Zacks Small-Cap Research

December 5, 2014
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Enumeral Biomedical (ENUM-OTCQB)

ENUM: Proprietary human immune profiling platform technology for antibody therapeutics, with a pipeline targeting cancer and inflammatory disease – initiation with an Outperform rating.

Current Recommendation	**Outperform**
Prior Recommendation	N/A
Date of Last Change	09/29/2014
Current Price (12/03/14)	$0.94
Twelve-Month Target Price	**$4.50**

OUTLOOK

Enumeral is a development stage biotech company focused on antibody therapeutics. The Company has developed a proprietary platform for rapid and cheap identification and 'human-based' selection of antibody candidates through its ability to measure the immune microenvironment. The Company's pipeline targets immune checkpoint proteins for cancer and inflammatory disease. Although in early development stage, we believe the Company has the potential to develop best-in-class antibody therapeutics for immunotherapy.

Current valuation is attractive and we believe that ENUM is a high risk/high reward name for investors with a long investment horizon.

SUMMARY DATA

52-Week High	**$1.50**
52-Week Low	**$0.92**
One-Year Return (%)	**N/A**
Beta	**N/A**
Average Daily Volume (sh)	**7,112**
Shares Outstanding (mil)	**52**
Market Capitalization ($mil)	**$53**
Short Interest Ratio (days)	**N/A**
Institutional Ownership (%)	**N/A**
Insider Ownership (%)	**N/A**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**N/A**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2014 Estimate	**N/A**
P/E using 2015 Estimate	**N/A**
Zacks Rank	**N/A**

Risk Level	**N/A**
Type of Stock	**N/A**
Industry	**Med-Drugs**
Zacks Rank in Industry	**N/A**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2013					$0.45 A
2014	$0.05 A	$0.00 A	$0.07 A	$0.09 E	$0.21 E
2015					$1.50 E
2016					$2.50 E

Earnings per Share
(EPS is operating earnings before non recurring items)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2013					-$0.86 A
2014	-$0.27 A	-$0.27 A	-$0.05 A	-$0.05 E	-$0.28 E
2015					-$0.12 E
2016					-$0.13 E

Zacks Projected EPS Growth Rate - Next 5 Years % **N/A**

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KEY POINTS

- Enumeral (ENUM) is a development stage biotech company focused on **antibody therapeutics** (immunotherapy) for cancer and inflammatory diseases.

- Enumeral has developed a unique, proprietary **microengraving technology** for rapid and cost effective discovery of antibody therapeutics and immune profiling for best-in-class candidate selection. This platform has multiple advantages over existing technologies.

- One **key advantage** of Enumeral's technology is its ability to perform drug candidate validation at the **single cell level**, within biopsy samples containing very few immune cells, based on determining which proteins are present on which cell types and are responsive to the drug candidate.

- Based on this technology, the Company is making efforts to build a robust pipeline for both internal development and corporate collaborations.

- Enumeral's initial drug targets are immune checkpoints PD-1, OX40 and Lag-3, which are important for cancer development and inflammatory disease. The Company is conducting preclinical studies with the goal of seeing its first program enter Phase I clinical testing in 2016.

- In regards to corporate partnerships, the Company has already had proof-of-concept collaborations with four large pharma companies. The current focus is on entering into larger corporate partnerships to advance its own programs and those of its potential partners.

- Balance sheet is relatively strong. The Company recently raised $21.5 million in a private placement. As of September 30, 2014, Enumeral had $16.2 million in cash and cash equivalents. Going forward, we believe Enumeral will continue to maximize non-dilutive financing by monetizing its technology, and that its existing cash and investment securities and anticipated cash flow from strategic alliances will be sufficient to support the Company's operations for at least the next 12 months.

- Valuation is attractive at the current market price. We rate Enumeral shares as Outperform with a 12-month price target of $4.50 per share. We believe this is a company with great potential and has a favorable risk/reward profile for investors with a relatively long investment horizon.

OVERVIEW

Enumeral Biomedical Holdings, Inc. (ENUM) is a development stage biotech company focused on the discovery and development of novel **antibody therapeutics** that help the immune system attack diseased cells (immunotherapy).

The Company's proprietary and patented **"microengraving" technology** was developed at Harvard and MIT, which enables rapid discovery and development of novel monoclonal antibodies **(mAbs)** and other **biologics** for use in the diagnosis and treatment of cancer, infectious and inflammatory diseases. The platform technology has a unique ability to extensively interrogate **cells of the human immune system** directly within samples obtained from patients for drug candidate validation. This ability gives the Company a distinct advantage in selecting potential best-in-class therapeutic candidates using tissue samples from human patients.

The Company also leverages its technology for rapid antibody discovery. The technology is faster and generates substantially greater candidate diversity than most established technologies. Based on this platform technology, Enumeral is building a pipeline of drug candidates for the treatment of **cancer** and

inflammatory diseases. Currently, Enumeral is conducting **preclinical** testing on drug candidates for its internal programs. Enumeral's strategy is to generate superior antibodies that it can co-develop, either through collaborative partnerships, or out-licensing partnerships, with larger biotechnology or pharmaceutical companies. The goal of management is to initially obtain partners following the completion of "**ex vivo**" human and animal preclinical studies, and prior to completion of full investigational new drug (IND)-enabling studies, or it may fund IND-enabling studies and seek collaboration partners at that point.

Enumeral has completed proof-of-concept partnerships with four pharmaceutical companies. Current focus is on entering large scale strategic collaboration partnerships with big biotech and pharmaceutical companies, including **out-licensing** of its drug candidates.

Management believes that they will reach significant value inflection points in the next **twelve to eighteen months** through a combination of up-front payments; milestone payments as the candidate clears pre-clinical and clinical regulatory hurdles; and royalty payments upon future sales of the marketed drug.

