Initiation
Neutral

FMI, FMI US
Price: $33.99

Price Target: $38.00

Foundation Medicine

First-Mover Advantage in Pan-Cancer Market, But Reimbursement & Competitive Uncertainties Remain; Initiate at Neutral

We are initiating coverage on Foundation Medicine (FMI) with a Neutral rating and December 2014 PT of $38. The FoundationOne test for solid tumors has a clear first-mover advantage as the only commercially available pan-cancer panel that delivers comprehensive, actionable, and patient-specific information matched to treatment options. That said, uncertainty remains around reimbursement as well as the evolving competitive landscape. We see a balanced risk/reward profile given the 89% rise in the stock post IPO, and view additional visibility on payor and competitive dynamics as key to a more constructive outlook.

- **Differentiated product with first-mover advantage in an area of rapidly growing medical need.** In addition to having a more comprehensive gene signature, the FoundationOne solid tumor panel requires lower sample purity and quantity while offering a quick turnaround, compared to single/multi-marker and hotspot tests. We estimate the initial addressable market of ~1M patients will expand to ~1.5M by 2018. To date, >1,600 physicians across 25+ countries have ordered the panel, and we believe early traction should translate to a strong network effect, compounding adoption rates and building a sustainable competitive advantage. The hematologic malignancy panel launch (~130K addressable patients) in 2014 should drive further volume over time.
- **Increasing penetration rates, coupled with operating leverage, should drive margin expansion.** While we expect pricing to decline at a ~3-4% CAGR annually, increasing penetration rates (driven by oncologist education, patient awareness, and reimbursement) and launch of the hematologic panel should drive robust revenue growth (JPMe 5-year CAGR of 84%). Moreover, FMI should benefit from declining sequencing costs and economies of scale in COGS and operating costs, allowing operating margins to expand to 15% by 2018.
- **Reimbursement (in particular, Medicare) and uncertain competitive dynamics are *the* key risks.** We currently model partial Medicare reimbursement starting in 2015, while any delays in this timeline, coupled with competitor entries that could pressure pricing beyond the 3-4% annual declines that we assume, are key risks to our investment thesis.
- **Valuation appears fair with a balanced risk/reward profile.** Our December 2014 DCF-derived price target of $38 assumes a WACC of 16.5% and 0.5% terminal growth. The current price of $33.99 implies a 2015 EV/Sales multiple of 10.2x, in line with IPO comps, which allows room for only limited upside.

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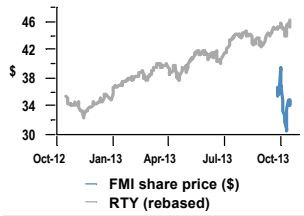
Price Performance



Foundation Medicine (FMI;FMI US)

FYE Dec	2012A	2013E	2014E	2015E
Revenue ($ mn)				
Q1 (Mar)	1	5A	10	19
Q2 (Jun)	2	6A	10	21
Q3 (Sep)	3	6	11	23
Q4 (Dec)	5	6	12	25
FY	11	23	43	88

Source: Company data, Bloomberg, J.P. Morgan estimates.

Company Data	
Price ($)	33.99
Date Of Price	18-Oct-13
52-week Range ($)	41.51-18.00
Market Cap ($ mn)	975.44
Fiscal Year End	Dec
Shares O/S (mn)	29
Price Target ($)	38.00
Price Target End Date	31-Dec-14

See page 48 for analyst certification and important disclosures.

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J.P.Morgan

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J.P.Morgan

Investment Thesis

Foundation Medicine (FMI)

Neutral

The FoundationOne cancer panel is a differentiated and value-added product in an area of significant and growing medical need

The FoundationOne test for solid tumors has a clear first-mover advantage in NGS-based cancer diagnostics as the only commercially available pan-cancer panel designed for use in routine clinical care. By delivering comprehensive, clinically actionable, and patient-specific information matched to a menu of optimal treatment options in an easy-to-use report, the product represents a value-added improvement for oncologists and the possibility of a truly personalized treatment regimen for patients over existing single-marker and hotspot tests.

By way of background, the FoundationOne panel currently assesses 236 biologically relevant cancer genes for all four classes of genomic alterations in solid tumors with >99% sensitivity and specificity, while linking them to either FDA-approved therapies or drugs in open clinical trials. In addition to a more comprehensive gene signature, the test requires lower sample purity and tissue quantity while promising a quicker turnaround time (14-17 days) as compared to single-marker and hotspot tests. We estimate the initial addressable market of ~1M solid tumor patients (stages III/IV with active metastatic disease in "challenging" disease categories) to expand to ~1.5M (all metastatic disease cases) through 2018. The launch of an analogous panel for hematologic malignancies (~130K addressable patients) in early 2014 should lead to further volume upside over time (further details to be disclosed at ASH in December).

Early traction coupled with the Interactive Cancer Explorer online portal should drive first-mover advantage coupled with a strong network effect

Since its launch in June 2012, more than 1,600 physicians across 25+ countries have already ordered the FoundationOne panel for solid tumor patients. Oncologists are traditionally risk-averse and slow adopters of new tests until they are completely convinced about accuracy and utility. We believe that FoundationOne's early traction with physicians coupled with the collaboration tools in the Interactive Cancer Explorer online portal (developed jointly with Google Ventures and already used by ~40% of referring oncologists) should translate into a strong network effect, compounding adoption rates and driving first-mover advantage for the firm. Consequently, we forecast FoundationOne's U.S. solid tumor penetration rates to increase from 0.6% in 2013 to 9.5% in 2018. For hematologic malignancies, we model U.S. penetration rates to increase from 0.6% at launch to ~11.7% in 2018.

Increasing penetration coupled with operating leverage should drive margin expansion over time

While we forecast pricing to decline at ~3-4% CAGR annually, increasing penetration rates in solid tumors and the launch of the hematologic panel should drive robust revenue growth (we forecast a 5-year CAGR of 84%). Moreover, FMI should benefit from leveraging existing lab operations and declining sequencing costs in COGS as well as significant economies of scale in operating expenses (particularly within R&D and sales force headcount), allowing operating margins to expand to ~15% by 2018.

That said, reimbursement timing (in particular, Medicare) and rapidly evolving competitive dynamics remain key risks to the investment thesis

We currently model partial Medicare reimbursement (30% coverage) starting in 2015, with full coverage expected by 2018. Any delays in this timeline would clearly have an adverse impact on FMI's revenue trajectory. Moreover, FoundationOne is the only pan-cancer panel that is commercially available on an international scale today. Over time, we expect a number of competitors to enter this highly attractive market. While FMI's first-mover advantage with oncologists should afford them some protection, we believe competitor entry will inevitably lead to a degree of price erosion over time. Consequently, we model ~3-4% annual pricing declines in our model.

Current valuation allows for only modest upside with a balanced risk/reward profile; accordingly, we launch with a Neutral rating and $38 price target

We note that the current stock price of $34 implies a 2015 EV/Sales multiple of 10.2x, a 2% premium to a set of high-growth IPO precedent comps. Driven by the high degree of product differentiation, first-mover advantage, and increasing penetration rates in a growing market, we forecast FMI to ramp revenues at a 5-year CAGR of 84%, justifying this valuation. However, significant uncertainty remains around Medicare coverage as well as timing, degree and nature of potential competition (and hence pricing power), which prevents us from seeing significant upside at current levels. Given these puts and takes, we prefer to launch with a Neutral rating on the stock. Our December 2014 DCF-derived price target of $38 assumes a CAPM-derived WACC discount rate of 16.5% and 0.5% terminal growth.

Risks to Rating and Price Target

Medicare and commercial reimbursement may not materialize in line with current expectations

Adequate reimbursement coverage is a critical factor in achieving broad clinical adoption of FoundationOne. On the commercial payor side, FMI currently uses a stacked subset of molecular pathology CPT codes to submit reimbursement claims on a case-by-case basis. The lack of a dedicated procedure code for NGS coupled with the potential for pushback from payers in the absence of a coverage decision could impact adoption as well as lead to a rise in unbilled tests. As for Medicare coverage, we currently model partial reimbursement (30% coverage) starting in 2015, with full coverage expected by 2018. Any acceleration or delay in this timeline would also have an impact on FMI's revenue and margin trajectory.

Competition and subsequent price erosion has the potential to create significant uncertainty in the business model

FoundationOne is the first pan-cancer panel commercially available on an international scale; however, over time, we think it inevitable that competitors will enter this highly attractive market. Companies such as OncoDNA and CollabRX in addition to single-marker and hotspot test manufacturers, labs, academic centers, CROs, and potentially even NGS platform suppliers like Illumina and Life could all play a disruptive role in ending FM"s strong competitive position in the market, should they be successful in commercializing a competing cancer panel. The uncertainty around the nature, degree and timing of competition along with potential price erosion is an inherent risk to FMI's business model.

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Sole dependence on Illumina for sequencers could prove a liability long-term

FMI relies on Illumina as the sole supplier of sequencers and various associated reagents, and also as sole provider of maintenance and repair services for sequencers. While it is not unique in dependence on Illumina, any disruption in the latter's operations or a contract renewal on unfavorable terms could disrupt FMI's supply chain and potentially impact both revenue and margins. That said, we note that FMI currently has a five-year supply commitment from Illumina and the terms of the existing contract prevent Illumina from adding a diagnostic surcharge in return for volume commitments, thereby partially mitigating this risk.

There is regulatory risk for current and future products

The FDA strictly regulates promotional claims that may be made about prescription drugs. If FMI is found to have improperly promoted off-label uses of therapies via the FoundationOne test report, the company may be subject to significant fines and other liability. Also, FMI processes all tests out of a single laboratory that is subject to CLIA certification. Failure to comply with CLIA and/or HIPAA regulations could have an adverse impact on the business.

Company Description

Foundation Medicine is a commercial-stage company focused on changing the way patients with cancer are treated. The FoundationOne test for solid tumors is the only commercially available, comprehensive molecular information product designed for use in routine clinical care. Its proprietary molecular information platform generates actionable genomic information about a patient's individual disease, enabling physicians to personalize and optimize treatments in clinical practice and enabling biopharmaceutical companies to develop targeted oncology therapies more effectively. The company also plans to launch an analogous pan-cancer panel for hematologic malignancies in early 2014. Foundation Medicine is headquartered in Cambridge, Massachusetts, has 142 full-time employees and is listed on the NASDAQ under the ticker FMI.

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Corporate Overview

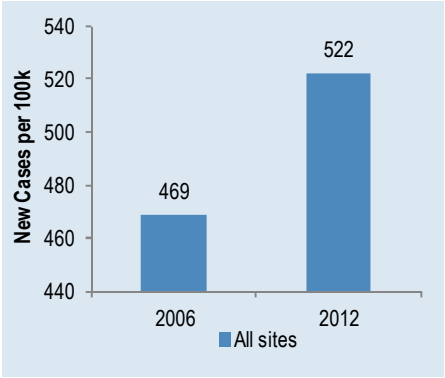
Foundation Medicine was founded in November 2009. Prior to the IPO, the company was primarily funded by venture capital investors, including Third Rock, KPCB, Google Ventures, Gates Ventures and Lab Corp, which now own 53% of shares outstanding, along with management, which holds 4.5%, following the offering. Headquartered in Cambridge, MA, Foundation has 142 employees of whom 120 are focused on R&D. The company listed on the NASDAQ under the ticker FMI in an IPO of 6.8M shares at $18 per share on September 30, 2013, for which J.P. Morgan was the joint book-runner.

FMI is focused on fundamentally changing the way patients with cancer are treated via usage of proprietary pan-cancer panel called FoundationOne – the only commercially available comprehensive molecular information product designed for use in the routine care of patients with cancer. Since its launch in June 2012, FoundationOne has experienced rapid adoption with more than 1,600 physicians from large academic centers and community-based practices across more than 25 countries ordering the test for patients.

Background on cancer panels

Cancer – a class of diseases characterized by uncontrolled cell growth – is a result of alterations to DNA and therefore disruption to the genes and proteins regulating cell division. It remains a critical area of unmet medical need, with the American Cancer Society (ACS) estimating more than 13M patients in the United States and 1.6M people newly diagnosed with the disease in 2012. Incidence rates in the U.S. have risen from 469 per 100,000 in 2006 to 522 per 100,000 in 2012 (Figure 1). Globally, the World Health Organization predicts 16M new cancer cases and 10M cancer deaths in 2020.

Figure 1: In Line with Global Incidence Rates, U.S. Cancer Incidence Has Risen Significantly Since 2006



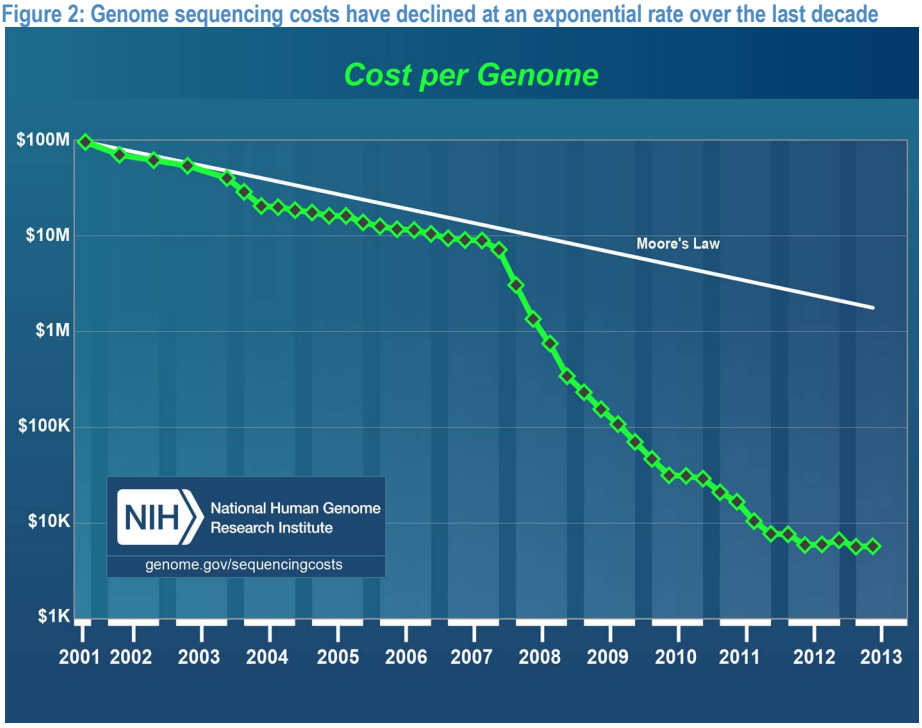
Source: J.P. Morgan.

The diagnosis of cancer is complex and multidimensional, with oncologists ordering multiple tests in order to better understand the genomic alterations that are driving cancer growth in patients. While surgery is often the first line of therapy, many patients require therapeutic intervention in the form of radiation and chemotherapy as well. However, these interventions come with significant side effects with the potential to dramatically reduce patient quality of life. While the high doses of

radiation required to kill cancer cells often cause damage to healthy cells in the treatment area, cytotoxic chemotherapy drugs often have a limited, inconsistent effect in some patients and can lead to severe toxic side effects due to the indiscriminate destruction of healthy cells involved in critical biological functions.

As a result, oncologists are increasingly using a personalized and precision medicine approach to cancer, via use of therapeutics based on the specific genomic alterations in the patient that are driving cancer growth, rather than a "one-size-fits-all" location-based approach. Moreover, according to the National Comprehensive Cancer Network (NCCN), 50-75% of cancer therapies are used off-label, often by physicians struggling to treat a patient's disease after it fails to respond to initial treatment regimens. This shift, enabled by advances in science and a rapid decline in sequencing costs at a faster rate than Moore's Law (see Figure 2), is also reflected in biopharma development, with more than 40 approved targeted oncology therapies on the market and 950 unique clinical trials currently underway (see Figure 3).

