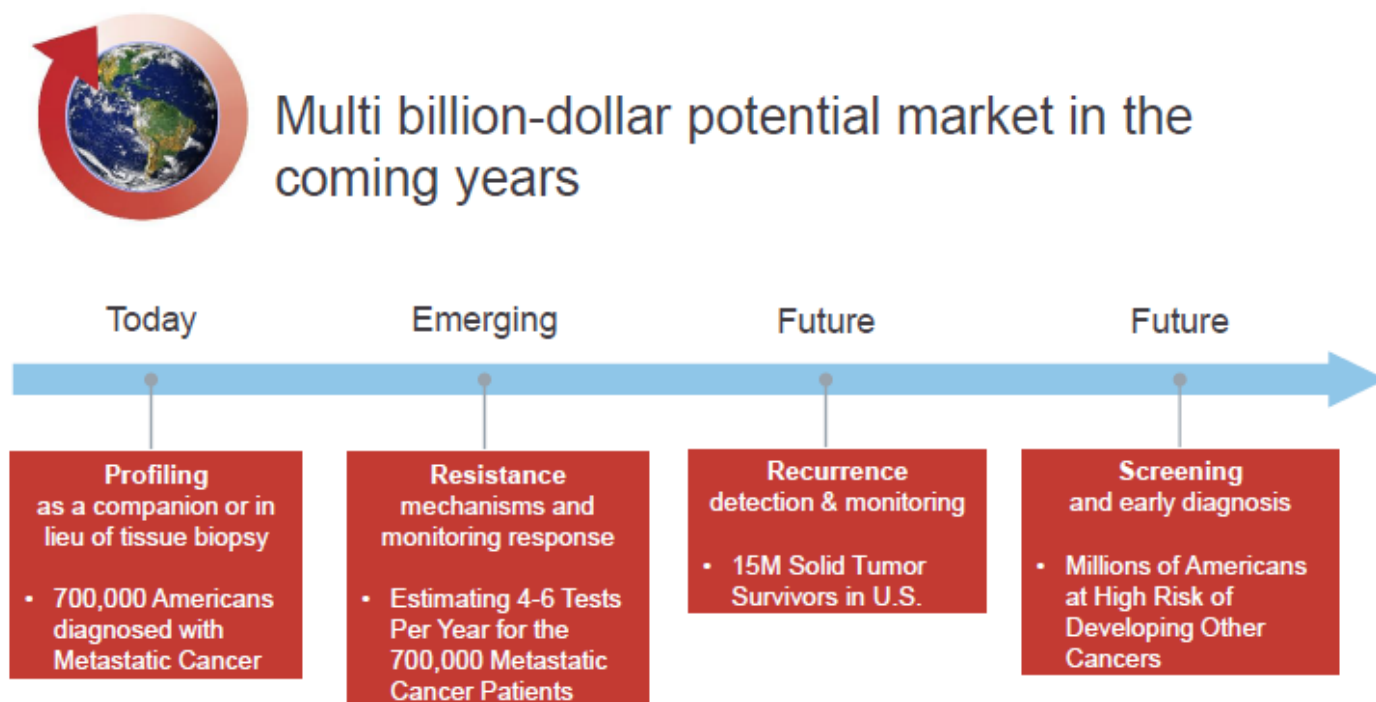
Source: Biocept

Cancer Market Overview

Despite many advances in the treatment of cancer, it remains one of the greatest areas of unmet medical need. According to the World Cancer Report 2014, cancer figures among the leading causes of morbidity and mortality worldwide, and according to the World Health Organization, there were approximately 14 million new cases and 8.8 million cancer related deaths in 2015. The number of new cases is also expected to rise by approximately 70% over the next two decades. According to the World Health Organization, the most common causes of cancer death are cancers of the lung (21%), liver (10%), colon (9%), stomach (9%), and breast (7%). According to the National Cancer Institute, there were approximately 249,000 new cases of breast cancer and approximately 224,000 new cases of lung cancer diagnosed in the United States in 2016, with over 3.5 million patients who have had a diagnosis of these cancers and are either living with these diseases and are undergoing treatment or are being monitored. For example, in breast cancer, many women have been deemed cancer-free, but continue to undergo periodic monitoring to assure there has been no disease recurrence.

