Zacks Small-Cap Research

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DiagnoCure Inc. (T.CUR)

T.CUR: *Q3 2012 Earnings. Adjusting Model On Signal Genetics Issue*

Current Recommendation	**Outperform**
Prior Recommendation	N/A
Date of Last Change	03/19/2012
Current Price (09/06/2012)	$0.59
Target Price	**$1.80**

OUTLOOK

DiagnoCure's flagship PCA3 test received FDA approval in February 2012. The test, marketed by Gen-Probe, could provide significantly greater clinical utility than the standard prostate cancer test (i.e. - PSA). PSA is infamously unreliable and, coupled with a huge unmet demand for a better prostate cancer test, provides a potentially attractive opportunity for DiagnoCure. HOLX/GPRO deal and recent USPSTF rec against PSA testing could benefit sales of Progensa, although sales have been slow to ramp. Recent issue with Signal Genetics prompted downward adjustment to our model. However, balance sheet remains healthy and our longer-term outlook remains mostly intact. We've moved our target price from $2.25 to $1.80. Maintaining Outperform rating.

SUMMARY DATA

52-Week High	**$1.30**
52-Week Low	**$0.49**
One-Year Return (%)	**0.00**
Beta	**N/A**
Average Daily Volume (sh)	**12,060**
Shares Outstanding (mil)	**43**
Market Capitalization ($mil)	**25**
Short Interest Ratio (days)	**N/A**
Institutional Ownership (%)	**N/A**
Insider Ownership (%)	**N/A**
Annual Cash Dividend	**N/A**
Dividend Yield (%)	**N/A**
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 2012 Estimate	**N/A**
P/E using 2013 Estimate	**N/A**
Zacks Rank	**N/A**

Risk Level	**N/A**
Type of Stock	**Large-Growth**
Industry	**Med Products**

ZACKS ESTIMATES

Revenue
(in millions of $U.S.)

	Q1 (Jan)	Q2 (Apr)	Q3 (Jul)	Q4 (Oct)	Year (Oct)
2011					1.2 A
2012	0.6 A	1.1 A	0.7 A	0.2 E	2.5 E
2013					1.1 E
2014					2.7 E

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

	Q1	Q2	Q3	Q4	Year
2011					-$0.09 A
2012	-$0.02 A	-$0.01 A	-$0.01 A	-$0.03 E	-$0.07 E
2013					-$0.10 E
2014					-$0.08 E

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

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WHAT'S NEW....

Q3 2012 Financial Results

On September 6th DiagnoCure Inc. reported results for the fiscal third quarter ending July 31, 2012. Revenue of $710k was more than double our estimated $305k as a result of about $500k more than modeled R&D services revenue booked related to the agreement with Signal Genetics for further development of the Previstage GCC test. Meanwhile royalties from Gen-Probe related to Progensa PCA3 continue to disappoint and again came in lower than our estimate ($137k A vs. $198k E).

Management attributed the continued softness in PCA3 revenue to prolonged economic weakness in Europe. It's unclear what the issue(s) are that have apparently stunted the roll-out in the U.S. following FDA approval of the test which happened in February of this year. As a reminder, DiagnoCure receives royalties from Gen-Probe (GPRO), which sells the test in North America and Europe. On August 1st Hologic (HOLX) closed on their acquisition of Gen-Probe. As we noted in previous updates, we think the acquisition could be a positive development for DiagnoCure and help spark a greater rate of sales growth of Progensa PCA3. Progensa PCA3 could be a natural fit with Hologic's major presence in cancer diagnostics and treatment. Hologic's sales force will also have a substantially larger presence than did Gen-Probe's. However, given the recent disappointing sales, we have made further downward revisions to this line item in our model - mostly effecting the near-term.

The biggest surprise revealed in the earnings release is that Signal Genetics apparently closed their Pennsylvania lab (as of 7/31/12) and discontinued selling and processing the Previstage GCC test. Signal has also stopped paying DiagnoCure for sales royalties owed as well as for the R&D services contract (current Signal-related A/R balance is $707k). There were no specifics offered relative to what the possible reasons are that Signal took this action. DiagnoCure noted that they intend to enforce the contract with Signal but didn't offer much in the way of specifics relative to when they might know more or their plan forward for marketing/processing Previstage. They did note on the call that they will continue with R&D activities of Previstage development, including the VITAR studies, despite the current ambiguity with Signal (which was funding at least a portion of the Previstage R&D).

While we have no idea what the outcome of DiagnoCure's enforcement efforts will be, until there's more clarity on this situation we think it's prudent to remove all Previstage royalties as well as R&D revenue from Signal Genetics from our model. We will again update our model, which could include re-establishing Previstage revenue and R&D from Signal, if and when it may be appropriate. As it is now, we have removed these from our model.

Net Income, EPS
Net income and EPS came in slightly better than our numbers for the second straight quarter. Q3 net income and EPS were ($606k) and ($0.01), compared to our ($834k) and ($0.01) estimates.

Cash balance (including investments) stood at $6.5 million at 7/31/2012, compared to $7.4 million at the end of Q2 (4/30/2012). Management indicated that full-year cash burn could remain within their earlier guidance of $2MM - $3MM depending on the outcome with Signal.

Updating Outlook

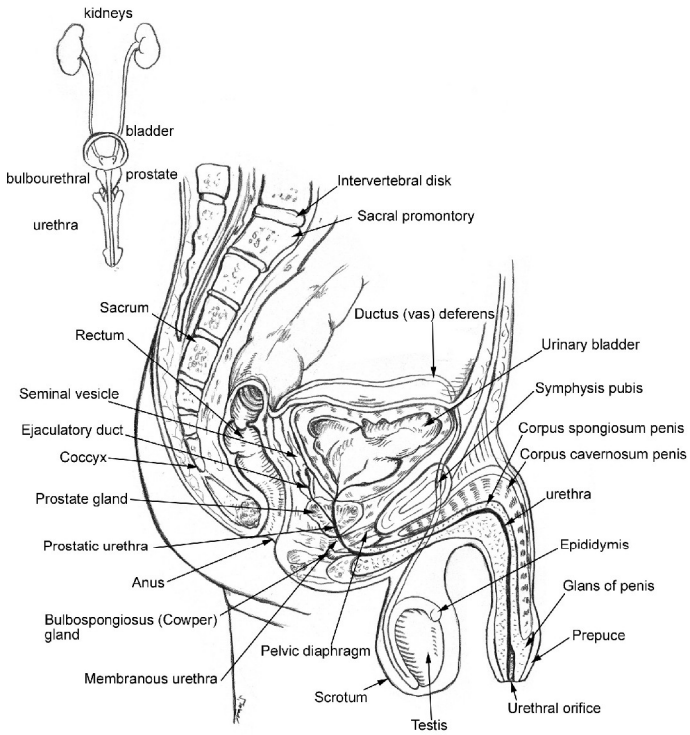
As noted, we have removed all revenue contributions from Signal Genetics from our model until further notice. We have also made some downward revisions to our ramp in PCA3 royalties due mostly to the apparent delay in the U.S. roll-out. As (prior to Q3 results) we had modeled Signal-related revenue to account for 40% and 23% of total revenue in 2012 and 2013, respectively (falling to 15% and 14% of total revenue in 2014 and 2015), removing this contribution from our model results in a significant reduction in projected sales, especially in 2013 and 2014. Downward revisions to the ramp in PCA3 also results in the $62.5 million royalty-rate hurdle (moving the royalty rate paid to CUR from 8% to 16%) now being met in 2014, instead of 2013 where we had it previously. This also significantly reduces our projected revenue in 2014.

We now look for total revenue of $1.1 million in 2013 (almost all of which is PCA3 royalties), growing to $6.8 million in 2015, this is adjusted from $3.5 million in 2013 and $10.0 million in 2015. We note, however, that long-term our outlook has always been mostly driven by an elongated ramp in PCA3 royalties. As this assumption remains intact (although slightly delayed), our longer-term outlook is much less effected by our current updates.
The adjustments to our model have moved our DCF-generated valuation from $2.25/share to approximately $1.80/share. As such, we are moving our price target to $1.80/share but maintaining our Outperform rating.

PROSTATE CANCER: *Progensa PCA3*

According to the National Cancer Institute, it is estimated that ~ 241k men will be diagnosed with and ~34k men will die of prostate cancer in the U.S. Prostate cancer is most prevalent in the elderly, with the vast majority of cases in men over the age of 65. Prostate cancer develops (the cause of which is not fully understood) in the male reproductive system and while it is typically slow growing and may never be life-threatening, it may spread to other parts of the body, particularly the lymph nodes and bones. While prostate cancer can be deadly if metastasized, when the cancer remains contained to the prostate or in nearby areas, the five-year survival rate is almost 100%. As prostate cancer is the most frequent cancer in men, an accurate test to regularly screen for the disease is in high demand. An important point to note, however, is that due to prostate cancer's typically slow-growing nature, a positive diagnosis does not necessarily mean that treatment (including surgery and radiation which can have deleterious side-effects) is the safest and best course of action. The real key to improving prostate cancer diagnosis and patient outcomes is being able to accurately (i.e. – minimize false-positives/false-negatives and determine the extent of progression) diagnose the disease at an early stage which in-turn will allow physicians to better determine the most appropriate course of treatment (if any) and reduce patient anxiety related to false-positive diagnoses.