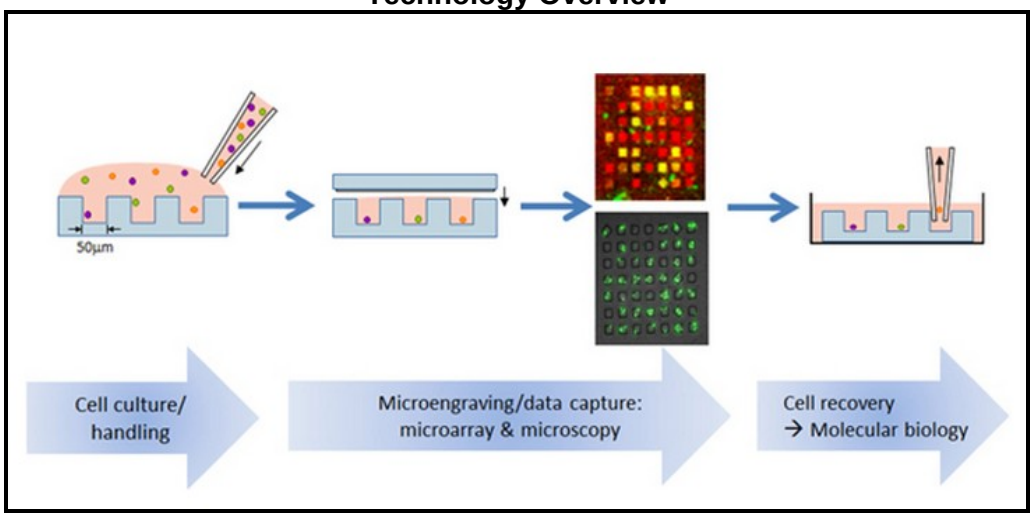
Enumeral is the survivor company of a reverse merger with Cerulean Group, Inc. and is headquartered in Cambridge, MA.

INVESTMENT THESIS

The Proprietary and Patented Microengraving Technology

Enumeral's **microengraving technology** integrates proprietary and standard laboratory processes with data acquisition and management software to link multiple parameters of cell function with high throughput and sensitivity.

Technology Overview



The platform uses a **proprietary chip** which contains on its surface a soft molded dense array of spatially addressable subnanoliter microwells that is affixed to a glass slide, and standard laboratory equipment such as manual pipetting devices, slide washers, microscopes and microarray readers. The device is currently manufactured from polydimethylsiloxane (PDMS). The platform facilitates:

- Cell culture and cell handling, working with a wide variety of cell types (T-Cells, B-Cells, peripheral blood mononuclear cells, mucosal, cerebral spinal fluid, and bone marrow tissue types) sourced from humans and mice;

- Data capture about cell surface markers and numerous types of cell secretion (antibodies, cytokines) through its proprietary microengraving process utilizing microarrays and microscopy;

- Recovery of individual cells in order to obtain single cell gene sequence information through reverse transcription polymerase chain reaction (RT-PCR), a method for amplifying and copying rare DNA molecules.

The first component of the platform process is a thin **PDMS chip** (the device) of the size of a standard microscope slide. It may be configured for arrays containing 85,000 or 250,000 microwells, depending on the experimental protocol.

The second component of the process is a **glass microscope slide** that has been functionalized (i.e. coated with capture reagents) to enable it to create a "printed" microarray representation of secreted proteins from individual cells within each microwell following the slide's brief attachment to the top of the device, in effect, sealing each individual subnanoliter microwell for a fixed period of time. Due to device configuration, each location on the now printed microarray slide is spatially registered to a corresponding microwell in the device.

Sample preparation and loading onto the device and subsequent microarray "printing" on the surface of the slide follows routine laboratory procedures which can be performed and scaled rapidly. After introduction of human cells (from blood, serum or tissue) to the device, they are allowed to settle naturally from suspension into microwells and weakly adhere to the bottom of the individual wells. Device design facilitates cell dispersion across its surface, resulting in rapid loading and analysis.

Detectable secreted materials include antibodies, cytokines and other pharmacologically relevant substances. The extremely small scale ensures that adequate quantities of secreted materials are available for analysis after very short incubation periods (10–60 minutes).

To date, Enumeral has utilized this platform technology in two key areas: Therapeutic Discovery and Immune Profiling.

In Therapeutic Discovery, inputs are cellular libraries that are derived from the Company's own target-specific mouse immunization campaigns or cellular libraries from human patient donors. Antibody hits and leads are the output. These hits and leads are further characterized for biological activity, confirmation of which may lead to drug candidates that can be brought to clinical trials. It is important to note that Enumeral's platform enables rapid, low-cost generation of proprietary libraries, removing the need for in-licensing potentially expensive third-party libraries.

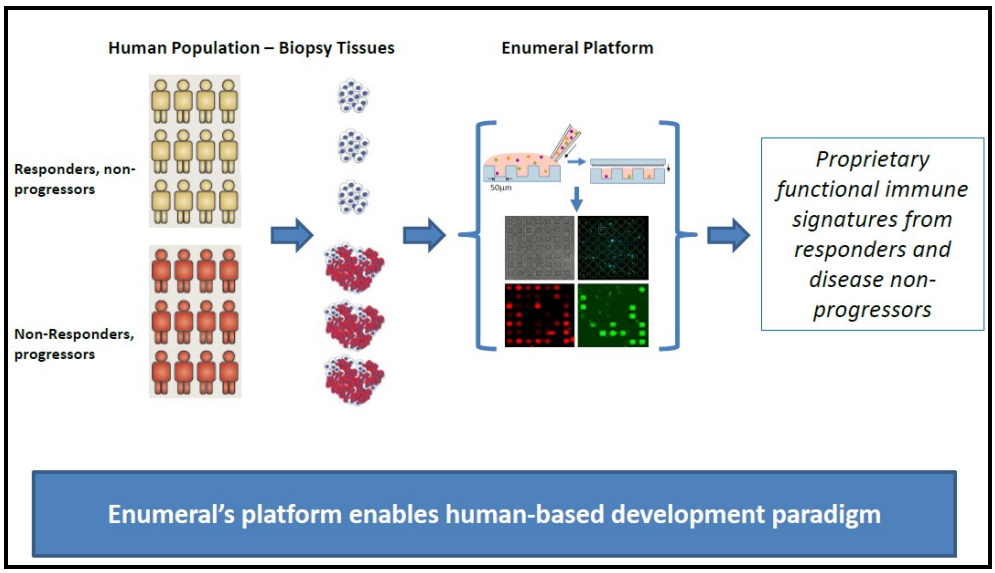
In Immune Profiling, inputs are tissue samples sourced from patients or commercial vendors, and the outputs are single cell functional profiles including assessment of the frequencies of functional immune cells. When such assays are carried out with cells in the presence of potential antibody candidates, as a way of measuring the potential modulation effects of the tested candidate, such information will enable the Company to rationally select antibody therapeutic candidates with the best immune cell targeting properties – that is, those candidate that are observed, through application of the platform, to interact with and activate or modulate appropriate effector cells preferentially over potentially harmful inflammatory or other damaging cells.