Figure 2: Genome sequencing costs have declined at an exponential rate over the last decade



Source: NIH (National Human Genome Research Institute).

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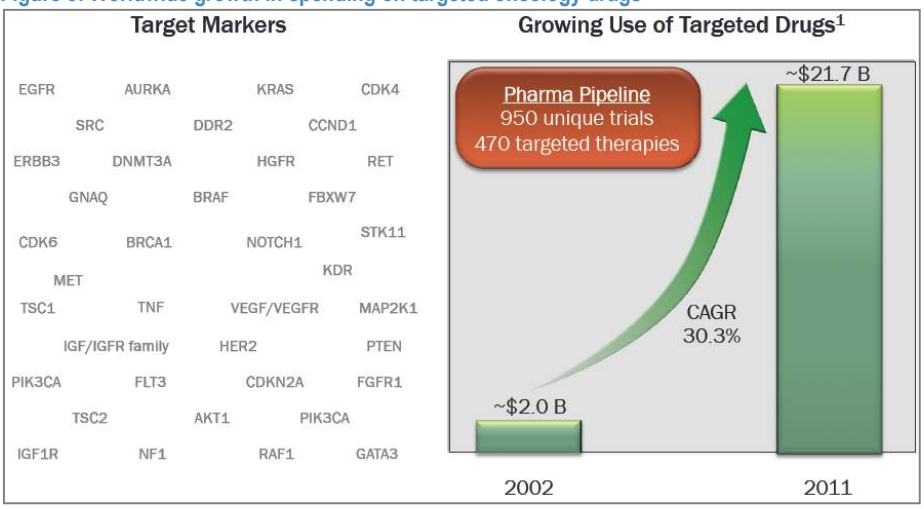
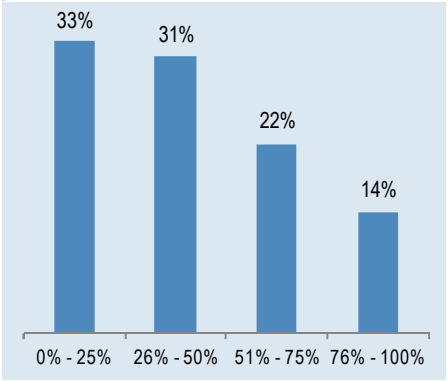
Figure 3: Worldwide growth in spending on targeted oncology drugs



Source: Tufts Center for the Study of Drug Development, Company data.

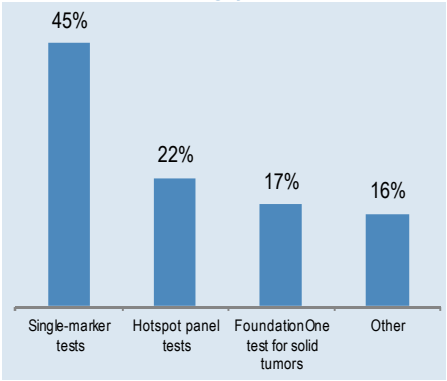
While clearly a blessing for the patient, this rapid proliferation in molecular information about cancer and the increasing array or targeted drugs has made the treatment decision process much more complicated for oncologists, who have increased dependence on molecular diagnostic tests as a consequence. Our proprietary survey of 51 oncologists alluded to this trend, indicating that over a third of respondents chose to order a genetic test for more than 50% of solid tumor patients (Figure 4).

Figure 4: For what % of your solid tumor cancer patients do you choose to order a genetic test? (n = 51)



Source: J.P. Morgan.

Figure 5: Of the solid tumor patients for whom you order a genetic test, what percentage are for each of the following types? (n = 51)



Source: J.P. Morgan.

Molecular diagnostic tests detect specific sequences in DNA or RNA that are associated with a particular disease. Today, most widely available molecular diagnostic cancer tests are single-marker and hotspot panel tests, with almost 70% of all genetic tests ordered by our surveyed oncologists falling into one of these categories (Figure 5). These tests are designed to target and capture only one or, at best, a limited number of the most common, well-known gene alterations. There are, however, numerous genetic mutations linked to different types of hereditary cancer, and single-marker and hotspot tests are unable to detect copy number alterations and often miss short insertions and deletions. Genetic testing using next-generation

sequencing (NGS) technology allows for the analysis of multiple genes at one time or "panel testing" without being susceptible to these drawbacks. Therein lies the opportunity for Foundation Medicine, via the creation of a single molecular information platform that can assess a solid tumor or hematologic malignancy for the presence of relevant genomic alterations and provide actionable assistance in matching those alterations with available therapeutic alternatives and open clinical trials.

FoundationOne for solid tumors

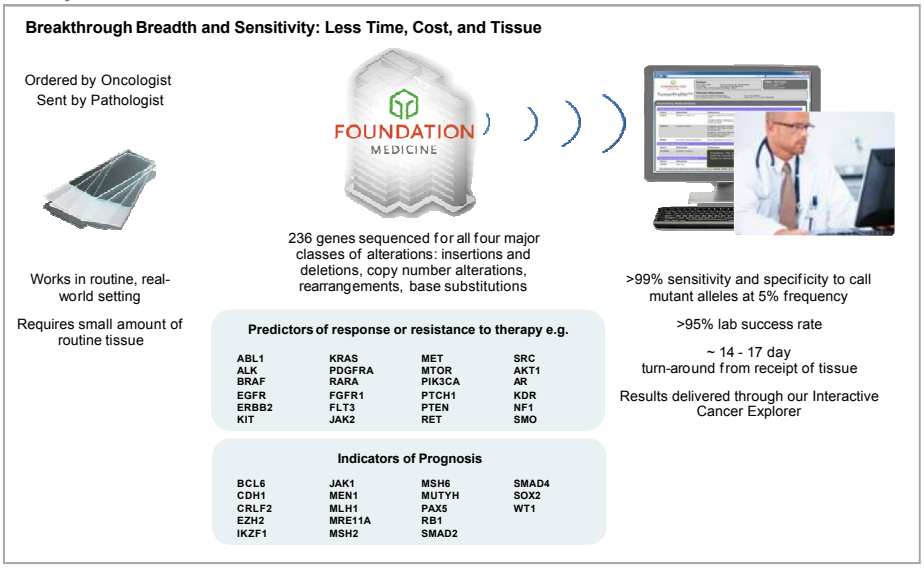
The FoundationOne solid tumor test reports on the genes known to be altered in human solid tumors that are validated targets for therapy or are unambiguous drivers of cancer. This set of genes has been selected based upon the advice of an international group of key opinion leaders in oncology and cancer biology, coupled with input offered by in-house biopharmaceutical partners and an extensive review of the relevant literature. The current version of FoundationOne interrogates 236 genes (representing 3,734 exons) across all four classes of genomic alterations, as well as 47 introns of 19 genes commonly involved in rearrangements. The test includes those genes implicated in cancers for which a targeted therapy is FDA-approved and for which targeted therapies are in current or near-term clinical development. Most importantly, FoundationOne is periodically updated to reflect new knowledge about cancer biology, including newly relevant cancer genes along with newly available targeted therapeutics and clinical trials. Below, we provide a brief overview of the test workflow, from sample collection to delivery of the results.

FoundationOne test workflow

- **Remove and ship specimen tissue:** The physician (or staff) can complete a FoundationOne order form by hand, electronically, or via electronic medical records technology. The doctor will take a small amount of tissue from the tumor, package and ship the specimen overnight in a pre-supplied FMI kit.
- **Specimen preparation:** Once the specimen arrives at the CLIA-certified FMI laboratory in Cambridge, preliminary information is collected and entered into the information management system and the specimen is prepared for testing. The first preparation step is a pathology review, assessing the sample's suitability for testing. FMI is able to extract and process samples for testing using a very small amount of DNA (sample minimum of 40 microns in thickness and at least 20% of tumor cells) with ~97% of all specimens received meeting these requirements. After the pathology review and DNA extraction, the DNA is broken down into small fragments using standard and molecular biology techniques to create a complex mixture of DNA molecules. The DNA fragments are separated from the relevant cancer genes through a proprietary hybrid capture process and are then ready for sequencing which determines where the critical genomic alterations driving the patient's cancer exist.
- **Sequencing:** The content of each DNA molecule is determined through the sequencing process during which sequences of nucleotides are identified in every position of every DNA molecule. Using modifications to the process (which uses Illumina's next-gen sequencing platform), FMI maximizes throughput, efficiency and quality, enabling detection of genomic alterations that may be present in as few as 1% of all cells tested.

- **Data analysis:** After sequencing, the data is entered into proprietary computational algorithms that identify all genomic alterations present in the sample. The sample is analyzed for sequence quality and anything below a certain quality threshold is removed. Next the algorithms carefully align every DNA sequence with a known reference sequence and look for differences between the sequenced DNA and the reference. These differences represent potential genomic alterations. Since some genomic alterations that are detected are not responsible for driving the cancer, the alterations are further distilled to a point where the algorithms compute a list of only those alterations where there is a therapy, FDA-approved drug or available clinical trial, for which the patient is eligible based on the genomic characteristics of the tumor sample. The output of the algorithms is then checked by a qualified computational biologist for accuracy.
- **Report results:** Finally, a team of trained scientists synthesize the information regarding the identified alterations into actionable information, and produce and review the patient result report. The report contains information about the alterations identified and therapeutic options available based on the genomic findings. The report is returned to the ordering physician, who can then use the data in conjunction with a clinical assessment to inform his or her treatment decisions. The entire FoundationOne process typically takes 14 to 17 days from receipt of the sample. A sample workflow (Figure 6) and patient report (Figure 7) are pictured below. Early feedback from our oncologist survey suggests that ~40% of physicians tend to be generally satisfied with the presentation of the report, with the majority of the rest preferring more data or an even more simplified presentation (see Figure 8).

Figure 6: The FoundationOne workflow promises a 14- to 17-day from sample collection to report delivery



Source: Company data.

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Figure 7: A sample FoundationOne test report

FOUNDATIONONE

Patient Name

Report Date

Diagnosis
Colon adenocarcinoma (CRC)

Date of Birth	Not Given	Client	Sample Case	Specimen Received	Not Given
Gender	Male	Physician	Soper, Chad	Specimen Site	Lung
FMI Case #	TRFAAAAAI	Additional Recipient	Not Given	Specimen Date	Not Given
Medical Record #		FMI Client #	-1	Specimen Type	Block
Block ID	SAMPLE	Pathologist	Not Given		

ABOUT THE TEST:
FoundationOne™ is a next-generation sequencing (NGS) based assay which identifies genomic alterations within hundreds of cancer-related genes.

PATIENT RESULTS

3 genomic alterations pg - 2
3 therapies associated with potential clinical benefit pg - 3
0 therapies associated with lack of response pg - 3
2 clinical trials pg - 4

TUMOR TYPE: COLON ADENOCARCINOMA (CRC)

Genomic Alterations Identified
ERBB2 amplification
APC E1309*
TP53 R282W

Additional Disease-relevant Genes with No Reportable Alterations Detected
BRAF
KRAS

THERAPEUTIC IMPLICATIONS

Genomic Alterations Detected	FDA Approved Therapies (in patient's tumor type)	FDA Approved Therapies (in another tumor type)	Potential Clinical Trials
ERBB2 amplification	None	Lapatinib Pertuzumab Trastuzumab	Yes, see clinical trials section
APC E1309*	None	None	None
TP53 R282W	None	None	None

Note: Genomic alterations detected may be associated with activity of certain FDA approved drugs; however, the agents listed in this report may have varied clinical evidence in the patient's tumor type. Neither the therapeutic agents nor the trials identified are ranked in order of potential or predicted efficacy for this patient, nor are they ranked in order of level of evidence for this patient's tumor type.

Source: Company data.

Figure 8: 40% of surveyed oncologists were happy with the presentation of the FoundationOne test report

What improvements would you like to see in the content, presentation and ease of use of the FoundationOne test report?
So far none - report is pretty straight forward. May on discussion of clinical trials - what is nearest center offering the trials
Reports often note mutations for which there are no data for the use of therapeutics targeting those mutations making the data of limited value
Evidence based literature regarding utility of such treatment decisions.
Would like to receive more of the raw data
Executive summary of results
The report is clear, the data is inherently complex and requires time to interpret.
Video format
More detail in clinical trial part of the report to why the patient may benefit from the trials presented on the page based on the genomic profile
Have a summary of positive findings first, and then the detailed report to follow
Need to simplify the reports. Too much detail and statistics and numbers blurs the impact of the conclusions
I think the last time I ordered it, there were not actionable results. It detects many changes but it is not clear how many are driver changes
Clear communication to patient of their cost
Faster turn around time
More comprehensive incorporation of important mutations for hematologic malignancies
Strong tablet interface so docs can keep in lab coat pockets and have easy access to patient genetics on the go

Note: These survey comments have been reproduced in their original form and have not been edited. Survey comments should not be attributed to J.P. Morgan and are not representative of its views.

Source: J.P. Morgan.

Interactive Cancer Explorer – FMI's online portal for test results

More than 40% of the oncologists using FoundationOne choose to receive the test report via the Interactive Cancer Explorer, an online portal that FMI developed jointly with Google Ventures that launched in December 2012. Interactive Cancer Explorer allows physicians to access the key genomic information identified by FoundationOne in a practice-friendly interface that links directly into publicly available databases like PubMed and clinicaltrials.gov. The portal also provides links and references to journal articles and clinical trial information relevant to a patient's identified genomic alterations. The company plans to link additional public and private data sources like the Cancer Genome Atlas and the Cancer Genome Project to Interactive Cancer Explorer. By making information more readily accessible to physicians, Interactive Cancer Explorer makes it easier to bring new, relevant information to each patient's treatment plan. The portal will soon be accessible through mobile applications in addition to the existing web interface.

Starting in 2014, Interactive Cancer Explorer will allow oncologists to share genomic and treatment data with each other, creating a strong network effect while leading to more actionable information for patients. We believe this upcoming functionality will afford FMI a distinct advantage in driving adoption rates for FoundationOne, as it encourages and facilitates physicians in integrating the test results into routine clinical practice while promoting an exchange of best practices and novel successful interventions.

In line with our view on the importance of ICE in driving adoption, feedback from our oncologist survey suggests a predominantly positive response to the ICE portal. Over 50% of surveyed physicians stated that they are satisfied with the portal, with the majority of the rest either yet to use the portal or recommending an interactive feature that would allow them to communicate with fellow users (see Figure 9).

Figure 9: Doctors use ICE and are looking forward to updates

What improvements would you like to see in the content, presentation and ease of use of the Interactive Cancer
I like the links to clinical trial enrollment and Pubmed, but it seems that the web page is a little cluttered.
Would like more disease specific info
Update old reports with copy number and VUS.
None at this point
More cartoons / animations
Patient specific offerings
Highlight and bold the key areas
Evidence based data coupled with case reports and examples of treatment algorithms
The online database of other clinicians' data and outcomes will be helpful
Perhaps ability to chat with a FM scientist
I would like it to be available on an iPhone app
I found that the portal is somewhat hard to read on small tablets and smartphones that are in use at our hospital.
Need to have information in the Explorer available more widely to colleagues, even to physicians that not enrolled with the company.

Note: These survey comments have been reproduced in their original form and have not been edited. Survey comments should not be attributed to J.P. Morgan and are not representative of its views.

Source: J.P. Morgan.

Comparison to existing cancer panels and potential competition

The following table (Figure 10) summarizes the uses and inherent limitations of the most commonly ordered, widely available cancer tests, including single-marker and hotspot panel tests.