Biocept's commercialized assays and other planned future assays only require a readily accessible standard blood sample and thus may be used to help manage these patients, including supporting the selection of appropriate treatment, at multiple time points during the course of their disease. Because the Company's assays require only a standard blood sample, they can be particularly useful when there is no currently available biopsy or surgical material, as is often the case in lung cancer, even at the time of initial evaluation. For example, up to 25% of patients with stage I non-small cell lung cancer, or NSCLC, are not surgically treated for various reasons, including patient status (consensus statement from the American College of Chest Physicians and the Society of Thoracic Surgeons; Chest, Dec. 2012). This is also the case with breast and lung cancers once surgical resection of the tumor has taken place and treatment has been initiated. Patients with breast and lung cancer must often undergo surgical resection of their primary tumor as part of their treatment. Therefore, at the time of progression or recurrence there may be no ability to obtain a tissue biopsy. Additionally, many studies have shown that most tumors mutate during treatment and as the disease progresses, so information from the initial tumor tissue may not be relevant. Again, a significant benefit of the Company's technology is that it allows physicians to assess the current status of the tumors on a real-time basis utilizing a standard blood

sample or liquid biopsy. The chart below outlines current and potential future commercial markets for liquid biopsy products and services and size of the respective segments worldwide:



Source: Biocept

Competition

As a cancer diagnostics company focused on current and planned assays for CTCs and ctDNA from standard blood samples, the Company relies extensively on its ability to combine novel technology and biomarker information with high-quality, state-of-the art clinical laboratory testing. Major competitors in this specific niche of the cancer diagnostic product market include Genomic Health (GHDX, Not Rated), Foundation Medicine (FMI, NR), Epic Sciences (Private), and Guardant Health (Private). Biocept's competitive product advantages stem from their ability to commercialize both CTCs and ctDNA from a single blood sample, the use of a proprietary collection tube, and a pathology partnership strategy pursued by the Company, as depicted in the table below:

Company	CTCs / Whole Cells	ctDNA / DNA Fragments	Proprietary Collection Tube	Pathology Partnership Strategy
Genomic Health (GHDX)		✓		
Epic Sciences (private)	✓			
Foundation Medicine (FMI)		✓		
Guardant Health (private)		✓		
Biocept (BIOC)	✓	✓	✓	✓

Source: Biocept

Intellectual Property

Currently, the Company owns 29 issued patents and 21 patents pending related to its current technologies, including eight issued and five pending in the US, and 21 issued and 16 pending patents in non-US territories. Technologies covered by the Company's issued and pending patents include microarray and cell analysis, microfluidic channel technology, blood collection tubes, enhanced staining, and Antibody Enrichment Cocktail techniques. In addition, the Company co-owns 1 issued and 1 pending US patent and 1 issued Australian patent with Aegea Biotechnologies (Private) related to target-selector mutation detection technology. These patents have expiration dates ranging from 2025 to 2033.

Manufacturing and Operations

Biocept owns and operates a CLIA-certified, CAP accredited, and state-licensed diagnostic testing laboratory and manufacturing facility located in its San Diego, California headquarters. The laboratories employ commercial state-of-the-art equipment as well as custom-made components specific to the CTC process that are generated in a small in-house engineering shop. The manufacturing facility used for the production of microfluidic channels is a Class 10,000 suite in which polydimethylsiloxane is formed into the base of the proprietary microfluidic channels in a molding process.