SOURCE: Medscape



The current standard screening method for prostate cancer is a digital rectal exam (DRE) along with the prostate-specific antigen (PSA) test, which measures a protein released by prostate cells to determine the presence of cancer. Despite its widespread use (~20MM PSA tests done every year in North America and ~45MM worldwide, representing markets worth ~$200MM U.S. and ~$500MM worldwide), PSA's accuracy in detecting prostate cancer as well as its effectiveness in reducing mortality (the ultimate goal) is highly controversial and has recently come under increasing scrutiny. Among the evidence that detractors cite as support against the use of PSA is the results of a meta-analysis of clinical trial data on over 400k patients which were published in the British Medical Journal in 2010. The study found that while PSA increases cancer detection, it is not associated with a "significant effect of screening on death from prostate cancer or overall mortality." The authors concluded that, "The existing evidence from randomized controlled trials does not support the routine use of screening for prostate cancer with PSA with or without digital rectal exam."

In a well publicized announcement, based on the results several large clinical trials in the U.S. and Europe, in late 2011 the U.S. Preventative Services Task Force recommended that healthy men without any symptoms of prostate cancer not receive a PSA test. The recommendation, which was finalized in May 2012, carries significant weight and can determine whether public (including Medicare) and private health insurers will reimburse for the test. Per the chairwoman of the task force relative to the recommendation, “Unfortunately, the evidence now shows that this test does not save men’s lives. This test cannot tell the difference between cancers that will and will not affect a man during his natural lifetime. We need to find one that does.” The Task Force gave the PSA test its lowest rating, D, noting that it does more harm than good.

Meanwhile there continues to be resolute advocates of PSA testing which dismiss the conclusions cited by the Task Force including Dr. Eric Klein, an expert on prostate cancer from the Cleveland Clinic who notes that a substantial amount of clinical data does indicate that PSA testing does indeed save lives.

Studies have shown that PSA testing has a sensitivity and specificity of approximately 85% and 30%, respectively - indicating that while it is fairly good at detecting cancer (detects 85% of cases) it is very poor at differentiating between what is, and what is not cancer (i.e. - very low specificity, resulting in high false-positive rate). The heart of the accuracy problem with PSA testing is that levels of the PSA protein can be elevated (and result in the test

indicating positive for cancer) under fairly common circumstances when cancer may not actually be present – which could result in a false-positive diagnosis. The most common of these is when there is an enlargement of the prostate (called benign prostate hyperplasia or BPH). While the majority of men will experience some enlargement of the prostate as they age, only a very small percentage of them will develop prostate cancer. The correlation between BPH and increased levels of PSA results in only about 30% of positive PSA tests (i.e. – PSA elevated beyond what is considered normal, >4ng/ml) actually turning out to be cancer. And of those accurately diagnosed as having cancer (as confirmed by biopsy) with PSA, most have slow-growing cancers that would never become life-threating. There is also no definitive evidence that the presence of BPH increases the chances of eventually developing prostate cancer.

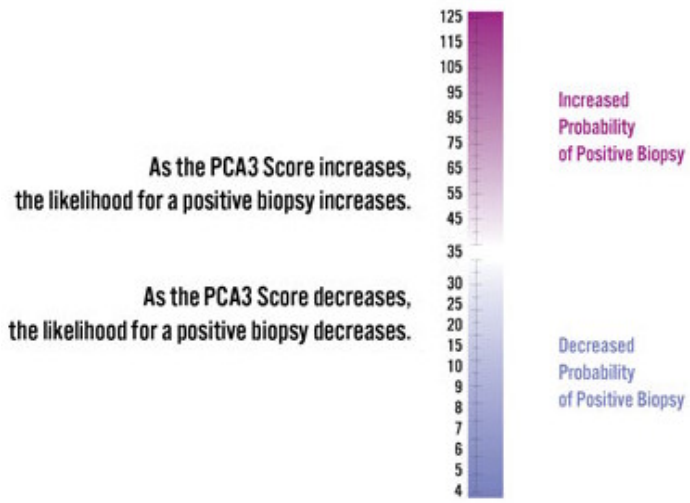
In the event of a positive PSA test showing, a biopsy will be done to confirm the diagnosis. If cancer cells are found in the tissue a Gleason score is assigned which is a measure of the severity or aggressiveness of the cancer. Prostate cancer biopsy involves the insertion of needles into different regions of the prostate gland to extract tissue which are then examined under a microscope. As a result of the low specificity of the PSA test, almost 75% of biopsies for prostate cancer turn out to be negative for the disease. Consequences of this include unnecessary mental anxiety associated with the thought of having a potentially deadly disease (this mental stress, especially with the elderly, can also result in physical health risks such as heart stress) and the risks inherent with biopsy such as infection. And even if the biopsy comes back negative, there still can be lingering mental anxiety from wondering if the biopsy was wrong and cancer is actually present. Instead of what might be a more appropriate course of action such as watchful-waiting (i.e. –monitoring including future follow-up testing), this anxiety can prompt the patient to undergo unnecessary treatments such as surgery, radiation, and hormone-blocking medication which can expose them to further negative side effects such as persistent blood in the semen, impotence, erectile dysfunction, urinary incontinence, bowel dysfunction, and even death (the latter, a result of complications from surgery). The unnecessary mental anxiety and over-treatment associated with PSA testing was a major reason for the recommendation by the U.S. Preventative Services Task Force against use of the test.

PROGENSA PCA3

Progensa PCA3

Unlike PSA, DiagnoCure's PCA3 (Prostate CAncer gene 3) marker is prostate cancer-specific and is not influenced by enlargement of the prostate. The test detects cancerous cells with high levels of PCA3 which are shed into the urine following a standard digital rectal exam. A higher level of PCA3 detected by the test indicates that there is a greater likelihood of a positive biopsy.

SOURCE: www.pca3.org



The PCA3 test's biomarker is a gene that was discovered in the 1990's by a Holland biologist while doing work at Johns Hopkins University. Originally known as DD3, DiagnoCure obtained patent rights to the marker from Nijmegen University (Netherlands) and John Hopkins University and used it initially to develop a qualitative assay. DiagnoCure began commercializing a PCA3 test named uPM3 in the U.S. in 2003 in ASR format – in November of that same year the company signed a deal with Gen-Probe to use the marker to develop a second generation, quantitative test and to distribute it throughout a network of laboratories. Gen-Probe, with worldwide development and commercialization rights, launched PCA3 in the U.S. in ASR format in 2005 and began selling the test under the Progensa PCA3 name in Europe and Canada following regulatory approval (CE Marking came November 2006, Health Canada approval came August 2011).

The test had only been available in the U.S. in ASR format until finally receiving FDA approval in mid-February 2012. FDA approval allows full commercialization of the test beyond the much more limited ASR format - which entails development of in-house tests (often called "home-brews") by labs, using the "ingredients" supplied by Gen-Probe. While ASR tests are widely accepted as scientifically valid and are an important part of diagnostic testing, unlike an FDA approved test (supported by clinical trial data), ASR ingredients can not be packaged and marketed as specific tests or kits for specific indications or applications and can not include labeling stating analytical or

clinical performance – all of this limits their marketability and potential profitability. FDA approval of Progensa PCA3 was obtained in February 2012 which is a major milestone for DiagnoCure.

How It Works…

The quantitative PCA3 that Gen-Probe developed uses a combination of technologies (Target Capture, Transcription Mediated Amplification, and Hybridization Protection Assay) to capture the target marker, amplify it, and allow for it to be detected. The PCA3 test is a dual-assay which uses the ratio of PCA3 (numerator) and PSA (denominator) to determine an overall PCA3 score. A PCA3 score of 25 is used as it has been shown to provide the greatest diagnostic accuracy, or balance between sensitivity and specificity as determined during the clinical evaluation of the Gen-Probe PMA submission approved by the FDA. As we note below, a number of studies with various designs and protocols have been done with PCA3 in prostate cancer. Based on various studies, sensitivity and specificity at the 35 cut-off were generally in the range of 50% - 60% (sensitivity) and 70% - 75% (specificity). Patients in clinical trials with PCA3 scores above 35 have been shown to be between 2 and 3 times more likely to have a positive biopsy than those with scores below 35. PCA3 is also linear, so the higher the score, the greater the likelihood of positive biopsy. And unlike PSA, PCA3 is not affected by BPH.



In step No.1 (top), target capture of the mRNA is performed, using magnetic bead (purple).

In step No. 2, the captured gene is amplified using Transcription Mediated Amplification, a process that generates some 10 billion copies of PCA3 in one hour.

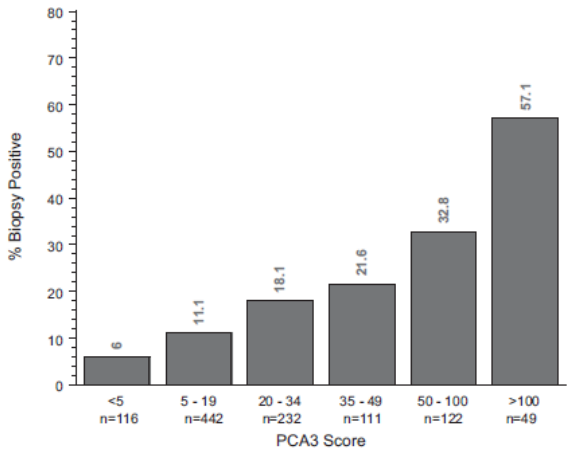
In step No. 3, the Hybridization Protection Assay is performed using DNA probes tagged with a chemiluminescent substance that is activated upon contact with detection reagents.