Advantages of Enumeral's Technology

We believe Enumeral's antibody discovery technology holds multiple advantages over currently available technologies.

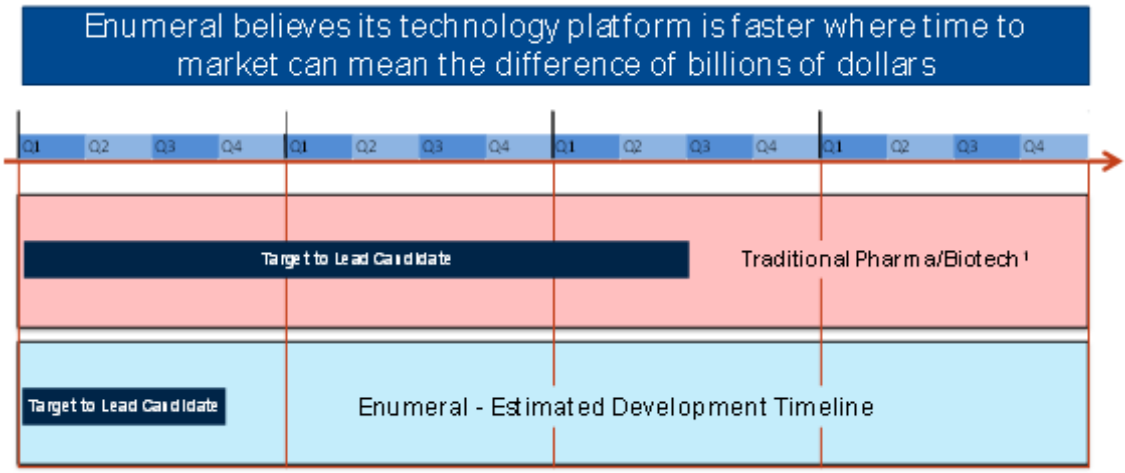
Enumeral's technology has the capability to analyze primary **patient-derived biopsy tissues** to mine the human immune system for information that is difficult to obtain using other methods. Data obtained may guide the development of new and more effective therapeutics and diagnostics. In our view, the efficiency

and sensitivity of the Company's platform technology increases the probability of finding rare cell types associated with disease or drug response, as well as rare and previously unknown antibodies that may have the potential to become novel therapies.



The platform enables the Company to study rapidly, and at high resolution the responses of rare immune cells from multiple patients in parallel, thereby potentially identifying best-in-class drug candidates earlier in the drug discovery and development process.

Their technology has the potential to generate antibody and vaccines candidates faster and cheaper than the current available modalities.



One **key advantage** of Enumeral's technology is its ability to perform drug candidate validation at the **single cell level**, within biopsy samples containing very few immune cells, to determine whether or not the relevant target proteins are expressed, and the variety of cell types upon which they are displayed – all of which could impact whether or not a given product candidate would produce a beneficial effect, or, a toxic effect, within a given patient, and, a given disease state. These single cell functional profiling capabilities provide for a deeper understanding of the variety of human responses, and thus, may provide a rational basis to guide product design and development.

We believe that Enumeral's technology platform can **improve the prospects of antibody discovery programs** by enabling quantitative screening of antibody-secreting cells in a population of cells without introducing bias from prior sorting according to cell surface markers or other low-yield transformation and

handling steps. It is also agnostic as to the species of cell sample origin – for example, human, mouse or rabbit.

When applied to **human cells**, Enumeral's technology **increases the probability** of finding rare antibodies that have the characteristics that are essential to becoming safe and effective drugs while also providing for an assessment of antibody affinity, specificity and potential tolerability much earlier in the antibody discovery and development process than has previously been achieved. Further, quantifying individual human immune response directly in blood or biopsy samples should enable the development of immune-based diagnostic products for the classification of responders and non-responders to therapeutics.

With Enumeral's platform, individual cell secretions can be analyzed while **retaining viable cells** for further analysis. Other assay methods for determining cell function and phenotype (ELISpot, FACs, et. al.) that are common to other approaches usually result in the death of the cells under study. In addition, further sequential rounds of micro-engraving onto additional multiplexed capture slides can be performed, greatly **expanding the analytic capability** of the platform.

After cells that generate antibodies of interest are identified, the individual cells are retrieved and RT-PCR is performed in order to obtain DNA sequence information corresponding to the potential antibodies. Enumeral's single cell **RT-PCR recovery rates** for matched heavy and light DNA sequences are typically greater than 50%, with 80-90% for antibody heavy chain and light chain genes individually, compared to the industry standard of around 50% for heavy chains, and significantly less for antibody light chain genes.

Enumeral's Internal Programs Overview

Enumeral is currently developing **antibodies** against three **checkpoint protein targets** for the treatment of **cancer and other diseases**. These three targets are: PD-1, OX40 and Lag-3, three checkpoint proteins expressed on the surface of the body's immune cells. Management plans to generate superior antibodies for these three targets for both in-house development and co-development with partners.

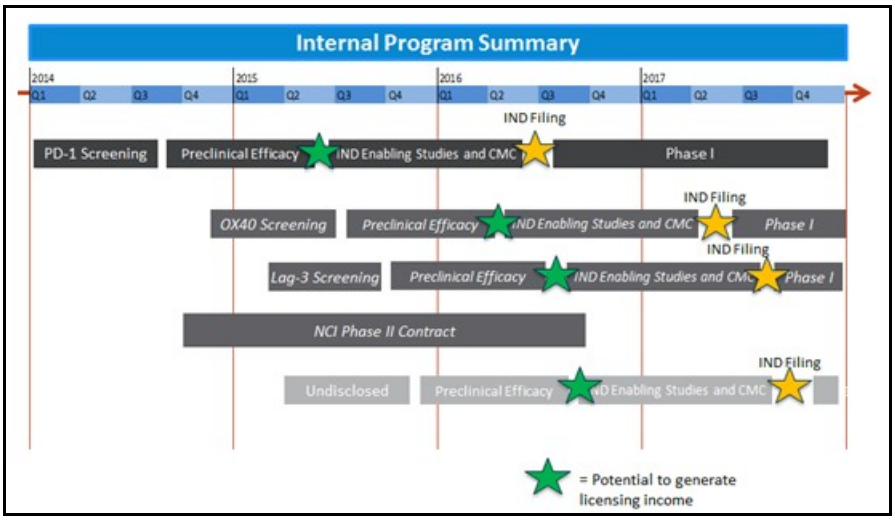
All three targets **PD-1**, **OX40**, and **Lag-3,** along with CTLA-4, are a group of functionally-related proteins expressed on various immune cells, including T cells, that together function as immune checkpoints.