Recent Results and Balance Sheet/Cash Flow

Biocept reported financial results for their Q2/18 quarter in August, including revenues of \$822,000 versus \$1.3 million in the prior year period, and a net loss of \$6.2 million or (\$2.70) per share as compared to a net loss of \$5.7 million or (\$6.32) per share in Q2/17. Revenues in Q2/18 were negatively affected by a switch last year to accrual-based from cash-based revenue recognition. For the second quarter, revenues included \$761,000 in commercial test revenues, \$52,000 in development services, and \$9,000 in CEE-sure blood collection tubes. Total samples accessioned in Q2/18 were 1,029 for the Company, compared with 1,405 in the prior year period. Cost of revenues increased to \$2.7 million in Q2/18 as compared to \$2.4 million in the prior year period, due primarily to higher software amortization and other indirect costs, while overhead expenses including sales and marketing and R&D declined to \$3.1 million this year from \$3.5 million last year as a result of cost reduction efforts initiated in 2018. Operating cash burn was approximately \$11.5 million during the first six months of 2018 for Biocept, at the end of June the Company had \$2.6 million in cash on hand, supplemented by gross proceeds of roughly \$11.6 million gained from an August shareholder rights offering and \$2.5 million from a September registered direct offering.

Key developments for Biocept during the second quarter included:

- Shipment of the first proprietary blood collection tubes to new global distributor VWR;
- Entering into an agreement with a large managed care organization to evaluate the clinical utility and cost effectiveness of Target Selector in patients diagnosed with non-small cell lung cancer (NSCLC);
- Entering into a partnership with Moores Cancer Center at UC San Diego Health to conduct two clinical studies in patients with a variety of solid tumors;
- Entering into a provider agreement with Alliance Global FZ to market and distribute Target Selector liquid biopsy tests in the United Arab Emirates and select countries in the Middle East, North and Sub-Saharan Africa and Southeast Asia;

- Award of a Canadian patent covering the use of Biocept's micro channels for the capture and detection of any target of interest, and granting of patent protection in seven European countries for Biocept's Target Selector assays for ctDNA analysis using real-time PCR, Sanger sequencing and next-generation sequencing. All-in-all, the Company expanded its global intellectual property portfolio to 28 issued patents globally; and
- Publication of case reports and/or letters in the peer-reviewed journals *Clinics in Oncology*, *Oncology & Hematology Review*, and the *Journal of Thoracic Oncology*.

The Company's balance sheets for the periods Q4/17 ending December 2017 and Q2/18 ending June 2018 are shown below:

	<u>Balance Sheets</u>	
	(\$000s)	
<i>Assets:</i>	<u>12/31/17</u>	<u>6/30/18</u>
<u>Current Assets</u>		
Cash and equivalents	\$2,147	\$2,569
Accounts receivable, net	1,193	1,438
Inventories	499	537
Prepaid expenses and other current assets	<u>417</u>	<u>855</u>
Total current	4,255	5,399
Fixed assets, net	<u>3,124</u>	<u>2,893</u>
TOTAL ASSETS	\$7,379	\$8,291
 <i>Liabilities:</i>		
<u>Current liabilities</u>		
Accounts payable	\$1,270	\$1,656
Accrued liabilities	1,426	1,518
Supplier financings	61	330
Interest payable	327	337
Current portion of credit/financings, etc.	<u>1,578</u>	<u>664</u>
Total current	4,661	4,505
Non-current liabilities	<u>1,422</u>	<u>1,258</u>
Total liabilities	6,083	5,764
Stockholders' equity	<u>1,296</u>	<u>2,528</u>
TOTAL LIAB & EQ	\$7,379	\$8,291

Source: Dawson James Securities and Company Documents

Outlook/Growth Drivers

Looking ahead, although Biocept management has not provided specific financial guidance for upcoming quarters, we are considering recent trends in quarterly revenues as well as the recent launch of new products and distribution agreements in forecasting increasing revenues, including revenues of \$900,000 in Q3/18 and \$950,000 in Q4/18, adding up to overall revenues of \$3.5 million for 2018E in total. We are also forecasting decreasing quarterly net losses for the Company in the near future, due to Biocept's cost cutting efforts and improved sales volumes. For 2019E, we are estimating that the Company will post revenues of \$5.0 million and a net loss of \$19.0 million, or (\$5.58) per share. Expected near-term milestones for Biocept for the coming twelve months include:

- Increased market penetration into emerging liquid biopsy segment;
- New strategic commercial and technology partnerships – Global and US;
- Validation of Oncomine NGS Panel - Becoming Thermo Fisher Liquid Biopsy Center of Excellence;
- Growth in sales of blood collection tubes under VWR marketing and distribution agreement;
- New third-party health plan agreements signed and expansion of relationship with BCBS;
- Publication of additional clinical case studies;
- Development of an ex-US kit strategy; and
- Launch of additional oncology biomarker assays.

Management

Michael Nall is the President and CEO of Biocept. Mr. Nall has over 25 years in healthcare sales, marketing and commercial operations, including 16 years in cancer diagnostics and genomics. He most recently was General Manager of North American Sales and Marketing for the Clariant division of General Electric (GE, NR).

Tim Kennedy serves as CFO and Senior Vice President of Operations of the Company. His previous 30 years of financial management experience included posts with LabCorp (LH, Not Rated), PLUS Diagnostics and Millennium Health.

Edwin Hendrick joined Biocept as SVP and Chief Commercial Officer in September 2018. Prior to joining the Company, he held management positions at GenomeDx, US Labs, PLUS Diagnostics and Ventana Medical Systems (now Roche RHHBY, NR).

Other key members of the Biocept management team include **Dr. Lyle Arnold**, Chief Scientific Officer, and formerly with Gen-Probe, Incyte Genomics and Genta; **Dr. Veena Singh**, Senior Medical Director and formerly with bioTheranostics; and **Michael Terry**, Senior VP, Corporate Development, and previously with GE Healthcare, Trovogene and Sequenom.

In addition to Michael Nall, Biocept's Board of Directors also includes **David F. Hale**, Chairman, currently Chairman and CEO of Hale BioPharma Ventures; **M. Faye Wilson**, a CPA and currently a principal of Wilson Boyles & Co.; **Dr. Marsha A. Chandler**, currently Executive Vice President of the Salk Institute for Biological Studies; **Bruce E. Gerhardt**, a practicing CPA and tax and business advisor; **Bruce A. Huebner**, currently Managing Director of healthcare consulting firm LynxCom Partners; and **Dr. Ivor Royston**, currently Managing Partner of Forward Ventures. Biocept's Clinical Advisory Board includes nine clinicians in the US and the Company's Scientific Advisory Board includes **Dr. David Rimm** of Yale University and **Dr. Marileila Garcia** of the University of Colorado.

Stock Valuation/Comparables

We have compiled a six-stock comparison group for Biocept comprised of diagnostic/genomic companies, including Luminex (LMNX, Not Rated), Danaher (DHR, Not Rated), CareDx (CDNA, Not Rated), ChemBio Diagnostics (CEMI, Not Rated), GenMark Diagnostics (GNMK, Not Rated), and Veracyte (VCYT, Not Rated). Since BIOC is not forecast to be profitable for 2018E, we are employing our revenue forecasts for this fiscal

year in order to place a long-term target valuation on BIOC shares. Many of the comparable companies in our group, in particular smaller firms, are expected to show significant revenue growth this year and next due to new products or technologies. On average, our comparable stock group shows valuation multiples of 6.1X estimated revenues for fiscal 2018E. BIOC's valuation metrics related to price/revenues estimates for 2018E show a considerable discount to our comparable group, and thus, employing the price/revenue multiple estimated for this calendar year (2018E) of 6.1X multiplied by our estimated revenues for BIOC of \$3.5 million for 2018E, we have derived a valuation and long-term price target of \$7 for BIOC shares, thus, we are initiating shares of BIOC with a Buy rating and 12-18 month price target of \$7 per share.