SOURCE: usrf.org

There's been a substantial amount of research done with PCA3 and over 80 peer-reviewed articles have been published supporting use of the marker as a diagnostic for prostate cancer. While results of the 495-patient multi-site study used as support for FDA approval were not submitted for publication, other trial data, published in prominent medical journals provide insight into PCA3's clinical utility as a diagnostic for prostate cancer. This includes;

SOURCE: J Urol. 2010 Nov:184(5):1947-52

A subset of GlaxoSmithKline's four-year, ~8,000-patient REDUCE trial which tested the ability of Glaxo's BPH drug Avodart to reduce the risk of prostate cancer in patients that had previously had a negative (i.e. – no cancer) biopsy within the preceding 6 months. The subset included ~2,400 patients (1,100 placebo, 1,300 Avodart) whose urine was tested for PCA3. All patients had a biopsy done two and four years following enrollment. Results, which were presented at the American Society of Clinical Oncology (ASCO) conference in 2010, showed that;



- **Placebo arm:** 94% of urine specimens yielded sufficient RNA for PCA3 testing. 18% of these patients were biopsy positive for prostate cancer with cancer found in only 6% of men with very low PCA3 scores (i.e. <5) but in 57% of those with very high (i.e. >100) PCA3 scores. The study concluded that PCA3 was associated with a positive biopsy rate and PCA3 at year-2 was a significant predictor of year-4 biopsy outcome (this relates directly to DiagnoCure's initial commercial target indication as a predictor of repeat biopsy), while PSA was not predictive of this. Results also showed that PCA3 was significantly correlated with biopsy Gleason score – which is indicative of the aggressiveness of the cancer.

- **Avodart arm:** the goal of this was to test the effect of Avodart on PCA3. Post-Avodart urine specimens were collected prior to year-2 and year-4. Results showed that PCA3 significantly predicted biopsy outcomes at year-4 while PSA was not predictive. The study concluded that PCA3 can be used to predict biopsy outcome in men taking Avodart (i.e. - Avodart does not impair the performance of the PCA3 test)

and PCA3 outperformed PSA for prostate cancer detection and improved diagnostic accuracy when combined with PSA. As Avodart is one of the most commonly prescribed medications for the treatment of BPH and almost all men will eventually have some form of enlarged prostate in their lifetime, it was important that the Avodart arm in this trial showed PCA3 performance is not affected by the medication.

Another trial that DiagnoCure points to is a 516-patient European study which was presented at the annual European Association of Urology meeting in April 2010. The trial studied PCA3's usefulness in predicting the outcome of initial prostate biopsies and cancer aggressiveness. The study showed that patients with a PCA3 score of over 35 were almost 3x as likely to have a positive initial biopsy compared to those with a score under 35. In addition, it showed (with a cutoff PCA3 score of 20), 40% of patients could have avoided a biopsy, with only 5% of the high-grade cancers (Gleason $\leq$ 7) being missed.

PCA3 Commercialization Strategy…

The test has been available in the use in ASR format in about 13 laboratories in the U.S. (including Quest, Lab Corp of America, and Bostwick) and fully commercialized in over 40 labs in Europe. It is just beginning roll-out in Canada. FDA approval now opens up the door to explicitly market the test with a potentially compelling message to a wide audience - including directly to the patient which could help uptake in the absence of widespread insurance reimbursement. The rate of ramp in sales of the test may be determined by a number of things, many of which are out of the company's control including coverage decisions by private payers and the utility of the test in clinical practice - which are both closely related. Despite FDA approval and coverage under existing CPT codes, more robust reimbursement for the test may be a progressive process related to evidence from clinical practice that it can actually improve patient care and/or reduce unnecessary procedures and the related costs - which may take some time. One positive factor is that healthcare reform measures have put greater focus on more rapid adoption and reimbursement of tests that can save money and improve patient care - which could potentially bode well for even more favorable reimbursement of Progensa PCA3. FDA approval will also hopefully facilitate more widespread reimbursement throughout Europe (which is a country-by-country decision), lack of which has hampered sales of the test (the test launched in Europe in late 2006). Perhaps the most influential factor that may shape the near and intermediate term success of PCA3, however, will be the level of effort and resources that Gen-Probe (which was acquired by Hologic on August 1, 2012) dedicates to marketing and sales of the test. A dedicated marketing effort will be key to maximize potential sales of the test. Hologic's motivation for acquiring GPRO was to bolt on a major diagnostics business and they didn't shy away from paying a hefty premium (20%) to do so. While HOLX clearly believes there's synergies with their women's health products and GPRO's sexually transmitted disease tests, Progensa PCA3 could also be a natural fit with Hologic's major presence in cancer diagnostics and treatment. Hologic's sales force will also have a substantially larger presence than did Gen-Probe's. The acquisition makes GPRO a wholly-owned subsidiary of HOLX.

Gen-Probe currently sells the test in North America and Europe and is expected to eventually be run on Gen-Probe's fully-automated PANTHER system, a next-generation instrument complementing their older TIGRIS system. PANTHER was CE Marked in late 2010, received Health Canada approval in August 2011 and was approved by the FDA in May 2012. The system is now available in the U.S., Europe and Canada.

The recently approved FDA indication for Progensa PCA3 is "for use in conjunction with other patient information to aid in the decision for repeat biopsy in men 50 years or older who have had one or more previous negative prostate biopsies and for whom a repeat biopsy would be recommended by a urologist based on standard of care". It is contra-indicated for men with atypical small acinar proliferation (ASAP). As a negative Progensa PCA3 result is associated with a lower chance of a positive biopsy, the expected value-added by using the test is to reduce the number of unnecessary repeat biopsies.

There are approximately 1 million prostate biopsies done every year in the U.S. and a similar number done in Europe. Worldwide, about 3 million prostate biopsies are done every year. As roughly 70% of prostate biopsies are negative for cancer, based on the indicated use of the test, this means the maximum combined U.S. and European markets are roughly 1.5 million people. While we note that not all patients with initial negative biopsies will be recommended for a repeat biopsy and ASAP is present in about 5% of biopsies - both of which mean that the indicated target markets may be slightly smaller than 1.5 million, for our financial model-building and forecasting purposes we think 1.5 million is a fair gauge of the indicated target market (U.S. and Europe combined).

Based on $100/test, this represent a total indicated U.S./European (i.e. - where the test is currently available) market size of approximately $150 million. Per terms of the development and commercialization agreement with Gen-Probe, DiagnoCure will receive royalties equal to 8% of worldwide sales of the PCA3 test up to the first (cumulative) $62.5MM in sales and 16% royalties beyond $62.5MM (cumulative). Approximately $33MM in sales

have been generated to date (i.e. - ~ 1/2 to the $62.5MM mark when royalties of 16% kick in), including approximately $1.7 million in the most recent quarter (fiscal Q3 2012).

Based on an assumed $150 million total market (not including off-label use), this represents potential peak royalties to DiagnoCure of $24 million - more realistic peak penetration of the total market is probably closer to 50% (reached several years after launch) however, equal to peak royalties to DiagnoCure of $12 million. However, if also used outside of the FDA-approved indication (i.e. - off-label), especially prior to a first biopsy, this could potentially expand the market for the test to many times the size of the indicated market. DiagnoCure believes the expanded market opportunity for the test is represented by the 9 million people worldwide that are screened with a PSA test and show elevated PSA (>2.5ng/ml). Progensa PCA3 could potentially be used to with these individuals to help determine whether an initial biopsy should be done. Based on a $100/test, this represents an expanded annual market size of approximately $900 million. This market is relatively large and potentially offers significant upside to our model depending on success of Progensa PCA in penetrating this market segment as we currently model only very modest sales of the test related to use prior to first biopsy - we will update our model accordingly.

Our model assumes the $62.5 million in cumulative sales watermark (moving the royalty rate to 16%) is attained in late fiscal 2014.

Royalty revenue from Gen-Probe for the full-year 2011 (ending 10/31/2011) and the first nine months of 2012 was $605k and $451k, roughly flat compared to the year earlier periods, respectively. $605k in royalties translates to about $7.6 million in PCA3 revenues to Gen-Probe - which (assuming a total market of $150MM) equals just over 5% of the target market. Approximately 60% of Gen-Probe's PCA3 revenue currently comes from Europe - although with FDA approval, a greater percentage may now shift towards the U.S.

COLORECTAL CANCER: *Previstage GCC*

While regular screening has helped reduce the overall incidence of colon cancer since the mid-1980's, current screening programs and procedures may not be enough as the disease remains the second leading cause of cancer death in the U.S., behind only lung cancer. It is the third most commonly diagnosed cancer (behind only prostate and lung), with approximately 5% of people developing colon cancer at some point in their lifetime. The American Cancer Society estimates that about 160k Americans will be diagnosed with the disease during 2011 and almost 50k will die from it. Over 1 million Americans currently have colon cancer.

Colon cancer rarely afflicts younger people and is usually (although not always) first discovered in middle-aged or older individuals. In fact, 90% of new cases and 95% of deaths from colon cancer are with people 50 years of age or older. Although the overall incidence rate of colon cancer has been declining, as has the rates in people 50 years of age and older, the incidence rate for those younger than 50 has actually been on the rise. Despite a decline in the overall incidence of colon cancer, colon cancer screening is expected to grow by as much as 20% per year over the next 10 years, largely as a result of significant growth in the proportion of the population over the age of 50.