Figure 10: Uses and inherent limitations to single-marker and hotspot panel tests

Names	Uses	Limitations
Polymerase chain reaction, or PCR based tests, a technology used for amplifying DNA sequences	Enable the detection of short fragment DNA or RNA sequences.	Single-gene tests for specific and limited number of mutations. Only identify known and select base substitutions and short insertions or deletions, such as BRAF V600E.
Immunohistochemical , or IHC, stains, a process used to diagnose abnormal cells	Utilize antibody proteins to identify certain antigens that are unique to various types of cancer.	Only identify the expressed presence of a known and select protein or specific protein marker, such as HER2, related to a particular genomic alteration.
FISH-based DNA probes, a mechanism for detecting DNA sequences through the use of fluorescent technology	Reveal specific genomic abnormalities, including insertion/deletions and rearrangements.	Only detect select gene rearrangements, such as EML4-ALK. Difficult to test for multiple markers.

Source: Company data.

The key disadvantages of current single-marker and hotspot panel tests relative to the FoundationOne pan-cancer panel are outlined below.

- **Analysis of only a subset of relevant cancer causing genes:** Most molecular diagnostic tests are capable of identifying only a single or limited number of genomic markers, thus addressing a subset of the four classes of genomic alterations found in cancers.
- **Tissue amount and quality restrictions:** Many clinical tumor samples come from standard or needle biopsies that yield very small tissue amounts with a low concentration of tumor cells, limiting the number of diagnostic tests a physician

can order, and hence increasing the likelihood of potential failure to identify genomic alterations and ultimately therapeutic options for the patient.

- **Difficult/expensive to integrate multiple tests into routine clinical practice:** Limited biopsy tissue may force the physician to order only a subset of desired diagnostic tests, often one at a time. Running multiple disjointed tests can pose logistical challenges, be very expensive, and make it difficult for the physician to interpret the information and match the genomic information provided by multiple tests with targeted therapies for the patient.

FMI's lab process has allowed them to successfully deliver results in 97% of all clinical tumor samples it has analyzed to date, despite tissue amount and quality limitations, while promising a 14- to 17-day turnaround. Moreover, the test was found to be highly sensitive (>99%) in identifying alterations even in samples in the validation study where the concentration of cancer cells was very low. Actionable alterations are defined as those for which an FDA-approved targeted therapy exists in either the patient's tumor type or another tumor type, or an open clinical trial exists for which the alteration confers trial eligibility. In a survey of 3,936 clinical specimens, FMI stated that due to the test's higher sensitivity and specificity, it found at least one "actionable alteration" in 82% of cases, versus a maximum of 31% by running four other commercially available multi-gene panels plus two common hotspot tests (HER2 and EML4-ALK).

These results suggest that FoundationOne is better able to identify actionable alterations and aid the doctor in finding targeted therapies than other commercially available molecular tests because it interrogates significantly more cancer-related genes than other molecular diagnostic tests, and examines the entire coding of genes enabling a broader interrogation of all classes of potential genomic alterations.

In line with this data, our surveyed oncologists listed the broader gene signature, actionability of information, and test turnaround time as the 3 most important reasons for ordering the FoundationOne test (see Figure 11). As compared to pan-cancer panels offered by academic centers, respondents valued the fact that detected mutations were linked to treatment options in an easy-to-use format (Figure 12).

On the other hand, familiarity and pricing were listed as the most important reasons for ordering a test other than FoundationOne – reaffirming the importance of "physician inertia" and insurance coverage in driving adoption rates in cancer diagnostics (Figure 13).

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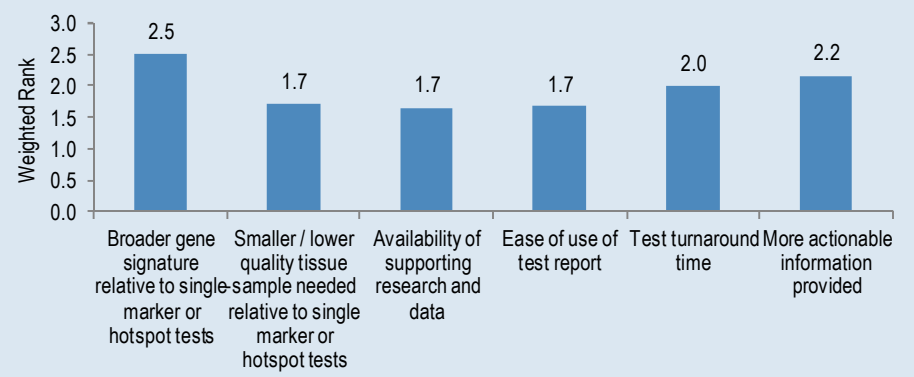
Figure 11: For those patients for whom you order FoundationOne, please rank your TOP THREE reasons for doing so in order of importance (n=51)



Source: J.P. Morgan.

Figure 12: What is the advantage to an oncologist of using FoundationOne versus an academic center to run a pan-cancer panel? (n=51)

What is the advantage to an oncologist of using FoundationOne versus an academic center to run a pan-cancer p
Providing treatment options and clinical trial results is more beneficial than just a result reporting gene mutations.
There is none
FoundationOne is more cost efficient
Insurance reimbursement
Precision data driven results for personalized care
Foundation requires less infrastructure
There is more information from one sample than a single/small panel available
Quicker turnaround, pricing, and specificity
FoundationOne may have a more extensive panel and testing that is not available in-house
Ease of access and extensive testing
Possibly better reporting and/or correlation of results with available clinical trials.
More information, may provide novel mutations, resistance. Can be used retrospective to look back at the time of progression, etc
Customer service generally tends to be better, reporting is less esoteric
Reliability and timeliness
Panel of actionable genes
Academic centers often take a little longer to provide results and occasionally aren't reported with a clinical context.
Personalized Results
They use NGS to interrogate hundreds of cancer related genes from routine tumor samples. Test results are fast-usually 14 days.
Easy to order, quick turn around and assistant on insurance and billing issues

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Source: J.P. Morgan.

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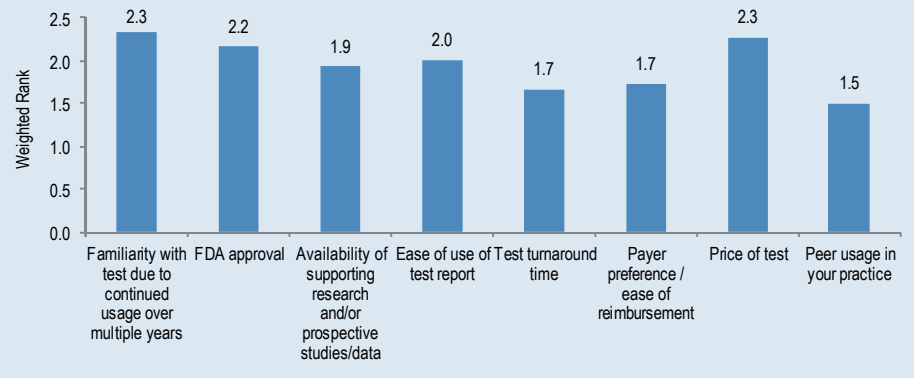
Figure 13: For those patients for whom you order a genetic test other than FoundationOne, please rank your TOP THREE reasons for doing so in order of importance (n=51)



Source: J.P. Morgan.

While the FoundationOne panel has clear advantages over existing cancer diagnostic tests, we remain cognizant of the fact that competition is likely to emerge over the course of the next several years.

More specifically, single-marker and hotspot test manufacturers will likely be forced to offer pan-cancer panels as a result of price erosion in existing product lines. When they do choose to enter the market, they will face an entrenched incumbent in Foundation Medicine, and will likely offer tests at a discount to prevailing prices. The increasing pricing pressure on Myriad Genetics' BRCA panel after the SCOTUS decision due to competitor entry by Ambry, Gene-by-Gene and most recently Quest Diagnostics is one such example of this dynamic. Smaller firms such as OncoDNA and CollabRX already offer a very similar product to the FoundationOne test. While these companies currently lack the commercial scale and early traction that FMI has achieved, they (in a potential alliance with larger partners) could become viable competitors over time. Finally, labs, academic centers, CROs, and potentially even NGS platform suppliers like Illumina and Life could all play a potentially disruptive role in ending FMI's strong competitive position in the market. Both Lab Corp and Quest, on most recent earnings calls, announced and/or reinforced intention to enter into the cancer panel market (Figure 15). While incremental competition in the post-diagnosis therapeutic panel market from scale players would obviously be a negative for Foundation, greater overall test volumes would likely act as a catalyst in driving reimbursement decisions from commercial players as well as Medicare.

Figure 14: There are numerous firms that could potentially choose to evolve or enter into the pan-cancer panel market in the future

Cancer Diagnostics Competitve Landscape									
Existing and Potential Competitors	Single-marker & Hotspot Panel	NanoString	Agendia	Fluidigm	Genomic Health	GE Healthcare	Genoptix (Novartis)	Sividon Diagnostics	RainDance
		Illumina	Life Technologies	Bio-Reference [GeneDx]	23andMe	bioMeriéux	Qiagen (Ingenuity Systems)	Natera	Ambry Genetics
	Pan-cancer	Oncodna	CollabRx	GENEWIZ	Myriad Genetics	InVitae			
	CROs	Quintiles	Covance	Charles River Labs					
	NGS	Illumina	Life Technologies	Affymetrix	Roche				
	Dx	Quest Diagnositcs	Lab Corp.	Luminex	Gene By Gene				

Source: J.P. Morgan.

Figure 15: Recent commentary from both Lab Corp and Quest has reflected growing interest in the cancer diagnostics space

Topic	Recent commentary from Quest and Lab Corp on cancer panels
On BRCA testing	**Lab Corp:** "As we stated last quarter **we will enter the BRCA testing market** and we are laying the groundwork and building the database **to support the launch of this during the fourth quarter**." **Quest:** "We're very **excited to introduce BRCAvantage**, a new choice of BRCA testing that's intended to **significantly broaden patient and provider access** to testing for BRCA gene mutations associated with increased risk of inherited breast and ovarian cancers. Quest BRCAvantage is **based upon next-gen sequencing technology** and expertise in cancer, genetics and women's health matched by none and a rich service approach designed to better healthcare experience for the patient and the clinician. Our laboratory professional services team **continues to expand this pipeline for hospitals and integrated delivery networks** that are interested in working with us **to improve outcomes and reduce costs**."
On cancer panels	**Lab Corp:** "In addition to our next-generation sequencing for familial cardiac diseases and three clinical development of new HIV in viral drugs we are pleased to announce we will **offer our first multi-gene oncology panel on the platform later this year**. The panel improve the sensitivity and detection rates for mutations in cancer **assessing more than 2700 mutations within 50 genes** and tumor suppressor genes. The panel has utility mainly **in patients with solid tumors** but includes some specific applications in leukemia and lymphoma **which can help guide physicians and their treatment decisions** for these cancers. **Over the next several quarters**, we will offer **more comprehensive oncology panels** that include additional content **covering liquid tumors, gene rearrangements and prognostic and predictive markers**. We will also offer additional targeted tests such as a test for Lynch Syndrome which is an inherited genetic condition associated with increased risk of colorectal cancer."
Companion diagnostics	**Lab Corp:** "Important components to our NGS oncology offerings are **two companion diagnostic tests associated with new cancer drugs.**"
Pricing/payor dynamic	**Lab Corp:** "I **don't think we're prepared to talk about pricing at this point** because obviously that is a discussion with payors. I certainly think there is increasing evidence about the value of assessing tumors to next-generation sequencing methodology. I think that our outstanding team...have **focused on** not what is the broadest spectrum we could test (on) what (are) the **key genes** that need to be looked at and the key items within the tumor **that need to be evaluated** and in that context, as I mentioned, **selected these 50 genes to look at 2700 important and powerful mutations**. So, this will be our initial launch. We will continue to add content and services."
Competitive positioning	**Lab Corp:** "Again, I go back to our **genetic counselors,** I go back to the **number of tests we performed and the size of the database** we bring to bear and I think Lab Corp has a very important role to play in better diagnosis and treatment of complex cancer. I think these are complex and sophisticated tests. They require a high degree of specialization. So I think the **centralized scale reference laboratory will be the obvious place to perform them**. I also think that the **ability to interpret and deliver the content is going to be absolutely critical** in you aren't going to need to see an up that these to develop a robust database or robust content and I think were in an excellent position to do that."

Source: Company reports.

Patient awareness and impact of FoundationOne on treatment decisions

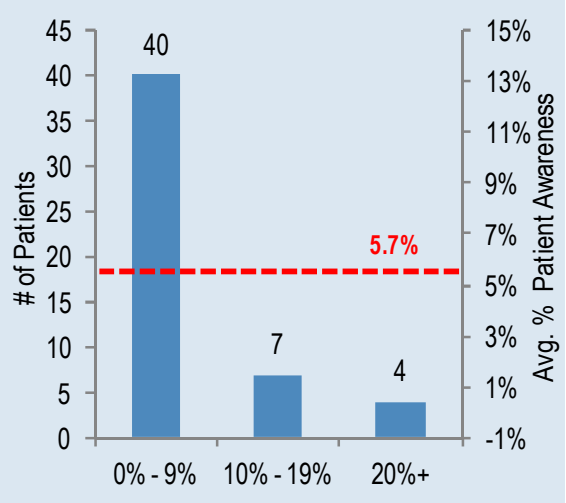
As stated earlier, in a survey of 3,936 clinical specimens, FoundationOne found at least one "actionable alteration" in 82% of cases. Moreover, given the significant off-label use of targeted cancer therapies (particularly in "challenging" cases where first line of treatment has failed, see
Figure 19), oncologists can use diagnostic tools like FoundationOne to help them make better-informed decisions.

In our survey, 11 of the 50 respondents indicated that 10% or more of patients were aware of the FoundationOne cancer panel, with an average awareness rate across our

sample of 6% (see Figure 16). We expect this number will increase over time, as evidence around the utility of the test enters the public domain and insurance coverage improves, coupled with a ramp in marketing.

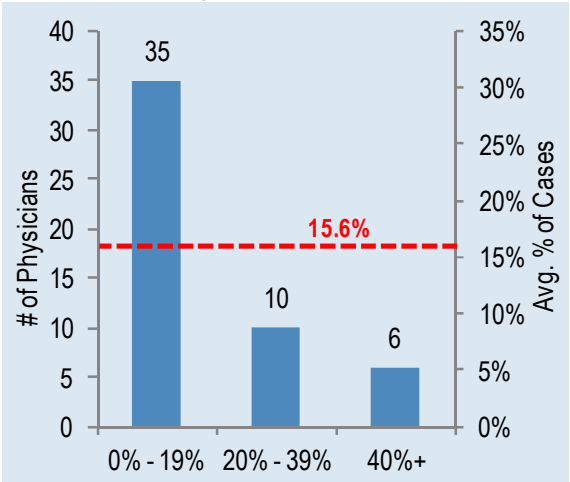
More encouragingly, 11 of the 50 surveyed oncologists indicated that in more than 30% of patients, the FoundationOne panel had made them change initial course of treatment or provided them with a treatment option that was not initially under consideration (see Figure 17). Figure 18 lists specific patient "wins" among our survey sample as a result of using the panel.

Figure 16: What percentage of your cancer patients is aware of or requests the FoundationOne test of own accord?



Source: J.P. Morgan.

Figure 17: What percentage of the time has the F1 test made you change the course of treatment or provided you with a treatment option that was not initially under consideration?



Source: J.P. Morgan.