In addition to cancer, therapeutics targeting these proteins may have applications in treating multiple diseases, including inflammatory, autoimmune, and infectious diseases. Using its proprietary platform technology, we believe Enumeral is able to determine rational development strategies across these diseases.

Enumeral has developed assays to identify animal- and human-derived native **antibodies** that bind to PD-1, OX40, and Lag-3. Initial screens have identified hundreds of antibody candidates that bind to PD-1, with a subset undergoing initial preclinical validation. Further characterization of additional antibodies is ongoing, and proprietary libraries directed at OX40 and Lag-3 are being screened. Management expects to be able to initiate partnering discussions for the Company's PD-1 program **in early 2015**.

In order to accelerate the development of antibody therapeutics, Enumeral is also developing **assays** to stratify patients with various cancers and other disease that might benefit from immunomodulatory treatment. Disease-specific assays can be rapidly developed for each type of patient population using its technology. Such assays will be applied in ex vivo "human preclinical" trials using biopsies from the intent-to-treat population to select lead candidates that exhibit the best immunomodulatory profiles, including appropriate activation of immune cells that target the tumor cells. The Company will also apply the assays for measurement of the potential for more general unwanted immune-related effects, such as inappropriate cytokine release or lymphocyte activation, especially immune-suppressive or tumor-promoting lymphocytes, to aid in selection of best-in-class lead candidates.

The development of stratification tools will enable predictive decision making during development, which will lead to faster, less costly and, ultimately, more successful clinical development.



Enumeral started the screening for **anti-PD-1** antibodies from immunized rodents at the end of the fourth quarter of 2013 and has led to the identification of novel antibodies that bind to PD-1 in vitro and expressed on the surface of T cells. Significantly, multiple diverse antibody sequences were identified in the screening, two of which contain similar sequences to two different Phase III product candidates, Pembrolizumab (Merck) and Nivolumab (Bristol-Myers Squibb), indicating the potential of Enumeral's platform to rapidly identify commercially-relevant antibody candidates. Two lead antibodies have been demonstrated to be functionally similar to others described in the literature. Ongoing preclinical evaluation is aimed at determining which candidates demonstrate optimal 'ex vivo' human functional characteristics.

Following preclinical evaluation and lead nomination, the Company plans to identify partners and CROs (contract research organizations) to undertake further required preclinical disease model and IND-enabling safety and toxicity studies as well as formulation and CMC package development. The Company currently expects to have such preclinical and ex vivo human data packages on its first program **by early 2015**, and the second and third programs, within the **second half of 2015**. We estimate first **Phase I** clinical trial could start in 2016.

Collaborative Partnerships

As an early development stage biotech company, Enumeral seeks to enter into collaborative partnerships for product discovery, development and commercialization. We believe these partnerships are important to Enumeral in the following aspects:

- Partnership can **accelerate** the development of product candidates through the potential leverage provided by large companies, including, research and development capabilities, manufacturing, clinical and regulatory expertise, and sales and marketing.

- Partnership further **validates** the Company's technology and the potential of its candidates;

- Partnership can **boost** the Company's balance sheet by providing non-dilutive financing in terms of upfront, milestone and royalty payments.

Enumeral has completed **four collaborations** with four leading pharmaceutical companies in the form of proof-of-concept projects that have provided for modest cash payments (in the hundreds of thousands of dollars per project). Certain of these collaborations have led to additional discussions regarding

expanded programs. Currently management is focused on entering into one or more **large-scale corporate collaborations** in the next **twelve months.** Enumeral would seek to retain commercialization rights to certain therapeutic and diagnostic applications of the discoveries resulting from large-scale corporate collaborations.

We believe that such large-scale collaborations will provide **meaningful revenues** that will reduce future operating losses and equity financing requirements through a combination of up-front payments, subsequent milestone payments as the candidate clears pre-clinical and clinical regulatory hurdles, and royalty payments upon future sales of the marketed drug.

Market Potential of Enumeral's Programs

Enumeral is targeting the multi-billion dollar **antibody and biologics market**.

Among pharmaceutical products, mAbs/biologics are one of the fastest growing product categories. According to Reportbuyer, global sales of antibody/biologics are forecast to exceed $141 billion in 2017, up from $44.6 billion in 2011. There are more than 30 FDA-approved mAbs on the market with 200-plus mAbs currently in clinical studies and over 600 in preclinical development. Four of the top six selling drugs in 2014 are projected to be mAbs, and today seven have sales exceeding one billion-dollars.

It is predicted that antibody products will dominate the pharmaceutical market in the next decade. According to Thomson Reuters, it is forecast that five of the top ten selling products in 2014 will be mAbs. This compares to only one biotech product making it into the top 100 in 2000, which is Amgen's erythropoietin agent, Epogen. Antibodies and other biologic drugs will account for 50% of the top 100 drugs in 2014 according to EvaluatePharma. Importantly, experts have predicted that within the next ten years half of all chemotherapy regimens may include an immunotherapy.

Top Ten Products by Projected 2014 Revenues

Rank	Product	Indication	Company	WW Sales ($Billion)	Technology
1	Avastin	Cancer	Roche	$8.9	mAb
2	Humira	Arthritis	Abbott	$8.5	mAb
3	Enbrel	Arthritis	Pfizer/Amgen	$8.0	Recombinant (biologic)
4	Crestor	Cholesterol	AstraZeneca	$7.7	Small molecule
5	Remicade	Arthritis	Merck/JNJ	$7.6	mAb
6	Rituxan	Cancer	Roche	$7.4	mAb
7	Lantus	Diabetes	Sanofi	$7.1	Recombinant (biologic)
8	Advair	Asthma/COPD	GlaxoSmithKline	$6.8	Small molecule
9	Herceptin	Cancer	Roche	$6.4	mAb
10	Novolog	Diabetes	Novo Nordisk	$5.7	Recombinant (biologic)

Source: Thomson Reuters

Approved antibody therapies have so far been focused on the treatment of cancer, inflammatory and autoimmune disorders, and infectious diseases. The two largest categories by worldwide sales are represented by the blockbuster oncology mAb products Avastin, Rituxan, Herceptin and Erbitux and the anti-TNF biologic drugs for the treatment of rheumatoid arthritis, including Humira (antibody), Enbrel (fusion protein) and Remicade (antibody).