Treatment of colon cancer is most effective when the disease is discovered at an early stage - if found and managed at the earliest stage, five-year survival rate is over 90%. Once the cancer has reached the lymph nodes and distant organs, the rate of survival decreases significantly. At stage IV, the most severe, five-year survival rate falls to less than 10%. Regular screening is advised in order to increase the chances of finding and removing polyps before they become cancerous. Unfortunately, current screening and staging techniques fail to either find or accurately characterize the risk of most cancers at a point when they are most manageable, resulting in approximately 20%+ (~ 32k of the ~160k diagnosed in the U.S. each year) of cases advancing to stage IV and likely to be fatal. The initial step in guiding appropriate treatment is to first determine whether cancer is actually present (i.e. - **diagnoses**). The second step is to accurately **stage** the cancer (characterize the severity of the disease). The third step is to decide what is appropriate **treatment** based on the stage of the cancer. DiagnoCure believes their Previstage GCC Staging test can more accurately stage localized cancers (i.e. - stage I / II), which will in-turn, provide better treatment decisions.

DIAGNOSING COLON CANCER

Colon cancer is usually initially diagnosed during regular screening. A variety of screening methods are regularly used including:

- **Colonoscopy:** a small flexible tube with a camera on the end is used to look at the interior walls of the rectum and the entire colon. During a colonoscopy, tissue samples may be collected and polyps removed so they can be microscopically examined. It is widely agreed that colonoscopies should be done as a screening procedure at least once every 10 years beginning at the age of 50 and as a confirmatory diagnosis when the results of another screening test are positive. Weakness of colonoscopies is that they can miss small polyps and diagnosis involves a significant amount of interpretive skill - this not only increases the risk that cancerous polyps are left to grow, it also can result in unnecessary biopsies from benign polyps being mistakenly suspected of being cancerous. While smaller polyps, in general, typically present a lower risk of cancer, as small (< 1 cm) polyps account for approximately 85% of all polyps, it's imperative that screening can accurately detect these. Approximately 3.1 million colonoscopies are performed in the U.S. each year, with another ~ 4.1 million performed in Europe.

- **Flexible sigmoidoscopy:** similar to colonoscopy except sigmoidoscopy looks at only the rectum and lower part (~ final 2 feet) of the colon. It is generally recommended once every 5 years beginning at the age of 50 as a screening procedure. If suspicious areas are identified, a colonoscopy is typically ordered for supporting diagnosis and to remove any polyps. Weaknesses of flexible sigmoidoscopies are that they view only about 1/3 of the colon, they can miss small polyps, it involves subjective diagnosis and polyps can not be removed during this procedure.

- **Double-contrast barium enema:** patient receives an enema with barium sulfate, a contrast agent, followed by x-rays of the colon and rectum. The contrast agent highlights the intestines which allows the x-rays to pick up abnormal growths. If suspicious areas are identified, a colonoscopy is typically ordered for supporting diagnosis and to remove any polyps. The American Cancer Society recommends a double-contrast enema is done once ever five years beginning at the age of 50. Weaknesses of double-contrast enemas are that they can miss small polyps, false positives can be an issue and polyps can not be removed during this procedure.

- **Fecal occult blood test:** blood vessels of large polyps can be easily damaged by the passage of feces. The small amount of blood released into the feces is usually not visible by the naked eye but can be detected by a stool test. If the test comes back positive, a colonoscopy is needed to determine the cause of the bleeding. Fecal occult blood (FOC) tests are generally recommended once every year beginning at the age of 50. These guaiac-based FOC tests have been the primary screening method for colon cancer since the 1970's (and continue to be so today). Roughly 140 million FOC tests are performed worldwide every year. Weaknesses of the test are that it can miss many polyps, can produce false positives, can be influenced by diet and should be done frequently (i.e. - every year).

- **Polyp Biopsy:** if these screening methods suspect the presence of cancer, suspicious polyps are removed during colonoscopy and microscopically examined which provides a definitive diagnosis whether cancerous cells are present.

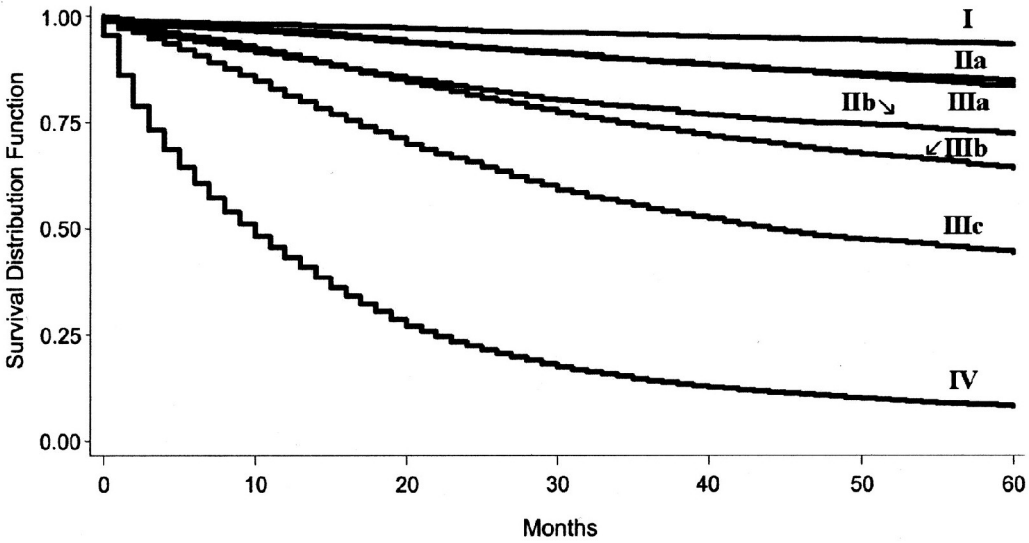
STAGING COLON CANCER

When cancer is confirmed, the next step is to stage the severity of the disease to determine whether is has spread to other parts of the body. This will determine the appropriate course of treatment. Prior to surgery, staging is typically accomplished with imaging techniques such as CT and MRI scans. CT and MRI provide pictures of the inside of the body, including the colon, and have the advantage of being non-invasive but offer only limited diagnostic capability. Colon surgery and lymph nodes removal are considered the most effective and accurate way to stage colon cancer. During surgery, tumor and lymph node tissues are removed and sent to a pathology laboratory for examination to determine the pathological stage - the stage is based on how far the cancer has grown into the wall of the intestine, whether or not it has reached nearby structures, and whether or not it has spread to the lymph nodes.

During surgery, parts of the colon and surrounding lymph nodes will be removed which will then be examined under a microscope (histopathology). While histopathology is useful for determining whether or not there are cancer cells in a tissue, it sometimes fails in accurately determining the stage of the disease (e.g. - incorrectly diagnoses stage III as stage II) and the risk of recurrence because it may not detect low levels of cancer which may be present in the lymph nodes. Presence of cancer cells in the lymph nodes, if undetected and not removed or properly treated, can

be particularly prone to progressing further to later, less treatable and more deadly stages (i.e. - stage III / IV). Prognostic risk stratification in early stage colon cancer remains a very clinically important issue due to the continuing challenge of attempting to identify those patients most likely to benefit from adjuvant chemotherapy. DiagnoCure believes their Previstage GCC test may be a more accurate staging method to address the issue of inaccurate staging and mis-diagnosis / inappropriate-treatment. Specifically, they believe it can be used as a treatment decision guide following surgery and lymph node removal by identifying patients in which likelihood of colon cancer recurrence is very low and could be safely managed without chemotherapy.

5-Year Colon Cancer Survival By TNM System



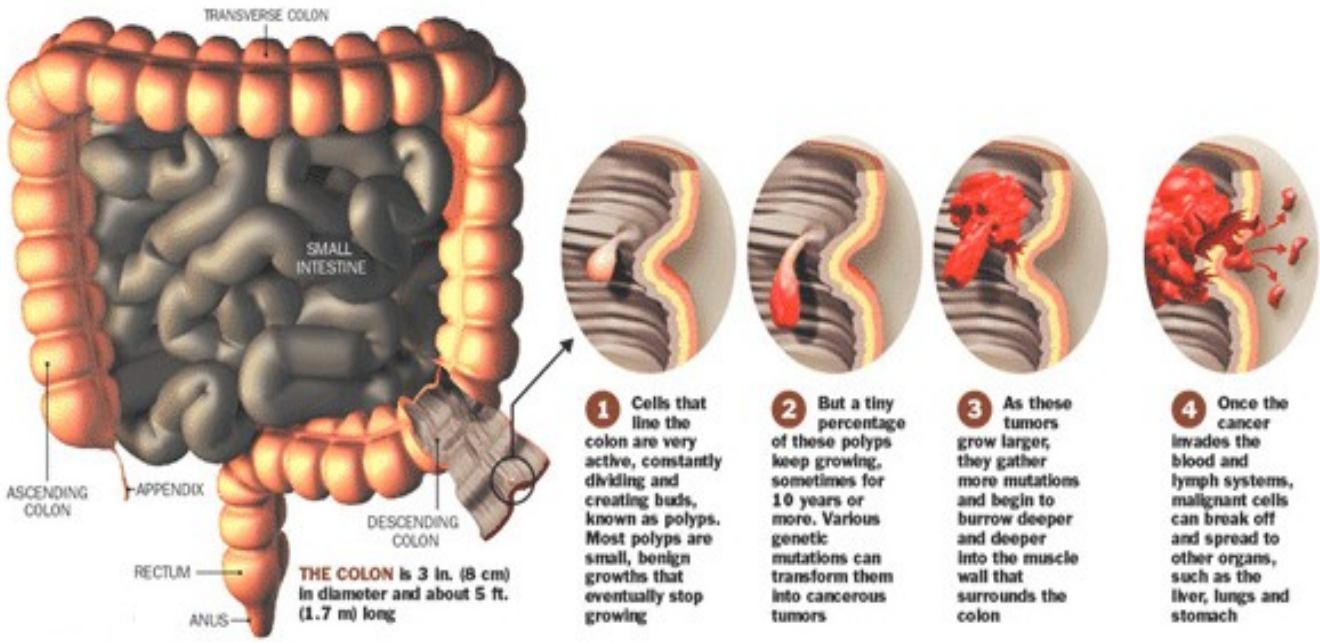
Five-year survival by the American Joint Committee on Cancer sixth edition system stages I–IV. *P* value determined by the log-rank test refers to the corresponding stage and the stage in the row above, unless otherwise indicated. All statistical tests were two-sided. * = IIIa versus IIb; † = IIa versus IIIa; ‡ = IIb versus IIIb; NS = not statistically significant.