Risk Factors

In addition to normal economic and market risk factors that impact most equities and the common risks shared by Biocept with other companies in the industry, we believe an investment in BIOC involves the following risks:

- **Reliance on key management** – At present, BIOC relies on several key members of its management team who either founded the Company or have been in key executive positions for an extended period of time. Should one or more of these key executives leave the Company, BIOC could find it difficult to replace their long-standing knowledge of operations and industry expertise.
- **Reliance on partnerships** – To date, BIOC has signed a number of distribution and development agreements for its diagnostic tests and information services. Thus, in the future certain factors related to product marketing and/or new product development may be determined by third parties and out of the control of Company management.
- **Limited stock liquidity** – Trading volume in BIOC stock is comparatively light and these shares have a relatively limited history of trading compared with other healthcare stocks. As such, news regarding BIOC, its target market, partners and/or competitors could lead to significant volatility in the stock price.
- **Competitive Markets** – The Company and its partners compete in its target diagnostic markets with a number of companies, many of which are considerably larger than the Company. There can be no assurance that the Company and its partners will be able to successfully compete and launch new products into these competitive markets in the future.
- **FDA and regulatory risks** – BIOC and its partners are subject to regulatory review for ongoing diagnostic tests and information products, principally the US Food and Drug Administration's approval and laboratory review processes. In addition, the quality assurance and manufacture of the Company's diagnostic products are subject to ongoing oversight and regulation, and any negative correspondence from the FDA or other regulatory agencies could have an adverse effect on the ongoing operations of the Company.
- **Lack of historic profitability** - BIOC has not achieved operating profitability since its founding, and according to our forecasts may not be expected to do so in the near future. Although the Company maintains adequate cash reserves at the present time, there can be no assurance the Company will not need to raise additional working capital in the future should operating losses continue.
- **Need to defend patents and other intellectual property** – BIOC currently holds approximately 30 US and International patents on its products and information services, some of which expire in the near future. The Company may be required to defend its patents in the US and overseas in the future, and there can be no assurance these defenses will be successful.

Companies mentioned in this report:

Genomic Health (GHDX, Not Rated)
Foundation Medicine (FMI, Not Rated)
DanaHER (DHR, Not Rated)
GenMark Diagnostics (GNMK, Not Rated)
Luminex (LMNX, Not Rated)
Laboratory Corporation (LH, Not Rated)
Roche (RHHBY, Not Rated)
CareDx (CRDX, Not Rated)
ChemBio Diagnostics (CEMI, Not Rated)
Veracyte (VCYT, Not Rated)
General Electric (GE, Not Rated)
Novartis (NVS, Not Rated)
Thermo Fisher Scientific (TMO, Not Rated)
Quest Diagnostics (DGX, Not Rated)
AstraZeneca (AZN, Not Rated)
Catalyst Pharmaceuticals (CPRX, Not Rated)
Pro Genetics (Private)
Insight Genetics (Private)
Rosetta Genomics, now Genoptix (Private)

Robert M. Wasserman

Biocept, Inc.
Consolidated Statements of Income
 (In 000s, except per share data)