Figure 18: Please cite specific FoundationOne patient "wins" in your practice (i.e., had patient X not had a FoundationOne test, she/he would have had a vastly inferior outcome) (n=51)

ALK mutations noted by FoundationOne have permitted the use of crizotinib
We had a significant tumor regression with the result of the FoundationOne test
Helped us find another targetable therapy for patients with refractory disease - in breast and a neuroendocrine tumor
It determined the presence of EGFR mutation and lack of KRAS mutation in patient with NSCLC, so Tarceva was used
Had my patient not had a FoundationOne test, he would have had a vastly inferior outcome
Patients can be identified for a targeted clinical trial not otherwise considered based on disease type.
Foundation testing enables targeted therapy not a otherwise viable
EGFR mutation in a female with lung cancer led to tarceva in first line therapy rather than chemotherapy treatment
Helped identify mutations for treatment of metastatic lung cancer
Breast tumor marker rise lead to PET, found incidental gyne cancer
No dramatic change in outcomes, so I've had no wins
FoundationOne found a genetic mutation that would not have otherwise not been found and thus therapy was changed
I was able to determine EGFR status in a patient who had biopsy that produced only a small suboptimal specimen
Identification of tyrosine kinase susceptibility in NSCLC in a patient with normal FISH studies.
Patient with ALK mutation noted, failed multiple chemo and now doing well on ALK inhibitor
By matching each patient with targeted therapies, larger patient population will have better clinical outcome
No definite wins as yet but offered therapy options that I would not have otherwise considered- eg targeted therapy for a metastatic parotid carcinoma
FoundationOne test used for a patient with NSCLC. EGFR was positive and resulted in modifying therapy to inhibit the growth factor. The patient responded wonderfully.
Patient with an uterine sarcoma - genomic findings changed the 2nd line therapy plans for the patient and with very good long term benefit.
A patient had adenocarcircinoma of unknown primary. I was able to change diagnosis and institute appropriate treatment patient still doing well on third line therapy
FGF amplification leading to eligibility for FGFRI clinical trial. Pten deletion leading to PI3k inhibitor trial. Met amplification. Leading to crizotinib
New lung cancer specialist who wanted fast turnaround times on KRAS and ALK testing. Ability to run her patients through FoundationOne was a big part of her willingness to join the facility = have been able to improve quality and access to high complexity lung cancer cases in several counties

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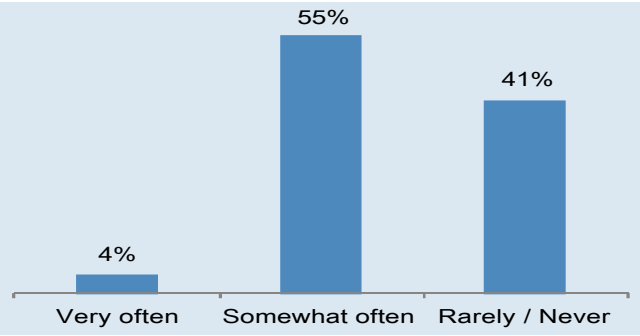
Source: J.P. Morgan.

Figure 19: How often are patients being opted into off-label use for existing therapies as a result of FoundationOne result?



Source: J.P. Morgan.

Commercialization strategy

The FoundationOne test is currently listed at $5,800. However, because payment for the test is not certain and may come from various sources, actual payment is often less than the list price. Sources of payment include: commercial third-party payors, Medicare and Medicaid, other healthcare providers (such as hospitals, cancer centers and other institutions), international distributors, and individual patients.

- **Commercial third-party payors:** FoundationOne is not currently a participating provider with any commercial third-party payors and thus does not have established payment rates. Commercial third-party payors reimburse FoundationOne claims based upon the stacked CPT codes or on other methods such as percentages of charges or other formulas. Some payors outsource FoundationOne claims to third-party administrators, who process the claims and pay directly at negotiated rates. In general, third-party payor coverage and payment is determined on a case-by-case basis, and currently yields a realized ASP of ~$3,600-3,700 per test. According to our survey, while 33% of physicians indicated that they did not encounter pushback from commercial payors (Figure 20), the remainder faced some issues while requesting reimbursement (Figure 21). Also, Figure 22 suggests that there is currently a mixed response from payors with respect to off-label use of existing therapies as a result of the FMI panel.
- **Medicare and Medicaid:** FoundationOne is not currently a participating provider in any state Medicaid program. It is however a participating provider in the Medicare program but does not have a national coverage decision and has not yet submitted claims to Medicare. The company is planning to commence submitting claims for FoundationOne tests provided to Medicare patients by the end of 2013, if it does not receive definitive direction from its Medicare contractor, which has currently requested them not to submit claims for services provided while it assesses the appropriate coverage and payment for FoundationOne as a whole. We currently expect Medicare reimbursement to begin in the 2015 timeframe. This estimate agrees with our survey findings where 71% of physicians indicated that they expect Medicare coverage within the next 2 years (see Figure 23) and, pending such coverage, usage of the test in Medicare patients is currently very limited (Figure 24). Foundation is also in the process of registering to participate in state Medicaid plans, as it anticipates that the number of patients covered by Medicaid plans will increase significantly over the next several years due to the Affordable Care Act.
- **International distributors, individuals, and other payors:** Foundation has agreements with various healthcare providers and international distributors. These providers or distributors pay for test results at negotiated rates below the list price. Foundation also negotiates rates with individual patients responsible for payment, and offers a comprehensive patient assistance program that supports low-income patients and allows for them to make extended payment as necessary based on economic situation.

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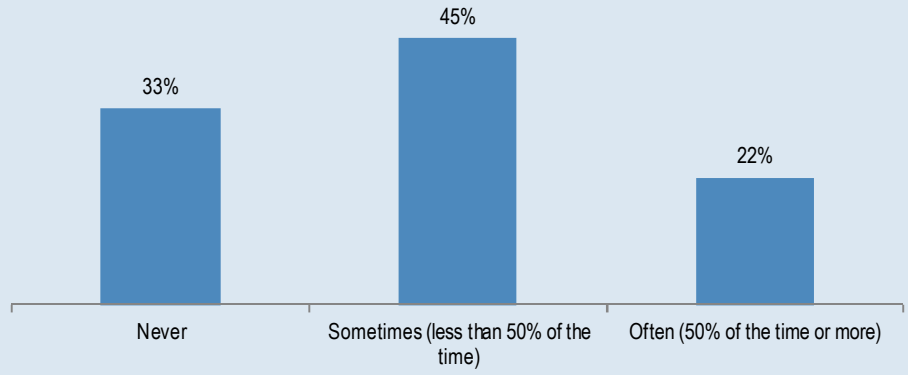
Figure 20: How often do you get pushback from third-party payers when ordering the FoundationOne test? (n=51)



Source: J.P. Morgan.

Figure 21: Please elaborate on the payor dynamic described above in terms of your reimbursement discussions with payors and patients (n=51)

I have not had issues.
Patients often get billed initially requiring manual resubmittision. or intervention
The copay is too high
It's usually not covered or not covered well
My staff deals with them, but its sometimes challenging for patients
Some payers decline testing unless specific criteria are met
I have not had experience with pushback from payers yet.
It's lots of paperwork
Typically insurance will not pay, so the patient has to understand that they may be responsible for the charges
Some insurances easier to work with than others
I ask my patients to talk with Foundation One billing directly.
So far, no issues, mostly PPO patients
Patients understand they are likely to be responsible for the cost of testing
Anytime a genetic test is relatively uncommon and costly we get pushback.
Need to often write a letter supporting its use to get reimbursed - if they even agree to cover
One patient out of 40 plus. Was college student on RI state plan
Patients may have high deductible and therefore makes it difficult to have the test done
If the insurance balks, I don't force the issue as there is very little data to actually support using Foundation One Testing as it relates to patient outcomes.
I am very selective in ordering the test and patients are pre-screened before ordering the test
Often suffer reimbursement difficulties for the test hard to explain to patients that such a useful test is not covered by their insurance
We emphasize that if it tells you which drug to select and that means that the patient gets the right treatment faster, has a better chance for a better outcome, and in looking in the total care picture, you've now maybe saved hundreds of thousands of dollars on the care because you're giving the right drug faster, which will affect everything else down the road.

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Source: J.P. Morgan.

Figure 22: What do payors think of such off-label use resulting from the FoundationOne test?

They probably would not be amenable to reimbursing these treatments since they would be off-label.
Sometimes it's an issue
Insurance companies has not complained of off label use
They are not amenable to covering off label use based on FoundationOne testing
It's easier for older, less expensive drugs.
They won't pay for it. Can't get a drug off label
It may be more difficult to have the treatment approved by Medicare if used off-label
They are not in favor of such off-label use
Not always well received for expensive agents
Not enthusiastic, but I work to get patients access.
Wary, but currently reluctant to deny.
Hard to say, usually need pre-auth which can be tedious
No problem as long there is compendia listing
Usually can approve on appeal if no other options
Insurance is unlikely to cover drug
Off-label use is rarely covered by payors. I encounter a lot of resistance to get drugs approved.
There is usually no issue if I can provide abstract or other supportive literature for the off label use
Very variable levels of acceptance from different payors. In general they are reluctant to pay.
Sometimes the drug company will supply the medication. If there at least a compendium listing or relatively good data in the literature regarding the off label use of the drug, a minority of payors agree to Rx

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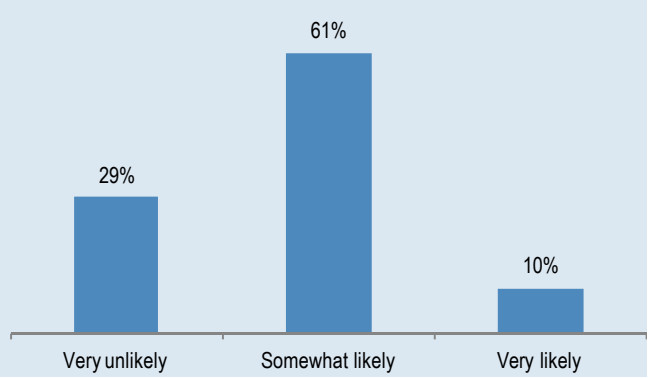
Source: J.P. Morgan.

Figure 23: In your opinion, what is the likelihood of Medicare coverage for the FoundationOne test for solid tumors within the next 2 years? (n=51)



Source: J.P. Morgan.

Figure 24: Since Foundation Medicine is not billing Medicare for any tests at the moment, how are you dealing with your Medicare patients in terms of ordering the FoundationOne test? (n=51)

Have only ordered this test for patients with private insurance or out of pocket payment so far.
Not sending unless patient knows risks of cost
Obtain secondary insurance and no balance billing and making patient is aware of financial issues
It is restrictive and limits the use of FoundationOne testing
Not ordering in these patients unless they request and are willing to pay out of pocket
Disclose the possibility to patient they may need to pay for the test and order as long as they are in agreement.
Very selective in ordering tests in Medicare patients. Patient and billers discussions a plan of payment
Usually wont be approved and copay too high
Rarely use with Medicare patients
Out of pocket where reasonable
Telling them that they may get stuck w bill
Many patients has combine HMO and Medicare
Patients are paying for test
We will usually work with the patient to evaluate financial assistance programs.
I think in some cases secondary insurance will pick up some otherwise patients have to pick up the payment
Some of these are done with the bill being sent to the Oncology Department. Others are presented to patients first before proceeding. It is being handled on a case by case basis, primarily guided by the oncologist.

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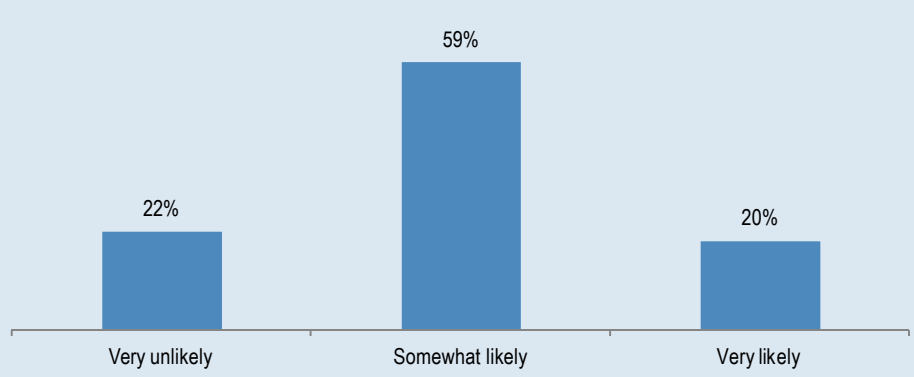
Product pipeline

Since formally launching FoundationOne for solid tumors in June 2012, the company has invested in its improvement, including updating the product from 180 genes to 236 genes, enhancing it to use less tissue, lowering its tumor purity requirements, making it more sensitive and lowering test turnaround time. Beyond these efforts, the company has also been focused on launching an analogous panel for hematologic malignancies along with several other pipeline projects which we describe below.

FoundationOne for hematologic malignancies

The current version of FoundationOne tests only solid tumors and is not able to test hematologic malignancies like leukemia, lymphoma, and myeloma which are cancers that affect the body's blood, lymphatic system or bone marrow. Foundation has developed methods to incorporate RNA-based sequencing technology to analyze the additional gene fusions commonly found in hematologic malignancies into FoundationOne. Before the commercial launch, the company will need to continue validation activities, increase laboratory production capacity to meet commercial demand and prepare the marketing strategy for the product. The company plans to begin its commercial launch of FoundationOne for hematologic malignancies in early 2014. In an encouraging read-through from our physician survey, 79% of respondents stated that they were somewhat to very likely to order the hematologic panel once available (Figure 25).

Figure 25: Based upon your experience with the FoundationOne test in your solid tumor patients, how likely are you to order the FoundationOne test for hematologic malignancies once it is launched? (n=51)



Source: J.P. Morgan.

Other innovations

FMI's ongoing product pipeline innovations for improving cancer care include: refining its hybrid capture strategy that isolates cancer genes so it can quickly incorporate newly discovered cancer genes into FoundationOne; developing new products for monitoring patients' tumor burden over time using cell-free plasma DNA; and expanding into epigenetics, methylation, immune response, and other areas through RNA sequencing.

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Financial Outlook

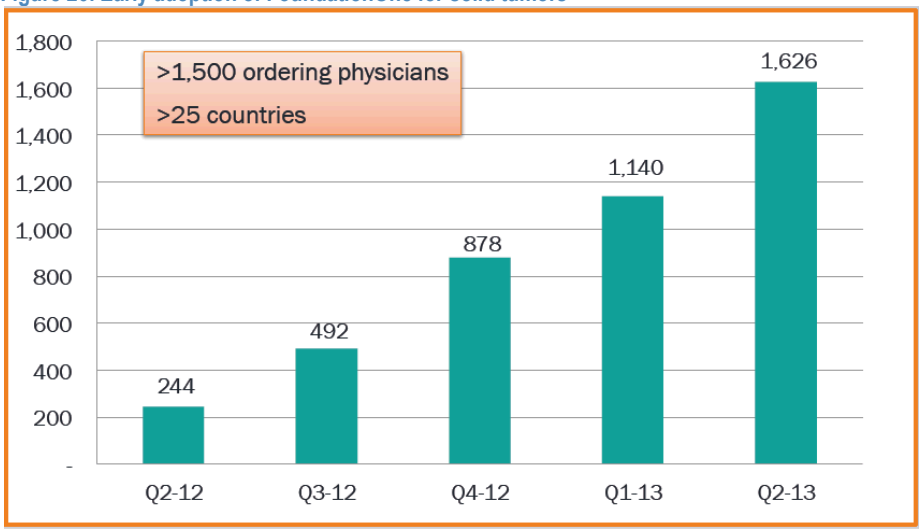
Clinical Segment Revenue

FoundationOne for solid tumors – addressable market growth

Beyond demographic growth and rising cancer incidence rates, we believe the use of pan-cancer panels will become more mainstream with time. The market is currently dominated by patients in "challenging" therapeutic categories such as those who have tested negative in traditional hotspot tests or failed standard treatment regimens, and those with aggressive disease, insufficient tissue or rare/uncommon tumors. Along with insurance coverage, as oncologist education and patient awareness around the utility of pan-cancer panels increases, we expect tests such as FoundationOne to move earlier in the treatment paradigm and eventually become standard operating procedure in all cases with active, metastatic disease.