Stage	0 mo		30 mo			60 mo		
	Survival, %	No.	Survival, %	No.	*P*	Survival, %	No.	*P*
I	100	14500	96.1	8,581	—	93.2	4514	—
IIa	100	28535	91.0	2,105	<.001	84.7	8494	<.001
IIb	100	5826	80.2	3,060	<.001*	72.2	1611	<.001*
IIIa	100	1989	91.4	1,120	NS†	83.4	551	NS†
IIIb	100	15946	77.3	7,786	<.001‡	64.1	3579	<.001‡
IIIc	100	8600	59.1	3,039	<.001	44.3	1250	<.001
IV	100	20802	17.3	1,832	<.001	8.1	432	<.001

SOURCE: http://jnci.oxfordjournals.org/content/96/19/1420/F2.expansion.html

"Staging" is used to characterize the degree of severity of the disease - in particular, how far the cancer has grown into the wall of the intestine, whether it has reached nearby structures and whether it has penetrated nearby organs or the lymph nodes. Staging, which is especially focused on the involvement of cancer in the lymph nodes, is considered the most important factor in determining patient prognosis and treatment. In colon cancer, lymph node metastasis (i.e. - how many, if any, lymph nodes have cancer in them) has been shown to be the most important prognostic characteristic. Below we have included an illustration of the general staging groups (i.e. - I through IV) as well as the detailed staging classifications (which includes sub-categories within the general groupings):

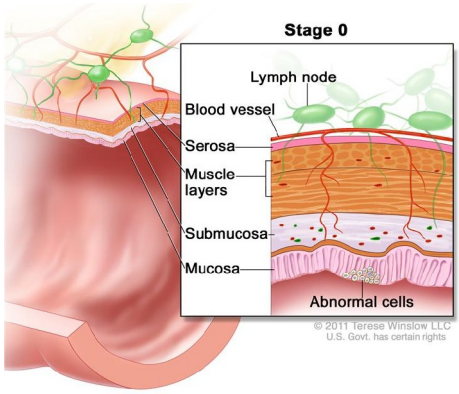
General Staging Groups of Colon Cancer



SOURCE: http://www.helpfulhealthtips.com/stages-colon-cancer/

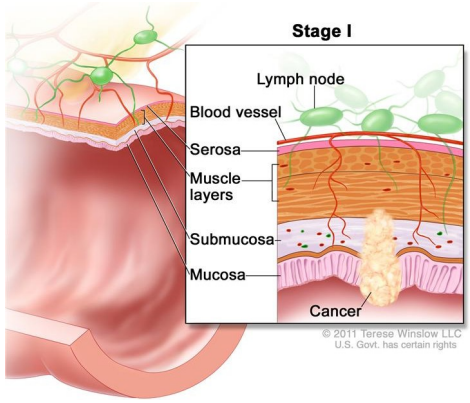
Detailed Staging of Colon Cancer

Stage 0: abnormal cells are found in the mucosa (innermost layer) of the colon and/or rectal wall. These abnormal cells may become cancer. About 10% of all new U.S. colon cancer cases are thought to be at stage 0 (= ~ 16k people).
SOURCE: National Cancer Institute

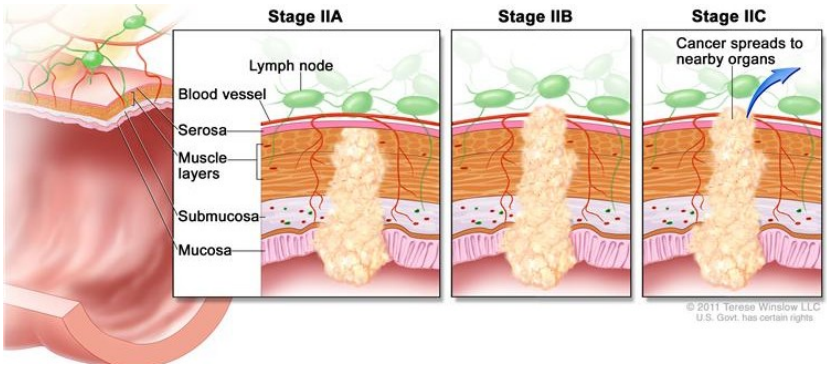


SOURCE: Terese Winslow, LLC / U.S. Gov't

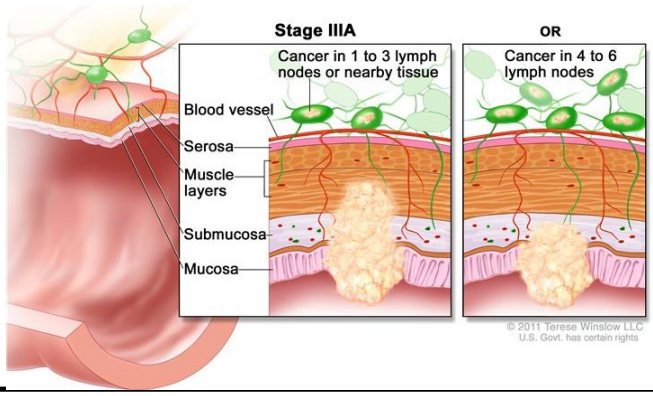
Stage I: cancer has spread from the mucosa (innermost layer) of the colon and/or rectal wall to the submucosa (layer of tissue under the mucosa) of the colon and/or rectal wall. Cancer may have spread to the muscle layer of the colon and/or rectal wall. Also called Dukes A colorectal cancer. About 15% of all new U.S. colon cancers are thought to be at stage I (= ~ 24k people).



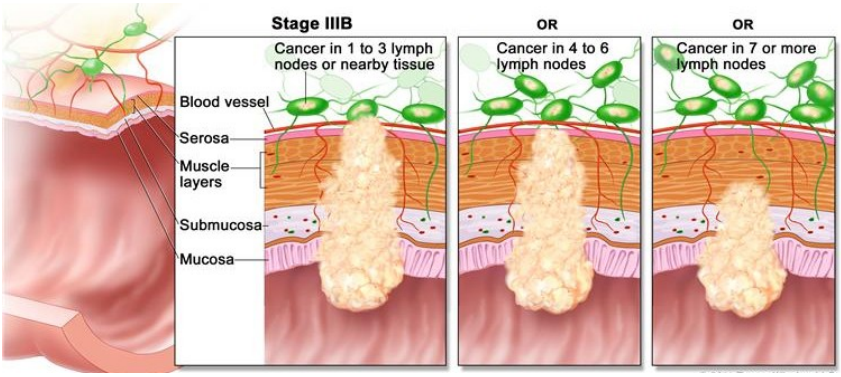
Stage II: colorectal cancer is divided into stage IIA, stage IIB, and stage IIC. In stage IIA, cancer has spread through the muscle layer of the colon and/or rectal wall to the serosa (outermost layer) of the colon and/or rectal wall. In stage IIB, cancer has spread through the serosa of the colon and/or rectal wall but has not spread to nearby organs. In stage IIC, cancer has spread through the serosa of the colon and/or rectal wall to nearby organs. Also called Dukes B colorectal cancer. About 25% of all new colon cancers are thought to be at stage II (= ~ 40k people).



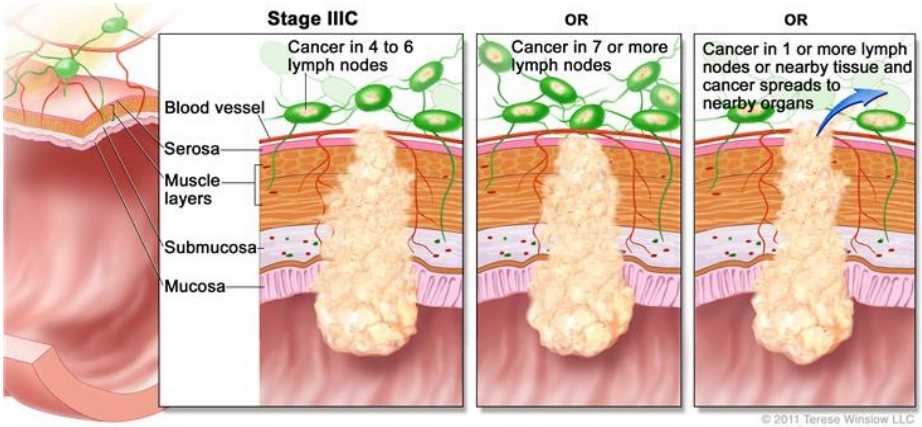
Stage III: colorectal cancer is divided into stage IIIA, stage IIIB, and stage IIIC. In stage IIIA, (1) cancer may have spread through the mucosa (innermost layer) of the colon and/or rectal wall to the submucosa (layer of tissue under the mucosa) and may have spread to the muscle layer of the colon and/or rectal wall. Cancer has spread to at least one but not more than 3 nearby lymph nodes, or cancer cells have formed in tissues near the lymph nodes; or (2) cancer has spread through the mucosa of the colon and/or rectal wall to the submucosa. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes. About 30% of all colon cancers are thought to be at stage III (= ~ 48k people).