Despite the rapid growth of mAbs, there are still considerable unmet medical needs. One area is the development of antibodies targeting **immune checkpoints** — immunotherapies for cancer and other indications. Both CTLA-4 and PD-1 inhibitors have shown impressive results in clinical care and in ongoing clinical studies. Recent approval of **Yervoy** (CTLA-4 antibody from BMS) and **Keytruda** (PD-1 antibody from Merck) demonstrated the importance of immune checkpoint inhibitors in the treatment of cancer. We believe that immune checkpoint inhibitors will enter widespread clinical use and will command a large market share of the cancer care market within the next decade. However, a key bottleneck in the field is limited understanding of human patient immunology at the level of human cells to guide validation and development of best-in-class therapies that effectively target the right patients.

Enumeral's **human cell-based evaluation methods** coupled with its unique antibody screening capabilities could provide the Company with a distinct competitive advantage in this field.

Balance Sheet Boosted With Recent Financing

As of September 30, 2014, Enumeral held $16.2 million in cash and cash equivalent.

In August 2014, Enumeral completed a $21.5 million private placement financing.

The Company sold 21,500,000 units at a price of $1.00 per unit. Each unit includes one share of the Company's common stock and a warrant to purchase one share of the Company's common stock at an exercise price of $2.00 per share for a five-year period.

Also in September 2014, Enumeral was awarded a **Phase II Small Business Innovation Research (SBIR)** contract from the National Cancer Institute (NCI) for $999,967 over two years to develop an advanced, automated prototype system for human tissue immuno-oncology profiling. This program complements Enumeral's other internal research and development efforts and enables it to continue its programs in colorectal cancer immune profiling that were initiated under the Phase I contract.

Going forward, we believe Enumeral will continue to maximize the non-dilutive financing by monetizing its technology.

We believe that its existing cash and investment securities as of September 30, 2014, and anticipated cash flow from strategic alliances will be sufficient to support the Company's operations for at least the next 12 months.

Experienced Management and Directors

John J. Rydzewski, Executive Chairman and Co-Founder

Mr. Rydzewski has been Executive Chairman of the Board of the Company since the Merger and prior thereto served as Executive Chairman of Enumeral since October 2011. Mr. Rydzewski is a Class I Director and his term on the Board will expire in 2015. Mr. Rydzewski has significant life sciences industry experience as an institutional investor, investment banker and corporate director. Before joining Enumeral, he was managing director of Christofferson, Robb & Co., an investment firm where he monetized life - sciences intellectual property covering large and small molecule therapeutics from July 2006 to September 2011. His banking career included partnership responsibilities at Benedetto, Gartland & Co., an investment bank serving corporate and institutional clients, and officer positions in the

merchant banking and healthcare specialty finance units of Kidder, Peabody & Co. Incorporated and Dean Witter Reynolds Inc. Prior to banking, he was a manager in the Bankruptcy Services Group of Price Waterhouse & Co. and he held positions in industry. He continues to serve as a director of several healthcare companies, including Vision-Sciences, Inc. and he is Co - Chairman of the Board of Advisors of the RAND Corporation's health policy research unit. He received an M.B.A. and a B.S. in Economics with Honors from The Wharton School of the University of Pennsylvania.

Arthur H. Tinkelenberg, President, Chief Executive Officer, Director and Co-Founder

Dr. Tinkelenberg has been President and Chief Executive Officer and a Director of the Company since the Merger and prior thereto was President, Chief Executive Officer and a director of Enumeral since 2010. He is a Class I Director and his term on the Board will expire in 2015. Dr. Tinkelenberg has broad experience in the business and finance of healthcare enterprises and basic life sciences research. Prior to joining Enumeral, he was a partner in Ascent Biomedical Ventures, a life sciences venture capital firm focused on early stage biomedical technologies, where he was responsible for originating and managing numerous biotechnology and medical device company investments from 2003 through 2009. Prior to venture capital, he served in the healthcare corporate finance and mergers and acquisitions group of Robertson Stephens from January 2001 through July 2002. Prior to industry, he conducted research in lipid metabolism, genomics, biochemistry, and cell biology as a Research Scientist at Columbia University from 1996 through 2000. He is a published author and inventor on a number of patents from projects initiated by him during his tenure in academic research. He received his Ph.D. in molecular genetics from The Rockefeller University and his B.A. in Biology from Grinnell College.

Kevin Sarney, Vice President of Finance and Chief Accounting Officer

Kevin G. Sarney has been Vice President of Finance and Chief Accounting Officer since the Merger. From September 2013 to July 2014 , Mr. Sarney was Vice President, Finance and Administration for Avaxia Biologics, Incorporated, a clinical-stage biopharmaceutical company developing gut-targeted therapeutics. Prior to joining Avaxia, he worked as a consultant from May 2009 to August 2013 at various biotechnology and medical device companies in interim VP of Finance and Controller roles. From March 2005 to April 2009, Mr. Sarney was the Corporate Controller and Principal Accounting Officer of Nitromed, Inc., a publicly traded cardiovascular-focused pharmaceutical company. Mr. Sarney earned a B.S. in business management from the University of Hartford, an M.B.A. from Boston University and an M.A. in accounting from Suffolk University. Mr. Sarney is a certified public accountant in the Commonwealth of Massachusetts.

M. Isabel Chiu, Ph.D., VP Translational and Clinical Sciences

Isabel has been Vice President Translational and Clinical Sciences since 2014. She is responsible for developing and implementing Enumeral's internal and external translational programs using human patient-derived samples in ex vivo trials. She oversees the company's operational, program management and strategic initiatives to support these goals. Prior to joining Enumeral, Isabel spent 10 years with AVEO Oncology, a clinical-stage biopharmaceutical company developing novel cancer therapeutics. As VP of Translational Research she helped create their proprietary "Human Response Platform" and was responsible for applying preclinical insights to guide the company's discovery, development and biomarker programs. Previously, Isabel was with GPC-Biotech, formerly Mitotix Inc., from 1993 to 2003, where she served as director of target discovery. Isabel has broad experience in shaping and leading R&D alliances with external partners, including multi-year collaborations with Merck Research Laboratories, OSI, Astellas and Altana Pharma. She completed her post-doctoral training at the Johns Hopkins School of Medicine and Howard Hughes Medical Institute, and is the author of numerous publications and issued patents. Isabel received her B.A. in biochemistry from Brandeis University and her Ph.D. in biology from the Massachusetts Institute of Technology.