Since its launch in June 2012, more than 1,600 physicians across 25+ countries have ordered the FoundationOne panel for solid tumor patients (Figure 26). As stated earlier, 11 of the 50 respondents in our oncologist survey indicated that 10% or more of patients were aware of the FoundationOne cancer panel, with an average awareness rate across our sample of 6%. More encouragingly, 11 of the 50 surveyed oncologists indicated that in more than 30% of patients, the panel had made them change initial course of treatment or provided them with a treatment option that was not initially under consideration.

Figure 26: Early adoption of FoundationOne for solid tumors



Source: Company reports.

Oncologists are traditionally risk-averse and slow adopters of new tests until they are completely convinced about accuracy and utility. They often rely on peer recommendation and usage before deciding to incorporate the test into own treatment paradigm. We believe FoundationOne's early traction with KOLs and physicians coupled with the collaboration tools in the Interactive Cancer Explorer online portal should translate into a strong network effect, compounding adoption rates and driving first-mover advantage for the firm. Consequently, we forecast U.S. solid tumor addressable market penetration rates to increase from 0.6% in 2013 to 9.5% in 2018.

We impute the ex-US solid tumor addressable market using an analogous approach and apply an even lower penetration rate (0.001% in 2013) to derive international test volumes.

FoundationOne for solid tumors – payor and pricing assumptions

In the U.S., FMI currently bills commercial third-party payors on a case-by-case basis for the majority of its tests, using stacked molecular pathology CPT codes. We assume that over time, the third-party payor case mix will shift from non-contracted to contracted tests as a result of coverage decisions. In terms of Medicare reimbursement, we conservatively assume no coverage through the end of 2014, followed by 30% coverage in 2015, 60% coverage in 2016, 90% coverage in 2017 and 100% coverage thereafter.

Finally, we assume a fairly constant payor mix over time, with approximately 55% of tests billed to commercial third-party payors, ~33% to Medicare and ~10% billed directly to patients. For the remaining 3-4% of total cases, we assume that FMI does not receive any payment.

In terms of pricing, we assume a realized ASP of $3,500 per test across all payors (slightly lower than the realized ASP of $3,600-$3,700 in 1H13 and significantly lower than the list price of $5,800) and incorporate a 3-4% annual pricing decline to account for increasing competition in the market.

For the international segment, we assume direct billing to patients and distributors with a realized ASP equivalent to that in the U.S. ($3,500 in 2013, with 3-4% annual declines thereafter).

FoundationOne for hematologic malignancies

We assume a 1Q14 launch for the hematologic malignancy panel. We estimate the addressable market to be ~133,000 patients in 2014 using an analogous approach to our solid tumor calculation, while assuming a slightly faster ramp in penetration from 0.6% in 2014 to ~12% by 2018. Our 2014 ASP assumption is $5,500, which we again assume declines at an annual rate of 3-4%.

Overall Clinical segment revenue

Combining our solid tumor and hematologic malignancy estimates, we forecast ~6,700 clinical tests in 2013, which should rise to ~177,000 tests by 2018. This rapid ramp in test volumes more than offsets the 3-4% annual pricing declines, with estimated clinical revenue growing from ~$13M in 2013 to $459M in 2018 (a 5-year CAGR of 105%).

Sensitivity analysis around pricing decline assumptions

The rate of decline in pricing for the FoundationOne solid tumor and hematologic malignancy tests is a critical assumption in our model. The table below (Figure 27) outlines a 2018 U.S. clinical revenue sensitivity analysis versus our base case pricing decline assumption of 3-4% per year relative to current levels.

Figure 27: U.S. Clinical revenue sensitivity to pricing assumptions

2018 U.S. Clinical Revenue	F1 Solid Tumor ASP	$2,300	$2,450	$2,600	$2,750	$2,900	$3,050	$3,200	$3,350	$3,500
F1 Heme Malignancy ASP	*Implied ASP CAGR vs. Current*	*-8%*	*-7%*	*-6%*	*-5%*	*-4%*	*-3%*	*-2%*	*-1%*	*0%*
$3,900	*-8%*	$366M	$387M	$408M	$429M	$449M	$470M	$491M	$512M	$532M
$4,100	*-7%*	$369M	$390M	$410M	$431M	$452M	$473M	$493M	$514M	$535M
$4,300	*-6%*	$371M	$392M	$413M	$434M	$454M	$475M	$496M	$517M	$537M
$4,500	*-5%*	$374M	$395M	$415M	$436M	$457M	$478M	$498M	$519M	$540M
$4,700	*-4%*	$376M	$397M	$418M	$439M	$459M	$480M	$501M	$522M	$542M
$4,900	*-3%*	$379M	$400M	$420M	$441M	$462M	$483M	$503M	$524M	$545M
$5,100	*-2%*	$381M	$402M	$423M	$444M	$464M	$485M	$506M	$527M	$547M
$5,300	*-1%*	$384M	$405M	$425M	$446M	$467M	$488M	$508M	$529M	$550M
$5,500	*0%*	$386M	$407M	$428M	$449M	$469M	$490M	$511M	$532M	$552M

Source: Company data and J.P. Morgan estimates.

Pharma Segment Revenue

As stated earlier, in addition to the clinical setting FMI provides analysis of tissue samples generated from clinical trials in order to help biopharmaceutical clients develop targeted oncology therapies. This revenue is based on a negotiated price per test or on the basis of an agreement to provide certain testing volumes or other deliverables over defined periods. As of 2Q13, FMI had ongoing relationships with 18 partners including Novartis, Johnson & Johnson, Sanofi and Celgene.

While biopharmaceutical customers represent more than half of total revenue today, we expect the pharma segment contribution to overall revenue to decline rapidly as clinical test volumes ramp over the next 2-3 years. Clinical trial dependence implies that revenues from this segment are likely to be lumpy over time. Finally, we note that the company intends to transition more of existing biopharma partnerships into multi-element contracts, allowing them to earn a significantly higher ASP as compared to the clinical segment. We forecast revenues of ~$10M in 2013 growing to ~$21M in 2018, or a 5-year CAGR of ~15%.

Operating leverage and margin profile

While we forecast pricing to decline at ~3-4% CAGR annually, increasing penetration rates in solid tumors and the launch of the hematologic panel early next year should drive robust revenue growth. Moreover, FMI stands to benefit from leveraging existing lab operations and rapidly declining sequencing costs in COGS; as a result, we expect gross margins to expand from 58% in 2013 to 73% in 2018.

The company also has significant economies of scale in terms of operating costs. We expect R&D to decline from current levels of ~100% of revenue to ~10% by 2018, aided by top-line growth and the fact that current R&D expenditure already accounts for clinical trials to support reimbursement/adoption as well as pipeline products beyond the hematologic malignancy panel in areas such as epigenetics, methylation and immune response. There is also a significant opportunity to realize operating leverage in terms of sales and marketing as well as G&A margins. While the number of sales reps is expected to grow from 28 in 2013 to ~135 in 2018, sales productivity in terms of cases handled per rep per week should increase significantly as a result of increasing test penetration at both the account and geography level. As such, we

model operating expenses to decline from ~216% in 2013 to ~58% by 2018, with a corresponding increase in operating margin to 15% (Figure 28).

Figure 28: FMI Margin profile

	2012	2013	2014	2015	2016	2017	2018
Gross Margin	47%	58%	61%	65%	68%	71%	73%
R&D	139%	100%	67%	37%	21%	13%	10%
Sales & Marketing	32%	43%	55%	50%	45%	40%	35%
G&A	81%	73%	47%	27%	16%	15%	13%
Operating Margin	**-206%**	**-158%**	**-108%**	**-49%**	**-14%**	**3%**	**15%**

Source: Company data and J.P. Morgan estimates.

Finally, we note that as of December 2012, Foundation Medicine had net operating loss carry-forwards of ~$40M at the federal level and ~$39M at the state level, which should limit tax liability over the next 3-4 years. We model a tax rate of 35% for 2017 and beyond.

Driven by strong top-line growth and the operating leverage in the business model, we currently expect FMI to turn profitable and free cash flow positive in 2017.

Valuation

Our preferred valuation metric is a discounted cash flow analysis using our base-case assumptions, which we then sanity-check by using a multiple-based relative approach versus an appropriate group of peers.

We believe Foundation Medicine is fairly valued at current levels with a balanced risk-reward profile. Our December 2014 price target on FMI is $38.

Absolute valuation

Our December 2014 DCF-derived price target of $38 assumes a CAPM-derived WACC discount rate of 16.5% and 0.5% terminal growth (see Figure 32). We also include a sensitivity analysis for the value of the company's equity relative to our WACC and the terminal growth rate assumptions, the two most subjective metrics in our DCF analysis.

Relative valuation

For relative valuation, our preferred metric is forward EV/EBITDA, although for early-stage companies that are not yet profitable, we use forward EV/sales as a substitute. Given Foundation Medicine is a first mover with significant operating leverage in a relatively high growth market, it is difficult to identify a set of directly comparable publicly traded companies. Our peer group analysis consists of a wide range of diagnostics, early-stage oncology/biopharma and big-data software companies, which we believe represent the best proxy for FMI's sizeable addressable market and potentially treatment-paradigm-changing product offering.

On a relative basis, FMI currently trades at a 2015 EV/Sales multiple of 10.2x versus IPO precedent comps at an average of 10.0x (and all-peer average of 7.6x that is weighed down by single-marker and hotspot test diagnostic comps with a much weaker growth profile). The current multiple is roughly in line with the high-growth

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IPO peer group and leaves room for modest upside given FMI's superior top-line growth profile over the medium term (104% y/y growth in 2015E vs. 34% for IPO peers). As such, our price target of $38 implies a 2015 EV/Sales multiple of 11.8x, representing an18% premium relative to the same peer group (Figure 29).

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Figure 29: FMI – Relative valuation versus peers

Company	Ticker	Price 10/18/13	Mkt Cap $M	EV $M	EV/Sales 2012A	EV/Sales 2013E	EV/Sales 2014E	EV/Sales 2015E	Revenue Growth 2012A	Revenue Growth 2013E	Revenue Growth 2014E	Revenue Growth 2015E
Group 1 (Diagnostics trading comps)												
ILLUMINA INC	ILMN	$81.43	10,189	9,681	8.4x	7.0x	6.2x	5.5x	9%	20%	12%	13%
HOLOGIC INC	HOLX	$22.28	6,025	10,501	5.1x	4.2x	4.0x	3.9x	14%	21%	3%	4%
QIAGEN N.V.	QGEN	$21.02	5,038	5,401	4.3x	4.1x	3.9x	3.7x	7%	4%	5%	6%
CEPHEID INC	CPHD	$40.67	2,743	2,649	8.0x	6.8x	5.9x	5.1x	19%	18%	15%	17%
MYRIAD GENETICS INC	MYGN	$24.99	1,908	1,377	2.5x	2.1x	1.9x	1.3x	23%	23%	10%	39%
GENOMIC HEALTH INC	GHDX	$30.33	929	830	3.5x	3.2x	2.8x	2.0x	14%	11%	12%	15%
MERIDIAN BIOSCIENCE INC	VIVO	$24.51	1,017	986	5.5x	5.1x	4.7x	4.3x	10%	8%	9%	10%
LUMINEX CORP	LMNX	$19.19	794	741	3.7x	3.3x	3.0x	2.7x	10%	9%	11%	13%
EXACT SCIENCES CORP	EXAS	$11.26	796	690	166.4x	167.9x	18.9x	6.6x	0%	-1%	790%	186%
GENMARK DIAGNOSTICS INC	GNMK	$12.69	512	461	22.5x	15.7x	14.7x	9.5x	309%	44%	7%	54%
Group 2 (Oncology biopharma trading comps)												
CELGENE CORP	CELG	$160.55	66,030	65,210	11.8x	10.3x	9.0x	7.5x	14%	15%	15%	19%
ONYX PHARMACEUTICALS INC	ONXX	$124.70	9,145	8,827	24.4x	13.8x	10.1x	7.0x	-19%	76%	37%	44%
PHARMACYCLICS INC	PCYC	$132.04	9,659	9,455		51.4x	29.2x	15.8x			76%	85%
INCYTE CORP	INCY	$38.04	5,822	5,925	19.9x	16.8x	11.3x	9.3x	214%	19%	49%	21%
SEATTLE GENETICS INC	SGEN	$40.04	4,879	4,514	21.4x	18.3x	16.5x	13.1x	122%	17%	11%	25%
MEDIVATION INC	MDVN	$50.82	3,822	3,722	20.5x	15.3x	9.3x	5.3x	201%	34%	63%	74%
ARIAD PHARMACEUTICALS INC	ARIA	$2.67	494	341	611.2x	5.8x	2.7x	1.7x	-98%	10370%	118%	59%
CLOVIS ONCOLOGY INC	CLVS	$50.58	1,526	1,382				11.3x				
IMMUNOGEN INC	IMGN	$17.03	1,449	1,261	97.7x	22.4x	19.9x	14.3x	-41%	337%	13%	39%
EXELIXIS INC	EXEL	$5.39	992	917	19.3x	27.6x	24.0x	11.9x	-84%	-30%	15%	102%
DENDREON CORP	DNDN	$2.44	385	613	1.9x	2.0x	1.8x	1.6x	50%	-8%	15%	14%
INFINITY PHARMACEUTICALS INC	INFI	$14.31	687	360	7.6x		4.7x	8.1x	-49%			-42%
AVEO PHARMACEUTICALS INC	AVEO	$2.16	113	(19)	-1.0x	-17.1x	-1.4x	-1.1x	-88%	-94%	1164%	18%
Group 3 (IPO precedent comps)												
AGIOS PHARMACEUTICALS INC	AGIO	$28.52	886	758	30.2x	30.2x	22.0x	11.0x		0%	38%	100%
PROSENSA HOLDING NV	RNA	$4.29	150	116		10.5x	3.1x	3.7x			243%	-18%
BLUEBIRD BIO INC	BLUE	$23.80	565	498		27.2x	23.2x	22.5x			17%	3%
EPIZYME INC	EPZM	$36.54	1,038	940		21.4x	14.5x	30.3x			47%	-52%
MERRIMACK PHARMACEUTICALS IN	MACK	$3.50	358	288	5.9x	4.5x	3.5x	1.7x		31%	28%	106%
SPLUNK INC	SPLK	$61.88	6,547	6,241		22.8x	17.1x	12.9x			33%	32%
TABLEAU SOFTWARE INC-CL A	DATA	$67.81	3,983	3,944	30.8x	19.6x	14.4x	10.9x		57%	36%	32%
CELLULAR DYNAMICS INTERNATIO	ICEL	$17.72	279	246		19.0x	7.8x	4.4x			142%	80%
NANOSTRING TECHNOLOGIES INC	NSTG	$11.15	163	154	6.7x	5.1x	2.8x	1.9x		32%	79%	49%
LIPOSCIENCE INC	LPDX	$4.98	74	70	1.3x	1.3x	1.3x	1.1x		-5%	6%	12%
				All Peer Average:	**43.8x**	**17.7x**	**9.8x**	**7.6x**	**30%**	**440%**	**101%**	**36%**
				Group 1 (Diagnostics trading comps) Peers:	23.0x	21.9x	6.6x	4.5x	41%	16%	122%	38%
				Group 2 (Oncology biopharma trading comps) Peers:	75.9x	15.1x	11.4x	8.1x	20%	1074%	143%	38%
				Group 3 (IPO precedent comps) Peers:	15.0x	16.2x	11.0x	10.0x		23%	67%	34%
FOUNDATION MEDICINE INC	**FMI**	**$33.99**	**954**	**902**	**84.7x**	**39.5x**	**20.9x**	**10.2x**	**418%**	**114%**	**89%**	**104%**
				FMI Premium (Discount) to Peer Average:	**93%**	**124%**	**114%**	**35%**	**1276%**	**(74%)**	**(12%)**	**187%**
				Premium (Discount) to Group 1 (Diagnostics trading comps) Peers:	268%	80%	217%	130%	908%	627%	(27%)	172%
				Premium (Discount) to Group 2 (Oncology biopharma trading comps) Peers:	12%	161%	83%	26%	1959%	(89%)	(38%)	172%
				Premium (Discount) to Group 3 (IPO precedent comps) Peers:	466%	145%	91%	2%		395%	33%	202%
				JPMorgan December 2014 PT of $38	97.8x	45.6x	24.1x	11.8x				
				Premium (Discount) to Peer Average at $38:	**123%**	**158%**	**147%**	**55%**				
				Premium (Discount) to Group 1 (Diagnostics trading comps) Peers:	325%	108%	265%	165%				
				Premium (Discount) to Group 2 (Oncology biopharma trading comps) Peers:	29%	201%	111%	45%				
				Premium (Discount) to Group 3 (IPO precedent comps) Peers:	553%	182%	120%	18%				

Source: Bloomberg and J.P. Morgan estimates. Note: Consensus estimates used for all companies except Foundation Health.