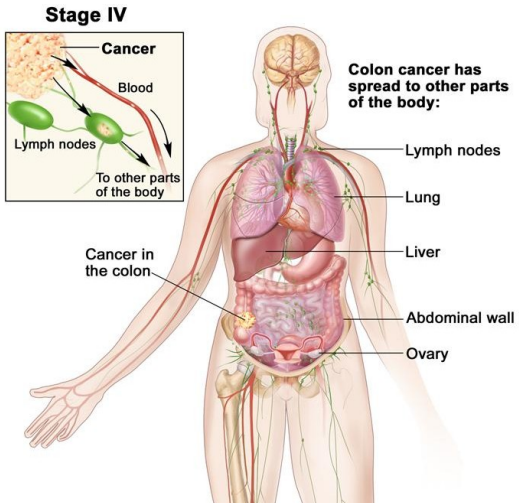
In stage IIIB, (1) cancer has spread through the muscle layer of the colon and/or rectal wall to the serosa (outermost layer) of the colon and/or rectal wall or has spread through the serosa but not to nearby organs. Cancer has spread to at least one but not more than 3 nearby lymph nodes, or cancer cells have formed in tissues near the lymph nodes; or (2) cancer has spread to the muscle layer of the colon and/or rectal wall or to the serosa of the colon and/or rectal wall. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes; or (3) cancer has spread through the mucosa of the colon and/or rectal wall to the submucosa and may have spread to the muscle layer of the colon and/or rectal wall. Cancer has spread to 7 or more nearby lymph nodes.



In stage IIIC, (1) cancer has spread through the serosa of the colon and/or rectal wall but has not spread to nearby organs. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes; or (2) cancer has spread through the muscle layer of the colon and/or rectal wall to the serosa of the colon and/or rectal wall or has spread through the serosa but has not spread to nearby organs. Cancer has spread to 7 or more nearby lymph nodes; or (3) cancer has spread through the serosa of the colon and/or rectal wall and has spread to nearby organs. Cancer has spread to one or more nearby lymph nodes, or cancer cells have formed in tissues near the lymph nodes. Also called Dukes C colorectal cancer.



Stage IV: colorectal cancer is divided into stage IVA and stage IVB. In stage IVA, cancer may have spread through the colon and/or rectal wall and may have spread to nearby organs or lymph nodes. Cancer has spread to one organ that is not near the colon and/or rectum, such as the liver, lung, or ovary, or to a distant lymph node. In stage IVB, cancer may have spread through the colon and/or rectal wall and may have spread to nearby organs or lymph nodes. Cancer has spread to more than one organ that is not near the colon and/or rectum or into the lining of the abdominal



wall. About 20% of all colon cancers are thought to be at stage IV (= ~ 32k people).

TREATING COLON CANCER

Physicians use staging to guide treatment decision-making which can involve surgery, chemotherapy, drugs and radiation. Surgery is required in almost all cases when colon cancer is found and not terminal. If the cancer is found at a very early stage, it may only involve removal of polyps (polypectomy) or local excision where a tube is put through the rectum and the cancer cut out of the colon. If the cancer is larger a partial colectomy may be done where the cancer and parts of the adjacent tissue and lymph nodes are removed - these lymph nodes are then examined for the presence of cancer cells. In cases where the cancer is more advanced and more of the colon needs to be removed, a colostomy is performed in which the colon is emptied outside of the body into a colostomy bag.

DiagnoCure believes their Previstage GCC test may be a more accurate staging method to address the issue of inaccurate staging and mis-diagnosis / inappropriate-treatment. Specifically, they believe it shows that many patients that are staged using traditional methods are underdiagnosed as current methods can miss cancer cells in lymph nodes. This can result in a Stage III patient being mis-diagnosed as Stage II. Chemotherapy has been shown to reduce the risk of cancer recurrence in Stage III patients but has much less utility in less severe (i.e. - Stage II or lower) cases. DiagnoCure / Signal Genetics point to the fact that ~20% of Stage II patients (a portion of which may actually be Stage III) have recurring cancer but only ~5% benefit from treatment as evidence that this patient population is both mis-diagnosed and treated inappropriately. The application for the test is as a guide following surgery and lymph node removal to determine the risk of cancer recurrence and to identify patients that are most likely to benefit from adjuvant chemotherapy and which ones can be safely managed without chemotherapy.

Stage 0: Recommended treatment is typically local excision and polypectomy. About 95% of Stage 0 patients have surgery. Chemotherapy is almost never administered.

Stage I: Recommended treatment is typically a resection which involves a partial colectomy and anastomosis where the colon is sewn back together. About 95% of Stage I patients have surgery. Chemotherapy is administered in less than 10% of cases (~2k Stage I patients get chemo every year in U.S.).

Stage II: Recommended treatment can include resection, anastomosis and sometimes chemotherapy. Over 95% of Stage II patients have surgery. Chemotherapy is administered in approximately 35% of cases (~15k Stage II patients get chemo every year in U.S.). Based on studies with Previstage GCC, chemotherapy may be overutilized in these patients.

Stage III: Recommended treatment can include resection, anastomosis and chemotherapy. Over 95% of Stage III patients have surgery. Chemotherapy is administered in approximately 45% of cases (~25k Stage III patients get chemo every year in U.S.).

Stage IV: Recommended treatment can include resection, anastomosis, colostomy, removal of other organs, radiation therapy, drugs, and chemotherapy. About 75% of Stage IV patients have surgery. Chemotherapy is administered in approximately 50% of cases (~20k Stage IV patients get chemo every year in U.S.).

PREVISTAGE GCC

DiagnoCure gained worldwide rights to the Guanylyl Cyclase C (GCC or GUCY2C) marker from Targeted Diagnostics & Therapeutics, Inc. in April 2007. DiagnoCure completed development of a test using the GCC marker for colon cancer and in 2008 launched the Previstage GCC Colorectal Cancer Staging test from its Pennsylvania-based CLIA lab (the lab has since been divested with the June 2011 consummation of a

development/commercialization agreement). The test is covered by 11 U.S. patents and patent applications until 2030. Previstage GCC is marketed as an adjunct to histopathology to help determine which patients that have been histologically diagnosed as stage II (i.e. - lymph node-negative for cancer) may actually have stage III colon cancer (i.e. - lymph node-positive for cancer) and which patients are more likely to experience cancer recurrence. The basis for this is that 1) lymph node metastasis (i.e. - how many, if any, lymph nodes have cancer in them) has been shown to be the most important prognostic characteristic for colon cancer and 2) up to 25% of people histologically node-negative (i.e. - stage II or earlier) experience recurrent disease.

Following surgery and lymph node removal, the Previstage GCC test analyzes the nodes for levels of GCC to determine if the levels are consistent with Stage III colon cancer. DiagnoCure / Signal Genetics note that the GCC test is able to detect cancer cells in some lymph nodes which histopathology misses because the test is 100,000 times more sensitive and uses 375 times more lymph node tissue than histopathology, which evaluates less than 1% of the node.

Guanylyl Cyclase C…

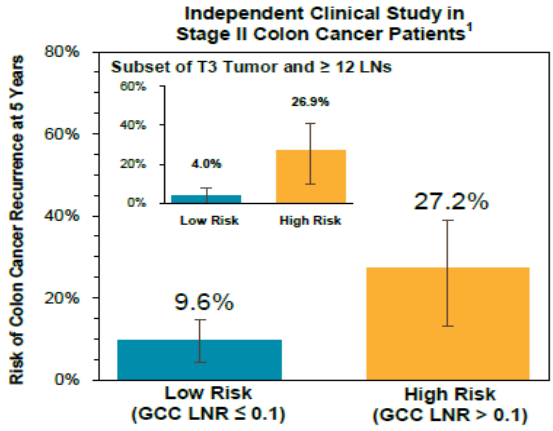
GCC (or GUCY2C) is a protein found only in the lining of the intestines which is responsible for activities such as water transport, crypt (glands in the intestine) morphology and the suppression of tumor creation. GCC should be confined to the intestines and if found in other parts of the body (such as the lymph nodes), it is an indication that cancer may be present. In addition, its expression is commonly found in metastatic colorectal cancer, indicating that this highly conserved intestinal receptor might contribute to malignant transformation by promoting tumor cell proliferation and genomic instability.