Anhco Nguyen, Vice President of Research and Development

Dr. Nguyen has been Vice President of Research and Development since the Merger and prior thereto, was Vice President of Research and Development of Enumeral since January 2012. Dr. Nguyen leads our research and development team and is responsible for both our proprietary discovery and corporate partnership programs. He participates with the Company's business development team in structuring new research collaboration initiatives. He brings to this role significant industry experience in the development of therapeutic antibodies for treatment of cancer and multiple sclerosis having held positions of increasing responsibility, most notably at Forma Therapeutics where he served as a staff scientist from June 2009 to January 2012 and Genzyme Corp. where he served as a staff scientist from June 2006 to May 2009. He completed postdoctoral training at MIT's Cancer Center and was the recipient of a Presidential Postdoctoral Fellowship, which he completed at the Novartis Institute for Biomedical Research. He received his Ph.D. Immunology from Washington University and his A.B. Biology, Harvard College. He has co - authored numerous articles in the fields of cancer and immunology.

Derek Brand, Vice President of Business Development

Mr. Brand has been Vice President of Business Development since the Merger and prior thereto, was a director and Vice President of Business Development and Director of Finance of Enumeral since 2010. Mr. Brand is responsible for initiating and executing technology and business collaborations with biopharmaceutical companies as well as our grant submission efforts. He is establishing our base of clinical operations and partnerships with leading academic research centers that provide research materials essential to our proprietary drug discovery programs and that potentially contribute to our receiving more favorable terms when negotiating corporate collaborations. He manages our financial reporting requirements and develops related budgets and financial projections. He has broad - based experience creating and implementing growth strategies for biomedical startup companies, having served in both business roles and scientific capacities. In previous roles in his career, he has secured corporate funding from research grants and corporate collaborations and he directed key elements of clinical trial design, implementation and analysis as a research scientist. He has been involved in multiple startup companies and also had the opportunity to lead a successful business turnaround for an analytical technology developed by General Electric for the pharmaceutical industry. He received his MBA from Babson College and his B.A. in Biology from Hamilton College.

Robert L. Van Nostrand, Independent Director, Former Chief Financial Officer, OSI Pharmaceuticals

Mr. Van Nostrand has been a member of the Board of Directors since 2014. He is a seasoned biotechnology executive with an extensive background in finance, operations and accounting in public biotechnology companies in all stages of development. Most recently, Mr. Van Nostrand held senior executive positions with AGI Dermatics and Aureon BioSciences. For 21 years, he served in executive leadership positions at OSI Pharmaceuticals, including Chief Compliance Officer, Chief Financial Officer and Chief Accounting Officer. During his tenure with OSI Pharmaceuticals, he had financial responsibility for all of its significant operations and was instrumental in development of strategy, budgeting and forecasting, negotiation and closing of several major corporate collaborations, and SEC reporting. During his tenure, Mr. Van Nostrand led the OSI financial team in raising over $1.4 billion in equity and debt during a time of high growth as OSI transitioned from an early-stage biotechnology company to a multi-billion dollar, commercial-stage organization. Prior to joining OSI, he was a manager at Touche Ross & Co (currently Deloitte). Mr. Van Nostrand currently serves on the boards of several other publicly traded biotechnology companies, including Metabolix, where he is chairman, Achillion Pharmaceuticals and Intra-Cellular Therapies. Mr. Van Nostrand also serves as the chairman of the audit committee for each of these companies. In addition, Mr. Van Nostrand serves on the board of directors of the Biomedical Research Alliance of New York. He is the former Chairman, and currently serves on the board, of NYBio (formerly the New York Biotechnology Association) and also serves on the Foundation Board of Farmingdale University. Mr. Van Nostrand received a B.S. in accounting from Long Island University and studied management at The Wharton School. He is a Certified Public Accountant.

Barry Buckland, Director, Co-Founder and Co-Chairman of the Scientific Advisory Board

Dr. Buckland has been a member of the Board of Directors of the Company since the Merger and prior thereto, served as member of the Board of Directors of Enumeral since December 2009. He is a Class II Director and his term on the Board will expire in 2016. Dr. Buckland's career in the pharmaceutical industry includes his leadership of Merck's world class bioprocess Research and Development Group which saw the market launch of major biological products, including Gardasil, Rotateq, and Zostavax. Dr. Buckland has been the Chief Executive Officer of BiologicB LLC, a consulting firm working with biotechnology and vaccine products, since May 2009. He is the recipient of numerous awards, among them the Donald Medal, UK Institute of Chemical Engineering in 2002, Prix Galien award as a member of the team that received the Vaccine Award for Gardasil in 2007, the Marvin Johnson award by ACS for lifetime contribution to Biotechnology in 2008, and the PhRMA Discoverer of the Year for development of the Merck HPV vaccine (along with Eliav Barr and Kathrin Jansen) in 2009. He has chaired multiple International Conferences related to Bioprocess Research and Development and Vaccine Technology and is an author on over 70 papers. He has been a Visiting Professor at University College London since 1995, and earned his Ph.D. in Biochemical Engineering at University College London in 1974.

Daniel B. Wolfe, Director

Dr. Wolfe has been a member of the Board of Directors of the Company since the Merger and prior thereto, served as member of the Board of Directors of Enumeral since 2009. He is a Class III Director and his term on the Board will expire in 2017. Dr. Wolfe serves on the Board of the Company and Enumeral pursuant to a Voting Agreement with Harris & Harris Group, Inc. Dr. Wolfe has been President and Chief Operating Officer of Harris & Harris Group, Inc., a publicly traded venture capital firm that invests in transformative companies enabled by disruptive science, since January 2009 and a Managing Director of Harris & Harris Group, Inc. since January 2008. Prior to that, he served as Harris & Harris Group, Inc.'s Chief Financial Officer from January 2008 to December 31, 2012 and Treasurer from May 2008 to December 31, 2012. Since January 2009, Dr. Wolfe has served as President and Chief Operating Officer and from January 2009 to December 31, 2012, as Chief Financial Officer of H&H Ventures Management, Inc., a wholly-owned subsidiary of Harris & Harris Group, Inc., and from October 2008 to May 2012, he served as a director. At the request of Harris & Harris Group, Inc., Dr. Wolfe served as Chief Executive Officer of Evolved Nanomaterial Sciences from July 1, 2008 to September 28, 2009. Evolved Nanomaterial Sciences filed for bankruptcy protection under Chapter 7 of the U.S. Bankruptcy Code on September 30, 2009. Dr. Wolfe also serves on the boards of SiOnyx, Inc. and SynGlyco, Inc. He completed his Ph.D. and A.M. in Chemistry at Harvard University, and graduated from Rice University with a B.A. in Chemistry.