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Appendix I: Financial Model

Figure 30: FMI Income Statement

Income Statement (in millions, except per shareamounts)	2011A	1QA Mar	2QA Jun	3QA Sep	4QA Dec	2012A	1QA Mar	2QA Jun	3QE Sep	4QE Dec	2013E	2014E	2015E	2016E	2017E	2018E	CAGR 13-18
Clinical	2	0	0	0	2	3	2	3	4	4	13	31	74	149	292	459	
Pharma	0	0	1	3	4	8	3	3	2	2	10	12	14	16	18	21	
Total Revenue	**2**	**1**	**2**	**3**	**5**	**11**	**5**	**6**	**6**	**6**	**23**	**43**	**88**	**165**	**310**	**480**	**84%**
Cost of goods sold	0	1	1	2	2	6	2	2	2	3	10	17	31	53	91	128	
Gross Profit	**2**	**(0)**	**1**	**1**	**3**	**5**	**3**	**4**	**3**	**3**	**13**	**26**	**57**	**112**	**220**	**352**	
Research and Development	9	3	4	3	5	15	5	6	6	6	23	29	33	34	40	48	
Sales and Marketing	2	1	1	1	1	3	2	3	3	3	10	24	44	74	124	168	
General and Administrative	7	2	2	2	3	9	3	5	5	4	17	20	24	26	47	62	
Operating Profit (Loss) - EBIT	**(16)**	**(5)**	**(6)**	**(5)**	**(6)**	**(22)**	**(7)**	**(10)**	**(10)**	**(9)**	**(36)**	**(47)**	**(43)**	**(22)**	**10**	**73**	
Depreciation & Amortization	2	1	1	1	1	3	1	1	1	1	3	3	4	5	7	9	
EBITDA	(14)	(5)	(5)	(4)	(5)	(19)	(6)	(9)	(9)	(8)	(33)	(43)	(39)	(17)	17	82	
Other income (expense), net	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	0	(3)	(0)	0	(0)	(0)	0	
Pretax Income	**(17)**	**(5)**	**(6)**	**(5)**	**(6)**	**(22)**	**(7)**	**(10)**	**(13)**	**(9)**	**(39)**	**(47)**	**(43)**	**(22)**	**10**	**73**	
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	26	
Net Income (Loss) attributable to common	**(17)**	**(6)**	**(6)**	**(5)**	**(6)**	**(23)**	**(7)**	**(10)**	**(13)**	**(9)**	**(39)**	**(47)**	**(43)**	**(22)**	**6**	**48**	
Diluted shares outstanding	4.9	6.9	8.5	9.5	10.5	8.7	11.3	12.2	16.6	28.5	17.2	28.7	29.1	29.5	29.9	30.3	
GAAP Diluted EPS	**($3.52)**	**($0.80)**	**($0.70)**	**($0.52)**	**($0.59)**	**($2.62)**	**($0.64)**	**($0.84)**	**($0.76)**	**($0.30)**	**($2.26)**	**($1.62)**	**($1.49)**	**($0.76)**	**$0.21**	**$1.57**	**N/M**
# Total tests performed (in 000s)		0.3	0.6	0.8	1.4	3.1	1.7	2.2	2.3	2.6	8.8	19.5	39.1	70.5	121.3	182.6	
Implied cost / test ($/test)		$2,355	$1,977	$2,235	$1,440	$1,833	$1,369	$987	$1,062	$970	$1,076	$871	$797	$753	$746	$701	
Gross Margin	87%	-16%	38%	41%	60%	47%	54%	63%	58%	58%	58%	61%	65%	68%	71%	73%	
R&D Margin (as % of revenue)	439%	492%	199%	112%	91%	139%	96%	103%	100%	100%	100%	67%	37%	21%	13%	10%	
Sales & Marketing Margin (as % of revenue)	76%	82%	46%	26%	25%	32%	35%	49%	44%	44%	43%	55%	50%	45%	40%	35%	
G&A Margin (as % of revenue)	340%	274%	111%	61%	60%	81%	61%	80%	85%	65%	73%	47%	27%	16%	15%	13%	
Operating (EBIT) Margin	-767%	-864%	-318%	-159%	-116%	-206%	-137%	-169%	-171%	-151%	-158%	-108%	-49%	-14%	3%	15%	
Effective Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	35%	
Net Margin	-843%	-902%	-329%	-164%	-120%	-213%	-139%	-173%	-219%	-146%	-170%	-108%	-49%	-14%	2%	10%	
Revenue growth (y/y)							*750%*	*226%*	*89%*	*15%*	*114%*	*89%*	*104%*	*87%*	*88%*	*55%*	
EPS growth (y/y)							*-20%*	*19%*	*44%*	*-49%*	*-14%*	*-28%*	*-8%*	*-49%*	*-127%*	*657%*	

Source: Company data and J.P. Morgan estimates.

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Figure 31: FMI Balance Sheet and Cash Flow

Balance Sheet and Cash Flow (in millions, except per share amounts)	2011A	1QA Mar	2QA Jun	3QA Sep	4QA Dec	2012A	1QA Mar	2QA Jun	3QE Sep	4QE Dec	2013E	2014E	2015E	2016E	2017E	2018E	CAGR 13-18
Balance Sheet																	
Cash and cash equivalents	11				55	55	46	36	23	98	98	50	12	2	22	77	
Accounts receivable	0				2	2	3	4	3	3	3	5	10	17	34	52	
Inventory	0				1	1	1	1	1	1	1	1	2	3	5	8	
Current Assets	12				58	58	51	42	28	103	103	59	28	27	68	145	
Property and equipment, net	6				7	7	8	7	9	10	10	14	18	22	29	35	
Accounts payable	1				2	2	2	2	2	2	2	5	9	16	27	36	
Current Liabilities	4				9	9	10	10	10	10	10	16	31	55	93	125	
Non-Current Liabilities	4				2	2	2	3	1	1	1	2	3	6	11	16	
Retained Earnings (Accumulated deficit)	(24)				(47)	(47)	(54)	(64)	(77)	(85)	(85)	(132)	(175)	(198)	(192)	(144)	
Total Liabilities + Shareholder Equity	18				66	66	60	52	39	115	115	75	48	53	101	186	
Net Cash (Debt)	**6**				**52**	**52**	**43**	**34**	**21**	**96**	**96**	**50**	**12**	**2**	**22**	**77**	**-4%**
per share	$1.27				$4.92	$5.96	$3.80	$2.76	$1.28	$3.37	$5.60	$1.74	$0.42	$0.07	$0.73	$2.53	
Cash Flow																	
Cash Flow from Operations	(14)	(6)	(5)			(17)	(7)	(7)	(10)	(8)	(32)	(40)	(30)	(2)	30	68	
CapEx	(5)	(1)	(1)			(3)	(0)	(1)	(2)	(2)	(6)	(7)	(8)	(10)	(13)	(16)	
Cash Flow from Investments	(5)	(1)	(1)			(3)	(2)	(1)	(2)	(2)	(7)	(7)	(8)	(10)	(13)	(16)	
Cash Flow from Financing	29	(0)	10			64	(0)	(2)	(0)	85	82	(1)	1	2	3	3	
Free Cash Flow to Equity	**(20)**	**(6)**	**(6)**			**(20)**	**(7)**	**(8)**	**(12)**	**(10)**	**(38)**	**(46)**	**(39)**	**(12)**	**17**	**52**	**N/M**
FCF growth y/y	0%					0%										214%	
FCF per share	$ (3.96)	$ (0.93)	($0.74)	$0.00	$0.00	($2.36)	($0.61)	($0.67)	($0.74)	($0.36)	($2.19)	($1.61)	($1.33)	($0.40)	$0.56	$1.72	
Dividend Per Share	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	

Source: Company data and J.P. Morgan estimates.

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Figure 32: FMI DCF Analysis

Projected FY Ending Dec	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Revenue ($M)	23	43	88	165	310	480	641	799	908	1,002	1,098	1,192
growth y/y		89%	104%	87%	88%	55%	34%	25%	14%	10%	10%	9%
EBIT ($M)	(36)	(47)	(43)	(22)	10	73	162	250	358	431	494	536
EBIT margin	-158%	-108%	-49%	-14%	3%	15%	25%	31%	39%	43%	45%	45%
Tax-affected EBIT ($M)	(36)	(47)	(43)	(22)	6	48	105	162	232	280	321	348
Free Cash Flow	**(38)**	**(46)**	**(39)**	**(12)**	**16**	**51**	**93**	**153**	**203**	**271**	**301**	**341**
growth y/y						226%	82%	64%	33%	33%	11%	14%

Discount Rate	Discounted Cash Flows ($M) 2015-2024		PV of Terminal Value ($M) at a Perpetual Growth Rate of -0.5%	0.0%	0.5%	1.0%	1.5%		Enterprise Value ($M) -0.5%	0.0%	0.5%	1.0%	1.5%	Equivalent Terminal EBITDA Multiple (forward 12 mos) -0.5%	0.0%	0.5%	1.0%	1.5%
15.5%	479		628	651	676	703	732		1,107	1,130	1,156	1,183	1,211	1.8x	1.9x	1.9x	2.0x	2.0x
16.0%	464		587	608	631	655	681		1,051	1,072	1,095	1,120	1,146	1.7x	1.8x	1.8x	1.8x	1.9x
16.5%	450	+	549	568	**589**	611	635	=	999	1,018	**1,039**	1,061	1,085	1.6x	1.7x	**1.7x**	1.8x	1.8x
17.0%	436		514	532	551	571	592		950	968	987	1,007	1,028	1.6x	1.6x	1.6x	1.7x	1.7x
17.5%	422		482	498	516	534	553		905	921	938	956	976	1.5x	1.5x	1.5x	1.6x	1.6x

	Net Debt (Cash) ($M)		Equity Value ($M) -0.5%	0.0%	0.5%	1.0%	1.5%		Equity Value per Share -0.5%	0.0%	0.5%	1.0%	1.5%	Terminal Value as a % of Enterprise Value -0.5%	0.0%	0.5%	1.0%	1.5%
	(50)		1,157	1,181	1,206	1,233	1,261		$40.25	$41.07	$41.94	$42.88	$43.88	57%	58%	59%	59%	60%
	(50)		1,101	1,122	1,145	1,170	1,196		$38.30	$39.04	$39.84	$40.69	$41.59	56%	57%	58%	59%	59%
-	(50)	=	1,049	1,068	**1,089**	1,111	1,135	=	$36.48	$37.16	**$37.89**	$38.65	$39.47	55%	56%	**57%**	58%	59%
	(50)		1,000	1,018	1,037	1,057	1,078		$34.79	$35.41	$36.07	$36.77	$37.51	54%	55%	56%	57%	58%
	(50)		955	971	988	1,006	1,026		$33.21	$33.77	$34.37	$35.01	$35.69	53%	54%	55%	56%	57%

Source: Company data and J.P. Morgan estimates.

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Appendix II: Management Team

Figure 33: FMI Management Team

Name / Title	Age	Compensation ($) Salary	Bonus	Equity	Ownership Shares (#)	Value (%)	Experience
Michael Pellini, MD *President & Chief Executive Officer*	47	$395,000	$218,713	$130,157	550,000	2.0%	- President and CEO since 2011 - President and COO of Clarient Inc. (GE Healthcare Company) 2008 - 2011 - VP of Life Sciences at Safeguard Scientifics Inc. 2006 - 2008 - EVP and COO at Lakewood Pathology Associates 2004 - 2006 - President and CEO of Genomics Collaborative, Inc 2004 - 2000 - B.A. from Boston College, MBA from Drexel University, MD from Jefferson Medical College
Steven Kafka, PhD *Chief Operating Officer*	43	-	-	-	-	-	- COO since January 2013 - CFO and COO Aileron Therapeutics 2009 - 2012 - VP of Finance at Infinity Pharmaceuticals Inc. 2006 -2009 - Senior Director of Finance at Millenium Pharmaceuticals Inc. - B.A. from Stanford University, Ph.D. from Harvard University
Kevin Krenitsky, MD *Chief Commercial Officer and SVP, Intl. Strategy*	46	$330,000	$102,800	$13,232	137,500	0.5%	- Chief Commercial Officer and SVP, Intl. Strategy since 2011 - President at Enzo Clinical Labs 2009 - 2011 - CEO of Bioserve Biotechnologies Ltd 2007 - 2009 - CEO Parkway Clinical Laboratories 2006 -2007 - B.S. from University of Scranton and MD from Jefferson Medical College
Robert Hesslein, JD *Senior Vice President and General Counsel*	60	$178,461	$70,000	$107,510	-	-	- Senior Vice President and General Counsel since 2012 - SVP and Deputy General Counsel, other roles at Genzyme Corporation 1996 - 2012 - Vice President and Counsel at The New England 1990 - 1996 - Partner at Csaplar & Bok (law firm) 1978 - 1990 - B.A. from Yale University and JD from The Cornell Law School

Source: Company reports.

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Appendix III: Board of Directors

Figure 34: FMI Board of Directors

Name / Title	Age	Committee			Experience
		Audit	Govern.	Comp	
Alexis Borisy *Chairman and Co-founder of Foundation Medicine* *Partner at Third Rock Ventures*	41			Chairman	- 20 years of experience building and operating innovative science-based organizations - Partner at Third Rock Ventures since 2009 - Chairman and former CEO of Warp Drive Biosynthetic Inc. - Founder, Former President and CEO of CombinatoRx Inc. - B.S. in Chemistry from University of Chicago, Graduate work in the laboratory of Dr. Stuart Schreiber at Harvard University
Brook Byers *Investment Partner, Kleiner Perkins Caufield & Byers*	68		Member	Member	- Venture capital investor since 1972 forming the first Life Sciences practice group in the venture capital profession in 1984 - Founder, Former President and Chairman of Idec Pharmaceuticals, Hybritech , Insite Vision, and Ligand Pharmaceuticals - Board of Directors of 10 companies including CardioDX, Crescendo, Genomic Health, Five Prime, and OptiMedica
Evan Jones *Managing Member of jVen Capital, LLC*	56	Chairman			- 20 years of operating and investment experience in the life sciences industry - Chairman of Opgen Inc. - Chief Executive Officer of Digene Corp from 1990 - 2006 - President of Neomorphics, Inc. 1988 - 1990 - B.A. from the University of Colorado, M.B.A. from The Wharton School at the University of Pennsylvania.
Mark Levin Co-founder and *Partner at Third Rock Ventures*	63		Member	Member	- 25 years of experience building and operating leading biotech companies - CEO of Constellation Pharmaceuticals Inc 2008 - 2009 - Founding CEO of Tularik, Cell Genesys/Abgenix, Focal, Stem Cells and Millennium Pharmaceuticals - Partner and Co-Founder of the Mayfield Fund - M.S. in Chemical and Biomedical Engineering from Washington University
David Schenkein, M.D. *Chief Executive Officer, Agios Pharmaceuticals*	56	Member	Chairman		- CEO of Agios Pharmaceuticals since 2009 - Senior Vice President, Clinical Hematology and Oncology at Genentech 2006 - 2009 - Medical Oncologist and Hematologist for over 20 years - Senior Vice President of Clinical Research at Millennium Pharmaceuticals 2001 -2006 - B.A. in Chemistry from Wesleyan University, M.D. from the State University of New York Upstate Medical School
Krishna Yeshwant, M.D. *Partner, Google Ventures*	35	Member		Member	- Physician, programmer, and entrepreneur working with Google Ventures since 2009 - Helped start an electronic data interchange company that was acquired by Hewlett-Packard - Helped start a network security company that was acquired by Symantec - Board member of Ipierian Inc - B.S. in Computer Science from Stanford University, M.D. from Harvard Medical School, M.B.A. from Harvard Business School

Source: Company reports.