Clinical Studies…

GCC as a marker for colon cancer was initially discovered about 20 years ago by a researcher at Thomas Jefferson University. Since then over 50 peer-reviewed journal articles including studies on over 1,000 patients have been published on the relationship between GCC and colon cancer. Signal Genetics lists the catalog of articles and studies on its website. Some of the studies that DiagnoCure and Signal Genetics cite as support for use of Previstage GCC in colon cancer are:

- The initial study on GCC lymph node testing for determining the risk of colon cancer recurrence. Results of the study were published in November 2009 in an article in The Journal of the American Medical Association titled, *Association of GUCY2C Expression in Lymph Nodes With Time to Recurrence and Disease-Free Survival in pN0 Colorectal Cancer.* Primary and secondary outcomes were the time to recurrence of cancer and disease-free survival, respectively. The prospective study included 257 patients with pN0 colon cancer as determined by histology. N0 means no cancer cells detected in the lymph nodes - which is consistent with Stage II and lower. Median follow-up for all patients was 24 months and ranged from 2 - 63 months. Results showed that 1) all but 2 of the 32 patients with lymph nodes negative for GUCY2C remained disease-free at follow-up and 2) 47 of the 225 patients with lymph nodes positive for GUCY2C developed recurrent cancer and these GUCY2C-positive patients experienced an earlier time to recurrence than GUCY2C-negative patients. The authors concluded that "expression of GUCY2C in histologically negative lymph nodes appears to be independently associated with time to recurrence and disease-free survival in patients with pN0 colorectal cancer." The authors also note suggest that larger studies should be done to support these findings. Relative to the fact that only about 21% (47 of 225) GUCY2C node-positive patients recurred, the authors note that nodal metastases does not ensure recurrence but only indicates risk and this 21% recurrence rate is "nearly identical to (the rate) for patients with Stage III pN1, the lowest stage which all patients have histopathological detectable metastases" - which supports the theory (and Previstage GCC's indication) that GCC can determine which patients that have been histologically diagnosed as Stage II are actually have Stage III.

- A study published in the *Journal of Clinical Pathology* in 2010. The study compared the assessment of node-positivity by histopathology with that of GCC testing. Results showed that GCC was detected in 8% of the 560 nodes initially identified as histologically negative for cancer. In histologically-positive nodes, the GCC detection rate was between 90% and 95% (depending on how much of the node was tested for GCC). The study also showed that patients that were histologically negative but GCC positive had an earlier time to recurrence. The authors concluded that "Molecular detection of tumor cells in lymph nodes may have prognostic value in identifying



[1] *Sargent DJ, et al. Evaluation of Guanylyl Cyclase C Lymph Node Status for Colon Cancer Staging and Prognosis. Annals of Surgical Oncology; May 1, 2011.*

patients diagnosed as having pN0 colon cancer who will relapse following surgery."

- A study of the prognostic value of GCC for disease recurrence in chemotherapy-untreated Stage II colon cancer patients. The study, titled *Validating Indicators To Associate Recurrence Risk* (VITAR), includes two phases (an initial and a confirmation study). Phase 1 included 241 patients with Stage II colon cancer which were classified as either high or low risk based on the percentage of lymph nodes positive for GCC (LNR ratio). The results, presented at ASCO-GI 2011 and published online in May 2011 in the Annals of Surgical Oncology, showed LNR significantly predicted higher recurrence risk for 84 patients (34.9%) classified as high risk. The estimated five-year recurrence rates were 10% and 27% for the low and high-risk groups, respectively. DiagnoCure / Signal Genetics note that the 27% high-risk recurrence rate is comparable to that of Stage III colon cancer (which lends support to the ability of Previstage GCC to identify which patients that have been histologically diagnosed as Stage II as actually being Stage III). In a subset of 181 patients considered histologically low-risk, the phase 1 data showed the risk of five-year recurrence in these patients was 4%, indicating a "significant association between the GCC LNR and recurrence risk". Regarding the phase 1 results, the authors concluded, "Our preliminary results suggest that detection of GCC mRNA in LNs is associated with risk of disease recurrence in patients with untreated Stage II colon cancer." The phase 2 portion of VITAR, details of which have yet to be announced, will be a larger study which the companies hope will confirm the phase 1 results. Data from the phase 2 study is expected to be available sometime in 2012.

  A pooled analysis of the phase 1 study plus data on 69 additional patients was also done and presented at ASCO-GI in January 2012. Clinical endpoints included time to recurrence (TTR), overall survival (OS), and disease-free survival (DFS). The pooled analysis showed that high-risk patients had significantly higher risk of TTR, OS, and DFS. The estimated five-year recurrence rates were 11% and 32% for the low and high-risk groups, respectively. A secondary analysis of low risk patients showed "a strong relationship between GCC LNR and each endpoint remained". The authors concluded that "patients with GCC LNR high risk status have significantly poorer outcomes compared to patients with low risk status, particularly among those traditionally considered to be low risk."

Signal Genetics Agreement…

DiagnoCure had been selling their Previstage GCC test themselves but in mid-2011 they restructured operations, selling their Pennsylvania-based CLIA-certified lab and granting worldwide exclusive rights to the Previstage test to Signal Genetics. The move was driven by DiagnoCure's desire to more rapidly expand growth of the GCC test via a partner with greater distribution reach, reduce operating expenses and to restock their cash balance, providing more opportunity to advance pipeline projects.

Under the agreement, DiagnoCure received $5.7 million upfront for the lab and is to receive $5.1 million in minimum royalty payments over the first five years. In addition, the deal calls for DiagnoCure to be paid $2.5 million related to R&D projects, including for studies related to the Previstage test (including phase 2 of the VITAR study) as well as for continued development of a lung cancer test (DiagnoCure booked $82k and $1,224k in revenue in 2011 and the first nine months of 2012, respectively related to this R&D collaboration agreement). DiagnoCure received the $5.7 million upfront payment during the quarter ending 7/31/2011 (fiscal Q3). The installment/royalty piece is structured where DiagnoCure is paid a "high single digit" (the specific rate was not disclosed - we estimate ~7.5%) royalty on sales of Previstage GCC and is to receive at least $5.1 million over five years. The aggregate royalties are essentially a carve-out of a total of $5.1 million in installment payments and DiagnoCure receives any royalties above this amount as well. Royalty payments have already started - DiagnoCure did not disclose whether or not the installments are equal annual payments but did indicate that they are expected to begin around the second year (i.e. ~ mid-2013).

Despite this agreement being in place, in CUR's Q3 earnings release (9/6/12) they announced that Signal Genetics apparently closed their Pennsylvania lab (as of 7/31/12) and discontinued selling and processing the Previstage GCC test. Signal has also stopped paying DiagnoCure for sales royalties owed as well as for the R&D services contract (Signal-related A/R balance was $707k at 7/31/12). There were no specifics offered relative to what the possible reasons are that Signal took this action. DiagnoCure noted that they intend to enforce the contract with Signal but didn't offer much in the way of specifics relative to when they might know more or their plan forward for marketing/processing Previstage. They did note on the call that they will continue with R&D activities of Previstage development, including the VITAR studies, despite the current ambiguity with Signal (which was funding the Previstage R&D).

While we have no idea what the outcome of DiagnoCure's enforcement efforts will be, until there's more clarity on this situation we think it's prudent to remove all Previstage royalties as well as R&D revenue from Signal Genetics

from our model. We will again update our model, which could include re-establishing Previstage revenue and R&D from Signal, if and when it may be appropriate. As it is now, we have removed these from our model.

PIPELINE: *Lung Cancer Test / GCC Blood Test*

Lung Cancer…
DiagnoCure began research on markers for lung cancer about 10 years ago and a couple years later completed a small study with various that showed potential promise in reducing false negatives in diagnosis of lung cancer. They then mothballed the program to conserve resources and focus on the prostate and colon cancer tests. Now, with additional financial flexibility and growing revenues from the PCA3 test, the company announced that it will resume their lung cancer project which is expected to eventually include the development of a multiplex PCR-based test in bronchiole aspiration as an adjunct to cytology. As this is still in a relatively early stage, we do not currently incorporate any contribution into our financial model from a lung cancer test.

The company also has stated that it will continue to look for additional M&A and partnering deals in order to help facilitate its R&D strategy. The R&D agreement with Signal also supported development of CUR's lung cancer program. Due to the recent issue with Signal stopping payments to CUR, it's currently unclear whether the lung cancer program will continue forward or be put on hold.

Lung cancer is the number one leading cause of cancer death. In the U.S. there are approximately 220k new cases of lung cancer and 160k deaths every year. Worldwide, there are about 1.5 million new cases and 1.3 million deaths. The standard diagnostic methods for lung cancer are a bronchoscopy (thin tubular instrument inserted into the airway used to view bronchial tubes) followed by a histology or cytology test. There are an estimated 600k+ bronchoscopy procedures done every year in the U.S. and Europe, approximately 50% of which result in a positive diagnosis for lung cancer. The other 50% are either negative or inconclusive - of these negative/inconclusive results, about one-half actually have lung cancer but it is not detected - DiagnoCure views this as the potential early adopter market for their future lung cancer diagnostic test. This represents a market size of approximately 300k annual procedures and at an estimated $1k per test, a potential early adopter market worth ~$300 million combined for the U.S. and Europe. If expanded to all patients prior to bronchoscopy, the market size is about 600k patients, or roughly $600 million.

BALANCE SHEET

The balance sheet remains very healthy, with a relatively large cash balance (despite Signal Genetics' A/R balance at over $700k) and little debt. CapEx has historically been minimal. Cash burn could increase, however, as a result of the non-payment issue with Signal Genetics.

Cash
As of their most recent reporting period (7/31/2012), DiagnoCure had $6.5 million in cash, short-term, and long-term investments.

Debt
Debt (at 7/31/2012) is immaterial at $128k ($28k ST, $100k LT) and consists entirely of a loan with the landlord of the company's headquarters to finance improvements to the property.

Cash Flow
Cash flow from operations was ($1,100k) in the twelve months ending 10/31/2011 compared to ($3,596k) in 2010. Through the first six months of 2012 cash flow from operations was ($1,445k). On the Q3 call management indicated that full-year cash burn could remain within their earlier guidance of $2MM - $3MM depending on the outcome with Signal.