Allan P. Rothstein, Director

Mr. Rothstein has been a member of the Board of Directors of the Company since the Merger and prior thereto served as member of the Board of Directors of Enumeral since September 20, 2013. He is a Class II Director and his term on the Board will expire in 2016. Mr. Rothstein has been a principal of Healthcare Recovery Services LLC, servicing financial aspects and enhancing revenue cycles of hospitals and other healthcare service enterprises, since December 2011. Mr. Rothstein has owned and managed Hedge Capital Partners LLC, an investment vehicle for venture capital, portfolio management and asset management, since April 2004 and is the owner of Shizoom LLC, a business funding company formed in March 2013. Mr. Rothstein was also head of trading at Centurion Partners from September 2010 to August 2011. He actively invests in emerging technology companies. He was founder and Chairman of NanoDynamics Inc. from 2002 through 2007. He served as a member of the National Nanotechnology Business Alliance and the New York Nanotechnology Business Alliance advisory boards and the Dean's Council of the Graduate School of SUNY Stonybrook.

He has over 30 years' experience in the financial industry, having started his career at Shearson Loeb Rhoades where he handled arbitrage lines for domestic and international customers. In 1982, he became a member of the New York Futures Exchange. In 1990 he joined Fahnestock & Company (presently, Oppenheimer & Company) as a NASDAQ market maker. In his role as Senior Vice President and co-head of NASDAQ Trading, Mr. Rothstein was responsible for trading in over 500 markets, oversight of all

NASDAQ market making and trading systems construction and integration. Mr. Rothstein graduated as a Benjamin Franklin Scholar from The University of Pennsylvania, magna cum laude in 1980.

VALUATION AND RECOMMENDATION

We are initiating coverage of Enumeral (ENUM) with an **Outperform** rating. Our 12-month price target is **$4.50** per share.

Enumeral is a development stage biotech company with a focus on immunotherapy for cancer and inflammatory disease. The Company has developed a **proprietary platform technology** with the ability to screen antibodies at a single cell level, which holds multiple advantages over existing technologies.

Based on this platform technology, Enumeral is currently focused on **therapeutic discovery and immune profiling** with the goal to build a robust pipeline rapidly and in a cost effective way. Currently, the discovery is focused on antibodies targeting immune checkpoints of PD-1, OX40 and Lag-3. The Company plans to file IND and initiate Phase I clinical trial for PD-1 in 2016 in collaboration with a co-development partner.

In addition to its internal programs, Enumeral also plans to monetize its technology by establishing partnerships with big pharma or biotech companies. The Company already had multiple proof-of-concept partnerships with a few big pharma companies. The next step is to enter into **large-scale corporate collaborations.** We believe such large-scale collaborations will not only provide non-dilutive financing to the Company, but also further validate the Company's technology and programs.

In terms of valuation, we think Enumeral is undervalued at current market price. Currently Enumeral shares are trading at about $1.03 per share which values the Company at about $54 million in market cap based on 52 million outstanding shares. This is a deep discount compared to its peers, and based on the Company's fundamentals.

We acknowledge that Enumeral is still in the early development stage with a Phase I trial starting in 2016. But when we look at the Company in detail and the industry in which it operates, we realize that this Company has potential to grow dramatically in the next few years. The unique platform technology not only provides the basis for rapidly building a robust pipeline, but also forms the basis for corporate partnerships which will generate near term revenue for the Company.

Our price target of $4.50 per share corresponds to a market cap of $235 million, which we think is appropriate at this point of time if the Company executes on its objectives and is able to see its lead programs progress into Phase I clinical testing by the end of 2016. **Risks** associated with our price target include the failure of the internal program development and failure to find appropriate corporate partners. But generally speaking, we think Enumeral is a company with great potential and a name with favorable risk/reward profile for investors with a relatively long investment horizon.