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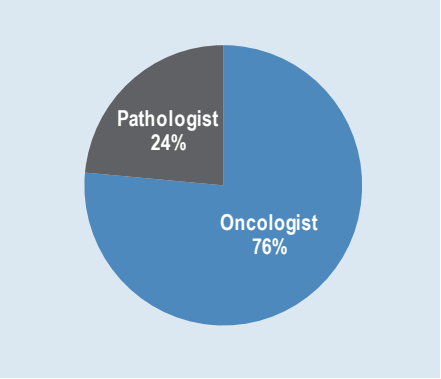
Appendix IV: Oncologist Survey Questionnaire

As part of our research on FMI, we conducted a survey of 51 oncologists and pathologists from both academic and community hospital settings who are users of the FoundationOne solid tumor test. Below, we include the complete questionnaire along with physician responses.

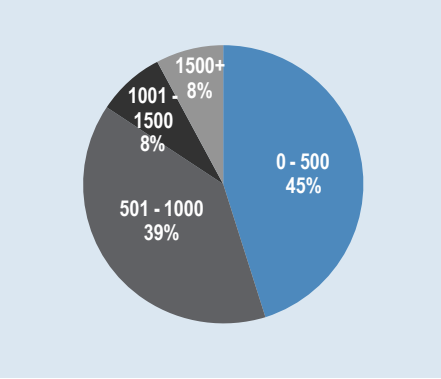
Demographics

Figure 35: Q1 – What is your primary specialty? (n=51)



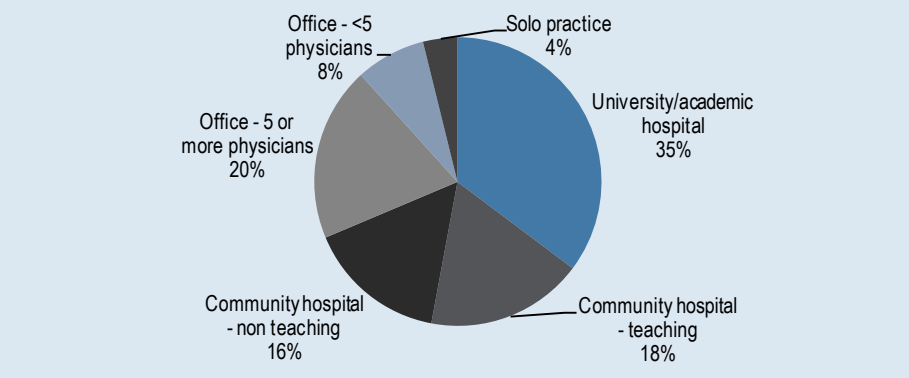
Source: J.P. Morgan.

Figure 36: Q2 – How many cancer patients do you treat per year in your practice? (n=51)



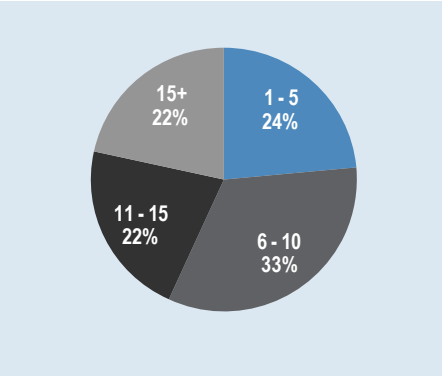
Source: J.P. Morgan.

Figure 37: Q5 – What is your primary practice setting? (n=51)



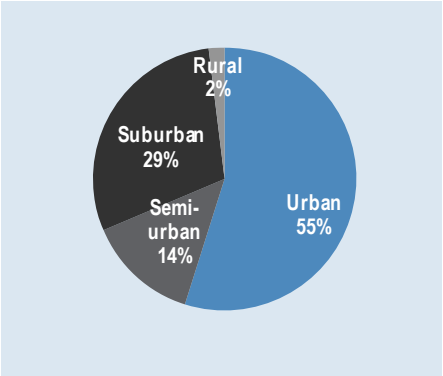
Source: J.P. Morgan.

Figure 38: Q6 – How many years have you practiced (post-residency)? (n=51)



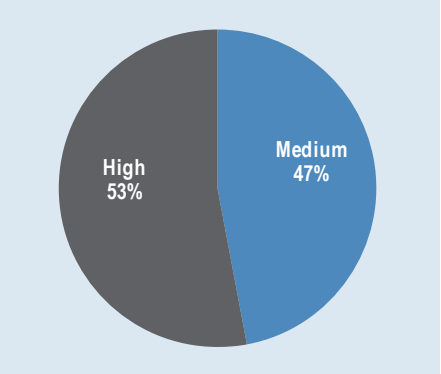
Source: J.P. Morgan.

Figure 39: Q7 – Which of the following best describes your primary practice location? (n=51)



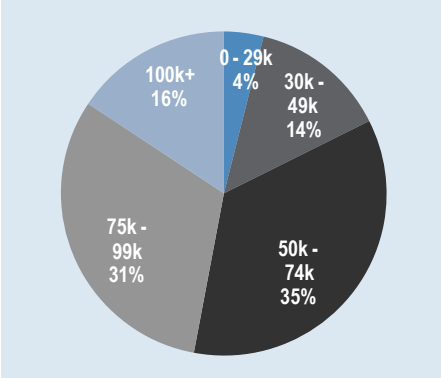
Source: J.P. Morgan.

Figure 40: Q8 – What is the average complexity of your cancer patients? (n=51)



Source: J.P. Morgan.

Figure 41: Q10 – What is the average income of your cancer patients? (n=51)



Source: J.P. Morgan.

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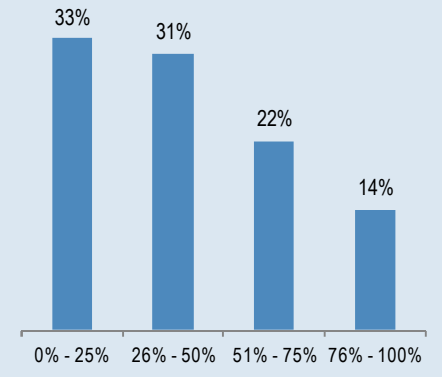
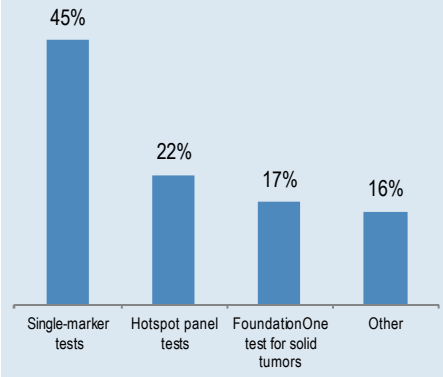
Survey Results

Figure 42: Q11 – For what percentage of your solid tumor cancer patients do you choose to order a genetic test? (n=51)



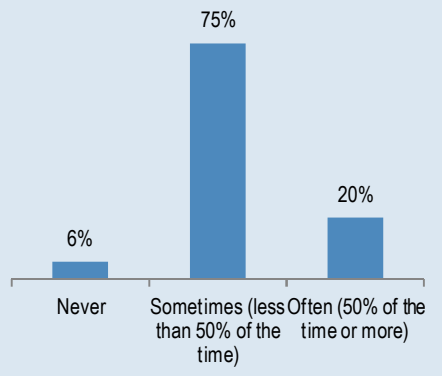
Source: J.P. Morgan.

Figure 43: Q11A – Of the solid tumor patients for whom you order a genetic test, what percentage are for each of the following types? (n=51)



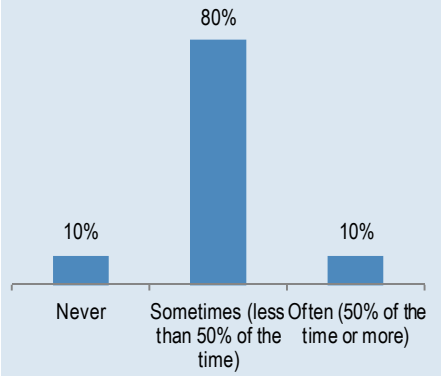
Source: J.P. Morgan.

Figure 44: Q12 – How often does limited biopsy tissue availability impact your choice of type or number of tests ordered? (n=51)



Source: J.P. Morgan.

Figure 45: Q13 – How often does poor tissue quality impact your choice of type or number of tests ordered? (n=51)



Source: J.P. Morgan.

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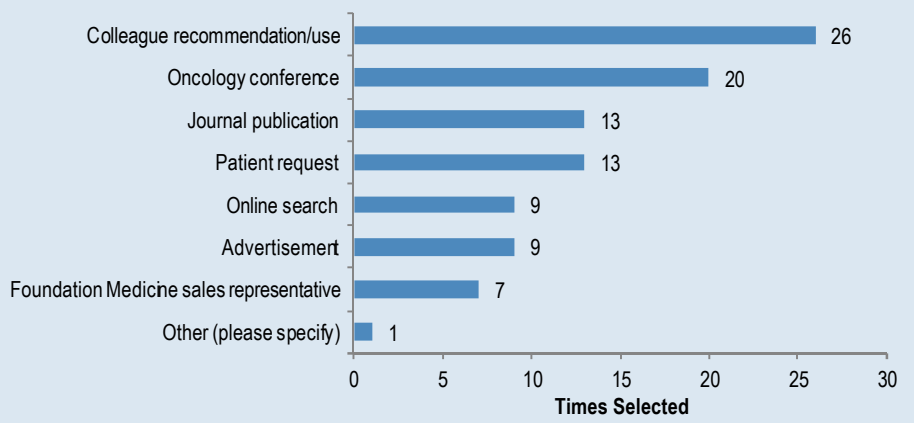
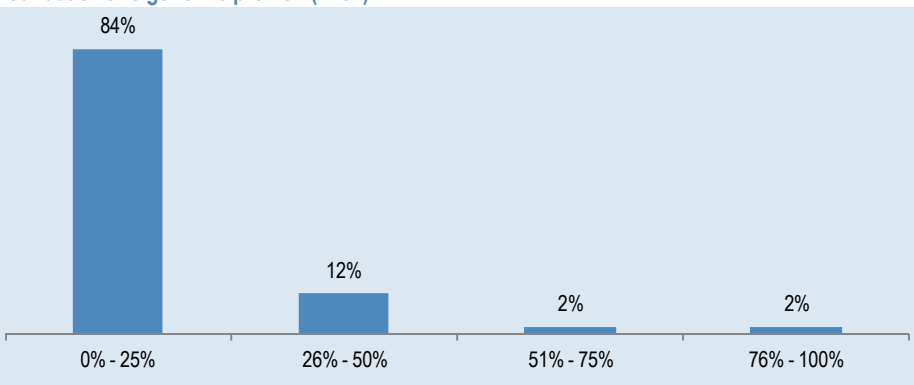
Figure 46: Q14 – Which of the following made you first aware of the FoundationOne test for solid tumors? Please select all that apply (n=51)



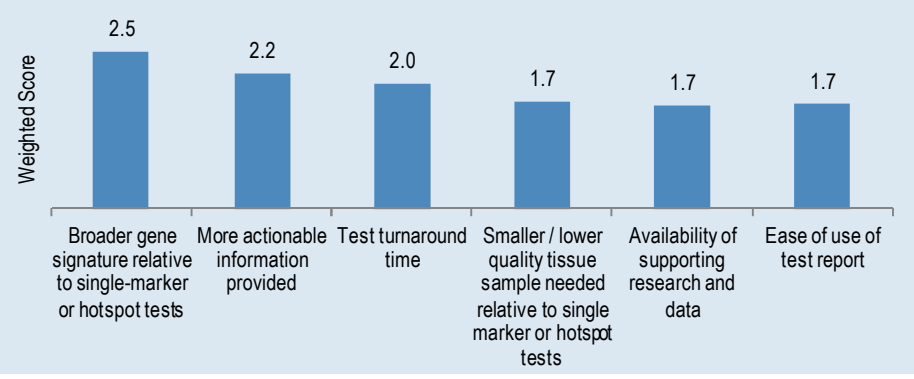
Source: J.P. Morgan.

Figure 47: Q15 – For what percentage of your cancer patients do you currently choose to order a FoundationOne genomic profile? (n=51)



Source: J.P. Morgan.

Figure 48: Q16 – For those patients for whom you order FoundationOne, please rank your TOP THREE reasons for doing so in order of importance: 1 for the most important factor, a 2 for the second most important factor, and a 3 for the third most important factor. You may use each number, 1-3, only once (n=51)



Source: J.P. Morgan.

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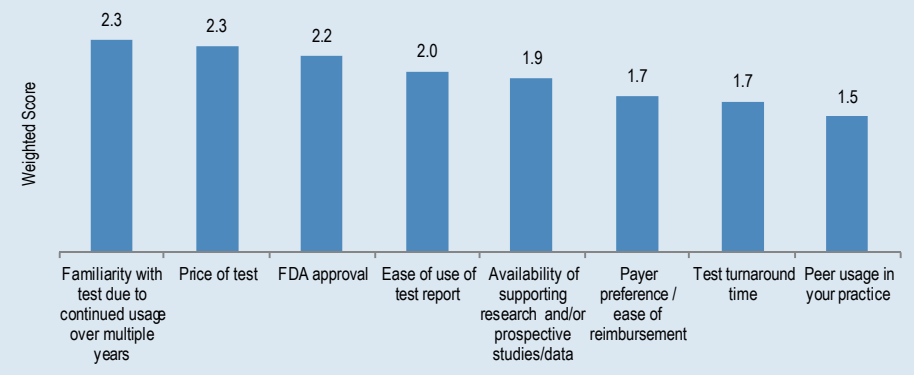
Figure 49: Q17 – For those patients for whom you order a genetic test other than FoundationOne, please rank your TOP THREE reasons for doing so in order of importance: 1 for the most important factor, a 2 for the second most important factor, and a 3 for the third most important factor. You may use each number, 1-3, only once (n=51)



Source: J.P. Morgan.

Figure 50: Q18 – For those genetic tests that you order other than FoundationOne, to what location do you send your tissue biopsy samples? (n=51)

Genomic Health, Quest Diagnositcs, Arup, Cleveland Clinic, Mayo Clinic	CARIS
Local pathology lab	Genzyme, Quest Diagnostics
Integrated oncology, Oncotype	Nearby University teaching hospital
University, Genomic Health	Neogenomics
Cellnetix	Quest Oncotype
Our own institution	In house clia path lab for hotspot testing
Our Molecular Pathology laboratory	LabCorp
University of Texas Caris	NeoGenomics
MAWD Molecular Lab	Outside reference lab
Quest, Cobas, Company central lab	Myriad
CARIS	Oncotype DX, Quest diagnostic

Source: J.P. Morgan.