Preferred Stock
4.9 million shares of convertible preferred stock are outstanding and owned by Gen-Probe which acquired the shares in May 2009 as part of an amended agreement between the two parties related to FDA submission milestones for the Progensa PCA3 test. The preferred shares have a cumulative 6% dividend and are convertible into an equal number of common shares at any time at the option of the holder.

OUTLOOK / RECOMMENDATION / VALUATION

As noted, following Q3 earnings we removed all revenue contributions from Signal Genetics from our model until further notice. We have also made some downward revisions to our ramp in PCA3 royalties due mostly to the apparent delay in the U.S. roll-out. As (prior to Q3 results) we had modeled Signal-related revenue to account for 40% and 23% of total revenue in 2012 and 2013, respectively (falling to 15% and 14% of total revenue in 2014 and 2015), removing this contribution from our model results in a significant reduction in projected sales, especially in 2013 and 2014. Downward revisions to the ramp in PCA3 also results in the $62.5 million royalty-rate hurdle (moving the royalty rate paid to CUR from 8% to 16%) now being met in 2014, instead of 2013 where we had it previously. This also significantly reduces our projected revenue in 2014.

We now look for total revenue of $1.1 million in 2013 (almost all of which is PCA3 royalties), growing to $6.8 million in 2015, this is adjusted from $3.5 million in 2013 and $10.0 million in 2015. We note, however, that long-term our outlook has always been mostly driven by an elongated ramp in PCA3 royalties. As this assumption remains intact (although slightly delayed), our longer-term outlook is much less effected by our current updates.

The adjustments to our model have moved our DCF-generated valuation from $2.25/share to approximately $1.80/share. As such, we are moving our price target to $1.80/share but maintaining our Outperform rating.

FINANCIAL MODEL

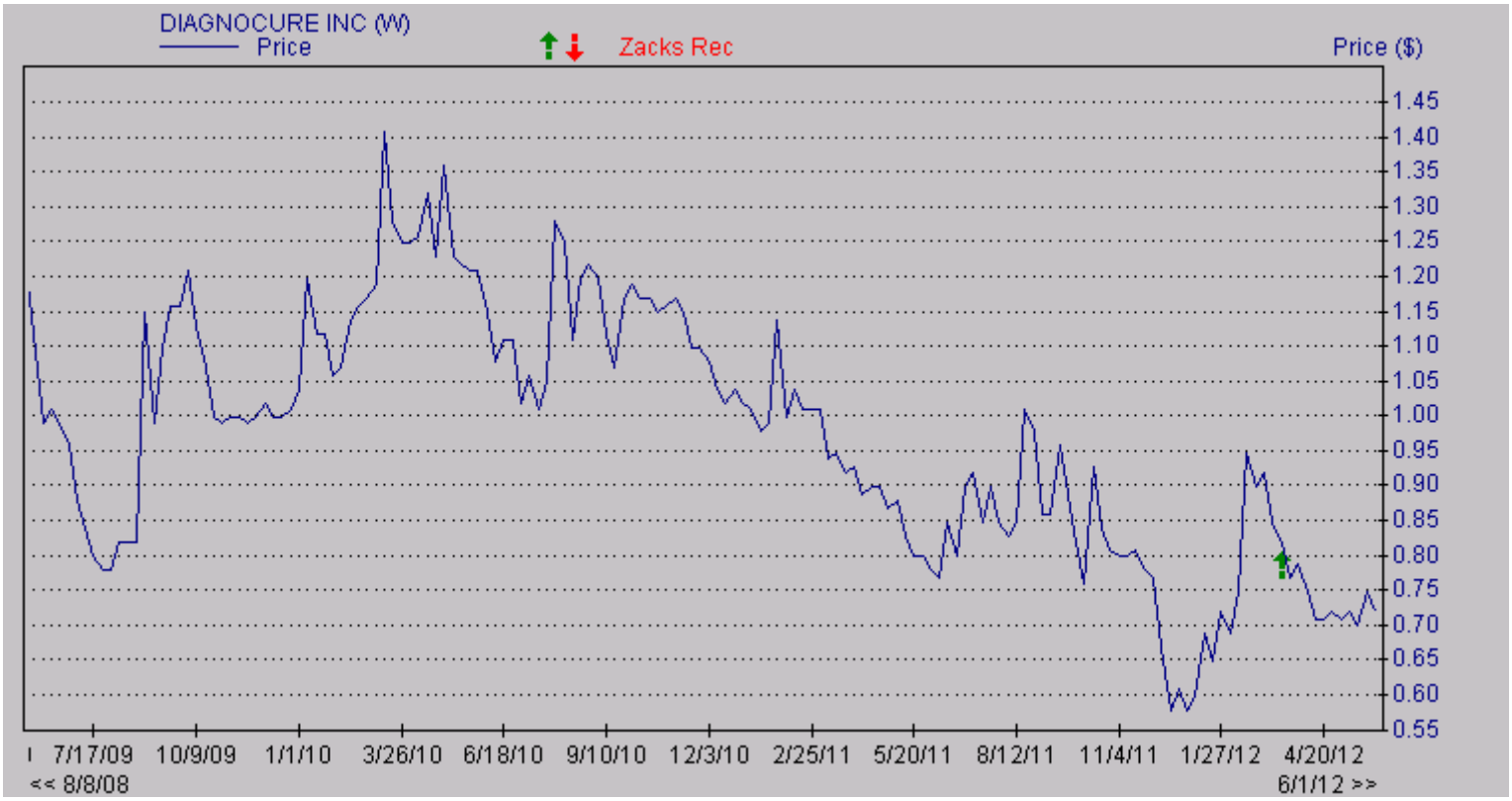
DiagnoCure Inc.

	2011 A	Q1A	Q2A	Q3A	Q4E	2012 E	2013 E	2014 E	2015 E
Royalty revenue total	**$659.1**	**$163.8**	**$173.3**	**$142.1**	**$166.0**	**$645.2**	**$1,075.0**	**$2,677.0**	**$6,779.0**
y-o-y growth	*2.2%*	*1.2%*	*-7.4%*	*-15.6%*	*16.9%*	*-2.1%*	*66.6%*	*149.0%*	*153.2%*
Total other revenue	**$585.1**	**$392.4**	**$889.9**	**$567.7**	**$0.0**	**$1,849.9**	**$0.0**	**$0.0**	**$0.0**
y-o-y growth	*-7.1%*	*120.7%*	*499.1%*	*358.5%*	*-100.0%*	*216.2%*	*-100.0%*	-	-
Revenue	$1,244.2	$556.2	$1,063.1	$709.8	$166.0	$2,495.0	$1,075.0	$2,677.0	$6,779.0
y-o-y growth	*-2.4%*	*63.8%*	*216.7%*	*143.0%*	*-52.4%*	*100.5%*	*-56.9%*	*149.0%*	*153.2%*
Cost of Goods Sold	$2.5	$0.0	$0.0	$0.0	$0.0	$0.0	$20.8	$52.8	$134.9
Gross Income	$1,241.8	$556.2	$1,063.1	$709.8	$166.0	$2,495.0	$1,054.2	$2,624.2	$6,644.1
Gross Margin	*99.8%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*98.1%*	*98.0%*	*98.0%*
R&D	$1,235.6	$802.2	$695.0	$755.8	$750.0	$3,003.0	$2,305.0	$2,500.0	$2,650.0
% R&D	*99.3%*	*144.2%*	*65.4%*	*106.5%*	*451.8%*	*120.4%*	*214.4%*	*93.4%*	*39.1%*
SG&A	$3,897.6	$599.5	$654.6	$584.3	$620.0	$2,458.4	$3,015.0	$3,902.0	$4,901.0
% SG&A	*313.2%*	*107.8%*	*61.6%*	*82.3%*	*373.5%*	*98.5%*	*280.5%*	*145.8%*	*72.3%*
Restructuring Charges	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Operating Income	($3,891.4)	($845.5)	($286.4)	($630.4)	($1,204.0)	($2,966.3)	($4,265.8)	($3,777.8)	($906.9)
Operating Margin	*-312.8%*					*-118.9%*	*-396.8%*	*-141.1%*	*-13.4%*
Financial income, net	$47.9	$22.8	$14.2	$24.3	$21.0	$82.4	$50.0	($50.0)	($100.0)
Pre-tax Income	($3,843.5)	($822.7)	($272.2)	($606.0)	($1,183.0)	($2,883.9)	($4,215.8)	($3,827.8)	($1,006.9)
Taxes (benefit)	($111.5)	($6.5)	($2.1)	$0.0	$0.0	($8.6)	$0.0	$0.0	$0.0
Tax Rate	*-9.0%*					*-0.3%*	*0.0%*	*0.0%*	*0.0%*
Net Income (continuing ops)	($3,732.0)	($816.2)	($270.1)	($606.0)	($1,183.0)	($2,875.4)	($4,215.8)	($3,827.8)	($1,006.9)
Net Margin	*-299.9%*					*-115.2%*	*-392.2%*	*-143.0%*	*-14.9%*
EPS (continuing ops)	($0.09)	($0.02)	($0.01)	($0.01)	($0.03)	($0.07)	($0.10)	($0.08)	($0.02)
YOY Growth	*-57.7%*					*-23.0%*	*43.4%*	*-13.2%*	*-74.8%*
Diluted Shares O/S	42,993	43,013	43,033	43,033	43,100	43,045	44,000	46,000	48,000

Brian Marckx, CFA

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