FYE December	2014	2015	2016	1Q17 March	2Q17 June	3Q17 September	4Q17 December	2017	1Q18 March	2Q18 June	3Q18E September	4Q18E December	2018E	2019E
Net revenues	\$133	\$610	\$3,223	\$1,683	\$1,279	\$1,111	\$995	\$5,069	\$807	\$822	\$900	\$950	\$3,479	\$5,000
Cost of revenues	2,171	4,596	6,920	2,129	2,369	2,487	2,360	9,345	2,435	2,700	2,400	2,350	9,885	8,000
Gross profit	(2,037)	(3,986)	(3,697)	(446)	(1,090)	(1,376)	(1,365)	(4,276)	(1,628)	(1,877)	(1,500)	(1,400)	(6,405)	(3,000)
Operating Expenses														
Research and development	4,498	2,858	2,713	757	842	857	909	3,365	1,071	1,019	1,000	950	4,040	3,500
General and administrative	5,202	5,686	6,560	1,907	1,798	1,835	1,650	7,190	1,939	1,709	1,650	1,600	6,898	6,500
Sales and marketing	2,137	3,880	5,054	1,278	1,747	1,676	1,643	6,344	1,637	1,433	1,400	1,350	5,820	5,500
Total operating expenses	11,837	12,425	14,328	3,942	4,387	4,367	4,202	16,898	4,646	4,161	4,050	3,900	16,757	15,500
Income (loss) from operations	(13,874)	(16,411)	(18,025)	(4,389)	(5,477)	(5,743)	(5,567)	(21,175)	(6,274)	(6,039)	(5,550)	(5,300)	(23,163)	(18,500)
Other income (expense)														
Interest expense	(1,991)	(537)	(526)	(83)	(214)	(88)	(97)	(482)	(83)	(84)	(80)	(80)	(327)	(400)
Other income (expense)	0	0	154	38	0	13	0	51	0	(30)	(30)	(30)	(90)	(70)
Total other (expense)	(1,991)	(537)	(372)	(44)	(214)	(75)	(97)	(431)	(83)	(114)	(110)	(110)	(417)	(470)
Income (loss) before tax	(15,865)	(16,948)	(18,397)	(4,433)	(5,691)	(5,818)	(5,664)	(21,606)	(6,356)	(6,153)	(5,660)	(5,410)	(23,580)	(18,970)
Income tax (benefit)	2	2	2	0	2	3	3	8	0	0	0	0	0	0
Net income (loss)	(15,866)	(16,950)	(18,399)	(4,433)	(5,693)	(5,821)	(5,667)	(21,614)	(6,356)	(6,153)	(5,660)	(5,410)	(23,580)	(18,970)
Basic income per share	(\$357.18)	(\$92.23)	(\$57.63)	(\$6.34)	(\$6.32)	(\$5.90)	(\$5.40)	(\$23.80)	(\$3.34)	(\$2.70)	(\$1.89)	(\$1.69)	(\$9.08)	(\$5.58)
Diluted income per share	(\$357.18)	(\$92.23)	(\$57.63)	(\$6.34)	(\$6.32)	(\$5.90)	(\$5.40)	(\$23.80)	(\$3.34)	(\$2.70)	(\$1.01)	(\$0.93)	(\$6.05)	(\$3.16)
Basic shares outstanding	44	184	319	699	901	987	1,050	908	1,903	2,280	3,000	3,200	2,596	3,400
Diluted shares outstanding	44	184	319	699	901	987	1,050	908	1,903	2,280	5,600	5,800	3,896	6,000
Key ratios:														
Revenue growth	N/A	357.2%	428.5%	660.3%	92.9%	6.1%	-22.9%	57.3%	-52.1%	-35.7%	-19.0%	-4.5%	-31.4%	43.7%
Gross margins	-1526.9%	-653.6%	-114.7%	-26.5%	-85.2%	-123.8%	-137.1%	-84.4%	-201.7%	-228.3%	-166.7%	-147.4%	40.0%	-60.0%
R&D/revenue	3371.3%	468.6%	84.2%	45.0%	65.8%	77.1%	91.3%	66.4%	132.7%	124.0%	111.1%	100.0%	116.1%	70.0%
G & A/revenue	3899.1%	932.3%	203.5%	113.3%	140.6%	165.1%	165.8%	141.8%	240.2%	207.8%	183.3%	168.4%	198.3%	130.0%
Sales/revenue	1601.8%	636.2%	156.8%	76.0%	136.6%	150.8%	165.1%	125.2%	202.8%	174.3%	155.6%	142.1%	167.3%	110.0%
Tax Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Deprec, amort & non-cash comp.	1,500	1,600	1,920	490	490	650	195	1,825	400	320	400	400	1,520	1,500
Cash Flow/share	(\$323.41)	(\$83.53)	(\$51.62)	(\$5.64)	(\$5.77)	(\$5.24)	(\$5.21)	(\$21.79)	(\$3.13)	(\$2.56)	(\$0.94)	(\$0.86)	(\$5.66)	(\$2.91)
EBITDA/share	(\$278.57)	(\$80.60)	(\$49.96)	(\$5.52)	(\$5.54)	(\$5.15)	(\$5.12)	(\$21.25)	(\$3.09)	(\$2.52)	(\$0.93)	(\$0.85)	(\$5.58)	(\$2.85)