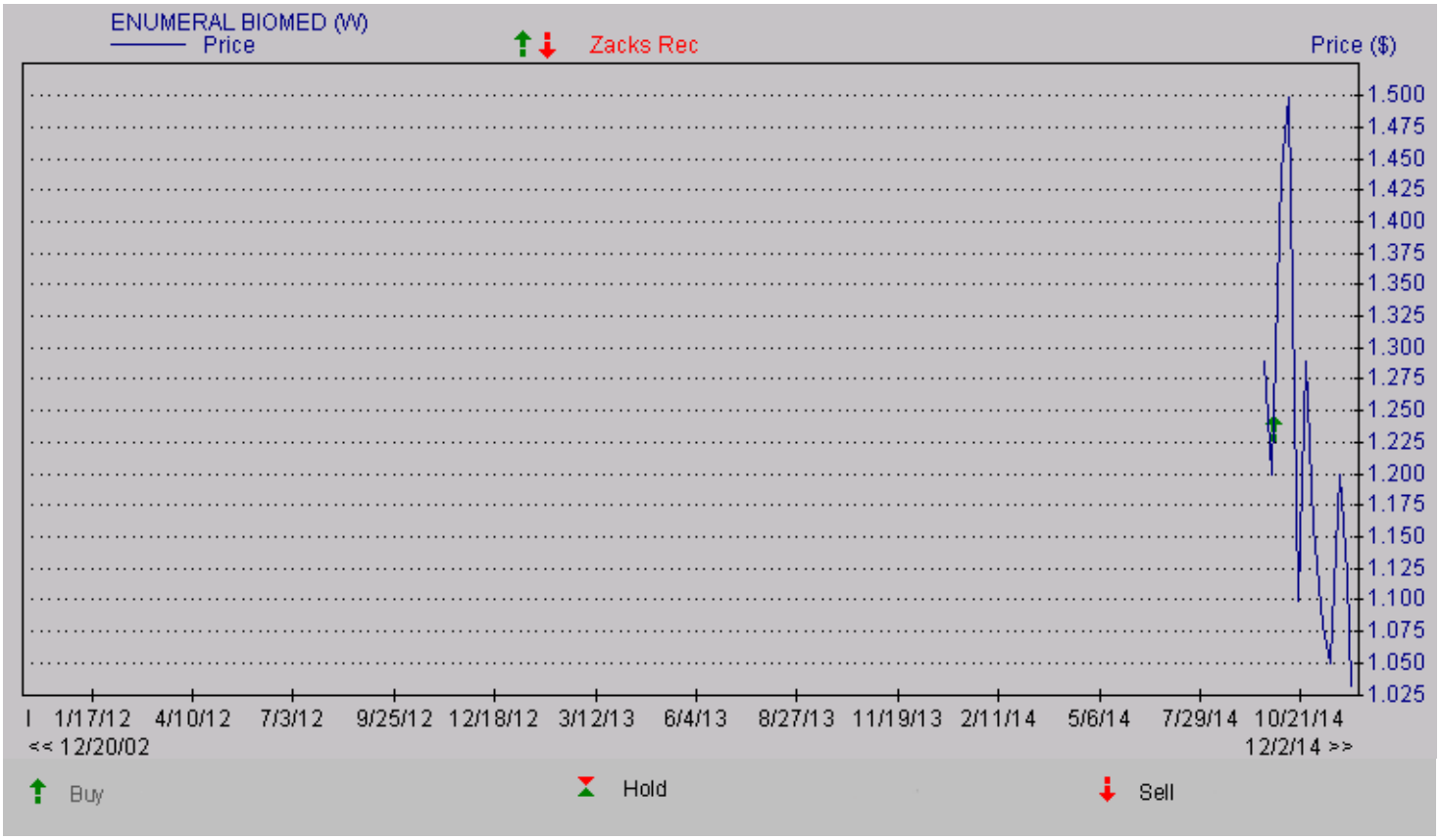
PROJECTED INCOME STATEMENT

	2012	2013	2014					2015	2016	2017	2018	2019
$ in millions except per share data	FY	FY	Q1	Q2	Q3	Q4	FYE	FYE	FYE	FYE	FYE	FYE
Collaboration/license Revenue	$0.05	$0.27	$0.05	$0.00	$0.07	$0.08	$0.20	$1.50	$2.50	$5.00	$7.50	$10.00
Grant Revenue	$0.02	$0.18	$0.00	$0.00	$0.01	$0.01	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00
YOY Growth	-	-	-	-	-	-	-	*-100.0%*	*#DIV/0!*	*#DIV/0!*	*#DIV/0!*	*#DIV/0!*
Product Sales	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
YOY Growth	-	-	-	-	-	-	-	-	-	-	*#DIV/0!*	*#DIV/0!*
Total Revenues	**$0.07**	**$0.45**	**$0.05**	**$0.00**	**$0.07**	**$0.09**	**$0.21**	**$1.50**	**$2.50**	**$5.00**	**$7.50**	**$10.00**
YOY Growth	-	-	-	-	-	-	-	*610.5%*	*66.7%*	*100.0%*	*50.0%*	*33.3%*
CoGS	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Gross Income	**$0.07**	**$0.45**	**$0.05**	**$0.00**	**$0.07**	**$0.09**	**$0.21**	**$1.50**	**$2.50**	**$5.00**	**$7.50**	**$10.00**
Gross Margin	-	-	-	-	-	-	-	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
R&D	$1.83	$2.37	$0.69	$0.79	$1.06	$1.15	$3.69	$4.00	$5.50	$7.50	$9.00	$12.00
% R&D	-	-	-	-	-	-	-	*266.7%*	*220.0%*	*150.0%*	*120.0%*	*120.0%*
SG&A	$1.38	$1.83	$0.50	$0.34	$1.16	$1.20	$3.21	$3.50	$4.00	$4.50	$5.00	$5.50
% SG&A	-	-	-	-	-	-	-	*233.3%*	*160.0%*	*90.0%*	*66.7%*	*55.0%*
Others	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
% Other	-	-	-	-	-	-	-	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Operating Income	**($3.1)**	**($3.8)**	**($1.1)**	**($1.1)**	**($2.2)**	**($2.3)**	**($6.7)**	**($6.0)**	**($7.0)**	**($7.0)**	**($6.5)**	**($7.5)**
Operating Margin	-	-	-	-	-	-	-	-	-	-	-	-
Other Income (Net)	($0.1)	($0.1)	($0.1)	($0.1)	($6.7)	($0.2)	($7.0)	($0.8)	($0.8)	($0.8)	($0.8)	($0.8)
Pre-Tax Income	**($3.3)**	**($3.9)**	**($1.2)**	**($1.2)**	**($8.8)**	**($2.5)**	**($13.7)**	**($6.8)**	**($7.8)**	**($7.8)**	**($7.3)**	**($8.3)**
Net Taxes (benefit)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$5.0
Tax Rate	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*-60.2%*
Reported Net Income	**($3.3)**	**($3.9)**	**($1.2)**	**($1.2)**	**($8.8)**	**($2.5)**	**($13.7)**	**($6.8)**	**($7.8)**	**($7.8)**	**($7.3)**	**($13.3)**
YOY Growth	-	-	-	-	-	-	-	-	-	-	-	-
Net Margin	-	-	-	-	-	-	-	-	-	-	-	-
Weighted avg. Shares Out	*3.7*	*4.5*	*4.5*	*4.5*	*40.7*	*51.6*	*25.3*	*55.0*	*60.0*	*65.00*	*70.00*	*75.00*
Reported EPS	**($0.88)**	**($0.86)**	**($0.27)**	**($0.27)**	**($0.22)**	**($0.05)**	**($0.54)**	**($0.12)**	**($0.13)**	**($0.12)**	**($0.10)**	**($0.18)**
YOY Growth	-	-	-	-	-	-	-	-	-	-	-	-
One time charge	$0.00	$0.00	$0.00	$0.00	$6.67	$0.00	$6.67	$0.00	$0.00	$0.00	$0.00	$1.00
Non GAAP Net Income	**($3.3)**	**($3.9)**	**($1.2)**	**($1.2)**	**($2.2)**	**($2.5)**	**($7.0)**	**($6.8)**	**($7.8)**	**($7.8)**	**($7.3)**	**($12.3)**
Non GAAP EPS	**($0.88)**	**($0.86)**	**($0.27)**	**($0.27)**	**($0.05)**	**($0.05)**	**($0.28)**	**($0.12)**	**($0.13)**	**($0.12)**	**($0.10)**	**($0.16)**

Source: Company filings and Zacks Estimates

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HISTORICAL ZACKS RECOMMENDATIONS



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The current distribution is as follows: Buy/Outperform- @B@%, Hold/Neutral- @H@%, Sell/Underperform – @S@%. Data is as of midnight on the business day immediately prior to this publication.