Balance Sheets

(\$000s)

Assets:	12/31/17	6/30/18
Current Assets		
Cash and equivalents	\$2,147	\$2,569
Accounts receivable, net	1,193	1,438
Inventories	499	537
Prepaid expenses and other current assets	417	855
Total current	4,255	5,399
Fixed assets, net	3,124	2,893
TOTAL ASSETS	\$7,379	\$8,291
Liabilities:		
Current liabilities		
Accounts payable	\$1,270	\$1,656
Accrued liabilities	1,426	1,518
Supplier financings	61	330
Interest payable	327	337
Current portion of credit financings, etc.	1,578	664
Total current	4,661	4,505
Non-current liabilities	1,422	1,258
Total liabilities	6,083	5,764
Stockholders' equity	1,296	2,528
TOTAL LIAB & EQ	\$7,379	\$8,291

Quarterly Earnings Comparisons

	March	June	September	December	Total
Revenues (in \$Mill)					
2014					\$133
2015	150	77	165	218	610
2016	221	663	1,047	1,292	3,223
2017	1,683	1,279	1,111	995	5,069
2018E	807	822	900	950	3,479
Earnings per Share (diluted)					
2014					(\$357.18)
2015	(33.00)	(20.10)	(21.60)	(21.90)	(92.23)
2016	(22.27)	(17.89)	(17.00)	(8.04)	(57.63)
2017	(6.34)	(6.32)	(5.90)	(5.40)	(23.80)
2018E	(3.34)	(2.70)	(1.01)	(0.93)	(6.05)

Revenues per Segment (\$000s)	2014	2015	2016	2017	2018E
Commercial services					
Cash basis commercial revenues			\$2,983	\$3,658	\$3,200
Accrual-basis commercial revenues			0	1,139	0
Total commercial revenues		556	\$2,983	\$4,797	\$3,200
Development services		54	240	272	300
Total revenues	\$133	\$610	\$3,223	\$5,069	\$3,500

Other Revenue Metrics (\$000s)

Total Samples	661	2,030	4,540	5,051	4,500
Billable Samples			4,211	4,517	4,000
# Commercial Accessions received		1,608	3,676	3,768	3,500
\$ Value per accession			\$988	\$1,117	\$950
# Development Cases		216	537	747	750
Revenue per case		\$250	\$447	\$365	\$400

Source: Dawson James Securities, Inc. estimates; Company documents

Important Disclosures:

Price Chart:



Price target and ratings changes over the past 3 years:

Initiated – Buy – October 3, 2018 – Price Target \$7

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Ratings Definitions:

- 1) **Buy:** the analyst believes the price of the stock will appreciate and produce a total return of at least 20% over the next 12-18 months;
- 2) **Neutral:** the analyst believes the price of the stock is fairly valued for the next 12-18 months;
- 3) **Sell:** the analyst believes the price of the stock will decline by at least 20% over the next 12-18 months and should be sold.

The following chart reflects the range of current research report ratings for all companies followed by the analysts of the Firm. The chart also reflects the research report ratings relating to those companies for which the Firm has performed investment banking services.

	Company Coverage		Investment Banking	
Ratings Distribution	# of Companies	% of Total	# of Companies	% of Totals
Market Outperform (Buy)	30	91%	10	33%
Market Perform (Neutral)	3	9%	0	0%
Market Underperform (Sell)	0	0%	0	0%
Total	33	100%	10	30%

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