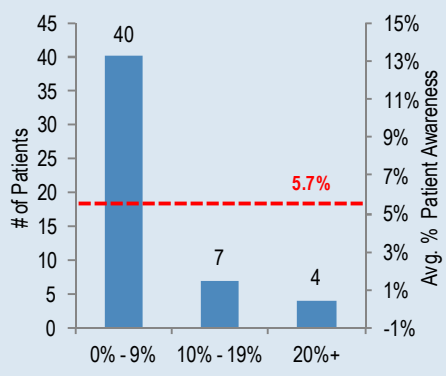
Figure 51: Q19 – What is the advantage to an oncologist of using FoundationOne versus an academic center to run a pan-cancer panel? (n=51)

Providing treatment options and clinical trial results is more beneficial than just a result reporting gene mutations.
There is none
FoundationOne is more cost efficient
Insurance reimbursement
Precision data driven results for personalized care
Foundation requires less infrastructure
There is more information from one sample than a single/small panel available
Quicker turnaround, pricing, and specificity
FoundationOne may have a more extensive panel and testing that is not available in-house
Ease of access and extensive testing
Possibly better reporting and/or correlation of results with available clinical trials.
More information, may provide novel mutations, resistance. Can be used retrospective to look back at the time of progression, etc
Customer service generally tends to be better, reporting is less esoteric
Reliability and timeliness
Panel of actionable genes
Academic centers often take a little longer to provide results and occasionally aren't reported with a clinical context.
Personalized Results
They use NGS to interrogate hundreds of cancer related genes from routine tumor samples. Test results are fast-usually 14 days.
Easy to order, quick turn around and assistant on insurance and billing issues

Note: These survey comments have been reproduced in their original form and have not been edited. Survey comments should not be attributed to J.P. Morgan and are not representative of its views.

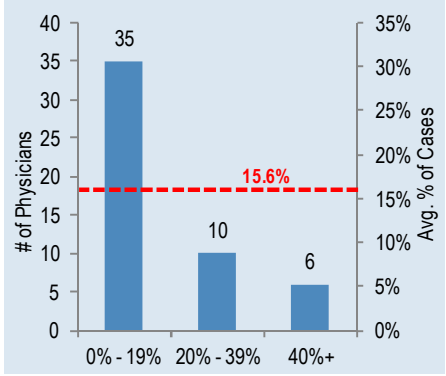
Source: J.P. Morgan.

Figure 52: Q20 – What percentage of your cancer patients are aware of or request the FoundationOne test of own accord? (n=51)



Source: J.P. Morgan.

Figure 53: Q21 – What percentage of the time has the FoundationOne test for solid tumors made you change the course of treatment or provided you with a treatment option that was not initially under consideration? (n=51)



Source: J.P. Morgan.

Figure 54: Q22 – Please cite specific FoundationOne patient "wins" in your practice (i.e., had patient X not had a FoundationOne test, she/he would have had a vastly inferior outcome) (n=51)

ALK mutations noted by FoundationOne have permitted the use of crizotinib
We had a significant tumor regression with the result of the FoundationOne test
Helped us find another targetable therapy for patients with refractory disease - in breast and a neuroendocrine tumor
It determined the presence of EGFR mutation and lack of KRAS mutation in patient with NSCLC, so Tarceva was used
Had my patient not had a FoundationOne test, he would have had a vastly inferior outcome
Patients can be identified for a targeted clinical trial not otherwise considered based on disease type.
Foundation testing enables targeted therapy not a otherwise viable
EGFR mutation in a female with lung cancer led to tarceva in first line therapy rather than chemotherapy treatment
Helped identify mutations for treatment of metastatic lung cancer
Breast tumor marker rise lead to PET, found incidental gyne cancer
No dramatic change in outcomes, so I've had no wins
FoundationOne found a genetic mutation that would not have otherwise not been found and thus therapy was changed
I was able to determine EGFR status in a patient who had biopsy that produced only a small suboptimal specimen
Identification of tyrosine kinase susceptibility in NSCLC in a patient with normal FISH studies.
Patient with ALK mutation noted, failed multiple chemo and now doing well on ALK inhibitor
By matching each patient with targeted therapies, larger patient population will have better clinical outcome
No definite wins as yet but offered therapy options that I would not have otherwise considered- eg targeted therapy for a metastatic parotid carcinoma
FoundationOne test used for a patient with NSCLC. EGFR was positive and resulted in modifying therapy to inhibit the growth factor. The patient responded wonderfully.
Patient with an uterine sarcoma - genomic findings changed the 2nd line therapy plans for the patient and with very good long term benefit.
A patient had adenocarcircinoma of unknown primary. I was able to change diagnosis and institute appropriate treatment patient still doing well on third line therapy
FGF amplification leading to eligibility for FGFRI clinical trial. Pten deletion leading to PI3k inhibitor trial. Met amplification. Leading to crizotinib
New lung cancer specialist who wanted fast turnaround times on KRAS and ALK testing. Ability to run her patients through FoundationOne was a big part of her willingness to join the facility = have been able to improve quality and access to high complexity lung cancer cases in several counties

Note: These survey comments have been reproduced in their original form and have not been edited. Survey comments should not be attributed to J.P. Morgan and are not representative of its views.

Source: J.P. Morgan.

Note: Over 20% of respondents replied "none" to question 23

Figure 55: Q23 – What improvements would you like to see in the content, presentation and ease of use of the FoundationOne test report? (n=51)*

So far none - report is pretty straight forward. May on discussion of clinical trials - what is nearest center offering the trials
Reports often note mutations for which there are no data for the use of therapeutics targeting those mutations making the data of limited value
Evidence based literature regarding utility of such treatment decisions.
Would like to receive more of the raw data
Executive summary of results
The report is clear, the data is inherently complex and requires time to interpret.
Video format
More detail in clinical trial part of the report to why the patient may benefit from the trials presented on the page based on the genomic profile
Have a summary of positive findings first, and then the detailed report to follow
Need to simplify the reports. Too much detail and statistics and numbers blurs the impact of the conclusions
I think the last time I ordered it, there were not actionable results. It detects many changes but it is not clear how many are driver changes
Clear communication to patient of their cost
Faster turn around time
More comprehensive incorporation of important mutations for hematologic malignancies
Strong tablet interface so docs can keep in lab coat pockets and have easy access to patient genetics on the go

Note: These survey comments have been reproduced in their original form and have not been edited. Survey comments should not be attributed to J.P. Morgan and are not representative of its views.

Source: J.P. Morgan.

Note: Over 35% of respondents replied "none" to question 24

Figure 56: Q24 – What improvements would you like to see in the content, presentation and ease of use of the Interactive Cancer Explorer portal? (n=51)*

I like the links to clinical trial enrollment and Pubmed, but it seems that the web page is a little cluttered.
Would like more disease specific info
Update old reports with copy number and VUS.
None at this point
More cartoons / animations
Patient specific offerings
Highlight and bold the key areas
Evidence based data coupled with case reports and examples of treatment algorithms
The online database of other clinicians' data and outcomes will be helpful
Perhaps ability to chat with a FM scientist
I would like it to be available on an iPhone app
I found that the portal is somewhat hard to read on small tablets and smartphones that are in use at our hospital.
Need to have information in the Explorer available more widely to colleagues, even to physicians that not enrolled with the company.

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Source: J.P. Morgan.

Figure 57: Q24A – Foundation Medicine intends to add an online interaction tool to Interactive Cancer Explorer in 2014, allowing physicians to share genome data and treatment outcomes. Please elaborate on the importance of this functionality to you and whether you see yourself making use of it when added (n=51)

It would be nice to see how other patients are faring based on the results and treatment regimen
Helpful if other people report. Would want to encourage negative data too
Could be useful for teaching patients, but depends on what information is available.
It would be interesting but all anecdotal and would not change my practice
It would be helpful to see how other pathologists are interpreting the panel
That will allow optimal data gathering
I would use it as it would help to stay aware of new gene mutations and therapies as they become discovered.
I am not sure whether I would take advantage of this
If there could be an easy to access network to send patients that would be useful
Very helpful. Similar to TCGA. Will allow trends and MD communication.
Correlating rare genetic events with outcomes is essential to proving the value of NGS in clinical practice for oncology.
Essential. I will use this regularly, and currently use the cBio portal in a similar manner
I believe an evidence based outcome from within Foundation Medicine is a critical way to get up to date data on frequency and treatment outcomes.
Sharing genome data is good for research purposes, however unless clinically actionable not very practical.
This may be of benefit during tumor board discussions of treatment options if the decision is made to order the FoundationOne test.
I think that as clinicians we at times hesitate to adapt new therapies if there is limited clinical experience within our own practice setting; the online addition would help broaden our familiarity with various treatment outcomes used in settings outside of our own
There is no data to suggest that clinical decisions can be based on this test. It is an unvalidated unproven instrument. Until such data exists I will not use this information in anything other than a research setting.
Very important to exchange ideas and innovative options in treatment. Currently there are uncommon or rare tumors that have only small and anecdotal or single case reports. Dissemination of information through journals and publications is time consuming and often requires a long time from submission to publication .

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Source: J.P. Morgan.

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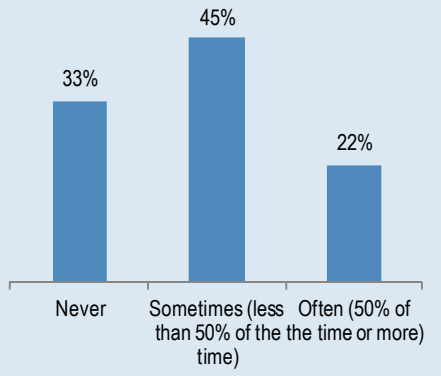
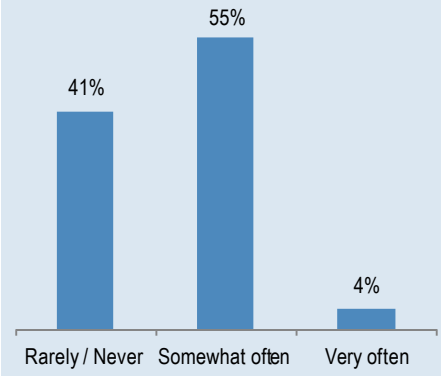
Figure 58: Q25 – How often do you get pushback from third-party payers when ordering the FoundationOne test? (n=51)



Source: J.P. Morgan.

Figure 59: Q26 – How often are patients being opted into off-label use for existing therapies (for example, a chemotherapy drug approved for a different cancer) as a result of FoundationOne test result? (n=51)



Source: J.P. Morgan.

Figure 60: Q25A – Please elaborate on the payor dynamic described above in terms of your reimbursement discussions with payors and patients (n=51)

They probably would not be amenable to reimbursing these treatments since they would be off-label.
Sometimes it's an issue
Insurance companies has not complained of off label use
They are not amenable to covering off label use based on FoundationOne testing
It's easier for older, less expensive drugs.
They won't pay for it. Can't get a drug off label
It may be more difficult to have the treatment approved by Medicare if used off-label
They are not in favor of such off-label use
Not always well received for expensive agents
Not enthusiastic, but I work to get patients access.
Wary, but currently reluctant to deny.
Hard to say, usually need pre-auth which can be tedious
No problem as long there is compendia listing
Usually can approve on appeal if no other options
Insurance is unlikely to cover drug
Off-label use is rarely covered by payors. I encounter a lot of resistance to get drugs approved.
There is usually no issue if I can provide abstract or other supportive literature for the off label use
Very variable levels of acceptance from different payors. In general they are reluctant to pay.
Sometimes the drug company will supply the medication. If there at least a compendium listing or relatively good data in the literature regarding the off label use of the drug, a minority of payors agree to Rx

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Source: J.P. Morgan.

Figure 61: Q26A – What do payors think of such off-label use resulting from the FoundationOne test? (n=51)

They probably would not be amenable to reimbursing these treatments since they would be off-label.
Sometimes it's an issue
Insurance companies has not complained of off label use
They are not amenable to covering off label use based on FoundationOne testing
It's easier for older, less expensive drugs.
They won't pay for it. Can't get a drug off label
It may be more difficult to have the treatment approved by Medicare if used off-label
They are not in favor of such off-label use
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Very variable levels of acceptance from different payors. In general they are reluctant to pay.
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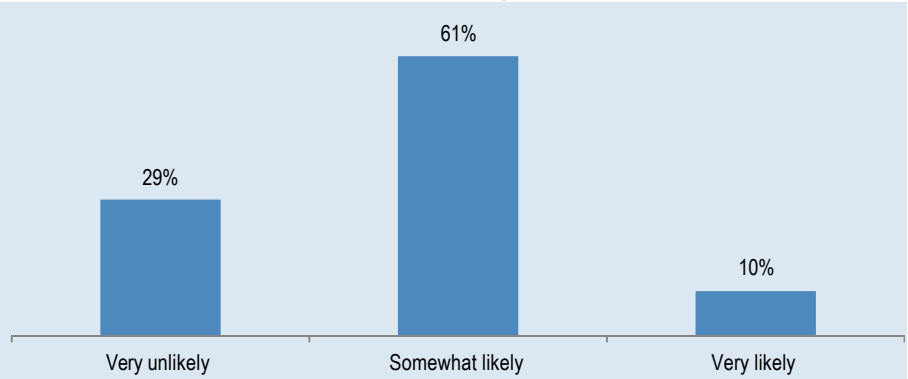
Source: J.P. Morgan.

Figure 62: Q27 – In your opinion, what is the likelihood of Medicare coverage for the FoundationOne test for solid tumors within the next 2 years? (n=51)



Source: J.P. Morgan.

Figure 63: Q28 – Since Foundation Medicine is not billing Medicare for any tests at the moment, how are you dealing with your Medicare patients in terms of ordering the FoundationOne test? (n=51)

Have only ordered this test for patients with private insurance or out of pocket payment so far.
Not sending unless patient knows risks of cost
Obtain secondary insurance and no balance billing and making patient is aware of financial issues
It is restrictive and limits the use of FoundationOne testing
Not ordering in these patients unless they request and are willing to pay out of pocket
Disclose the possibility to patient they may need to pay for the test and order as long as they are in agreement.
Very selective in ordering tests in Medicare patients. Patient and billers discussions a plan of payment
Usually wont be approved and copay too high
Rarely use with Medicare patients
Out of pocket where reasonable
Telling them that they may get stuck w bill
Many patients has combine HMO and Medicare
Patients are paying for test
We will usually work with the patient to evaluate financial assistance programs.
I think in some cases secondary insurance will pick up some otherwise patients have to pick up the payment
Some of these are done with the bill being sent to the Oncology Department. Others are presented to patients first before proceeding. It is being handled on a case by case basis, primarily guided by the oncologist.

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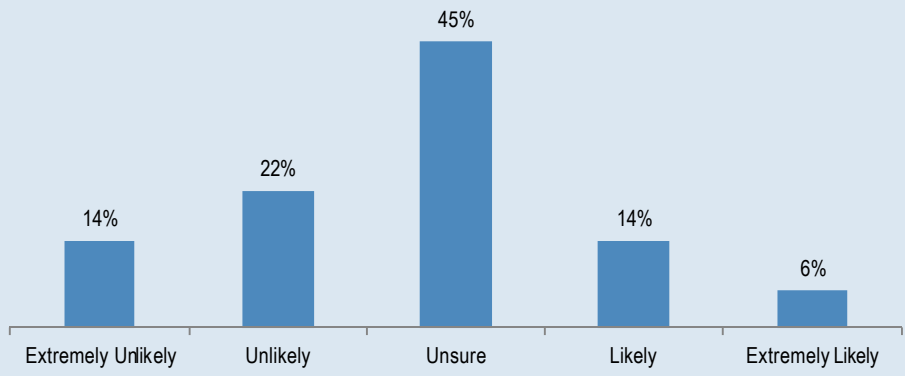
Source: J.P. Morgan.

Figure 64: Q29 – How likely would you be to switch from using single-marker or hotspot panel tests to FoundationOne for your solid tumor patients in the next 12 months? (n=51)



Source: J.P. Morgan.

Figure 65: Q29A – Please explain briefly the reasons behind your choice above (n=51)

Going to depend on price and ability to get reimbursed for particular tests
The single marker / hotspots are more cost-effective, currently.
I need actionable data based on genetic abnormalities and most don't have the literature support at this time
We are ramping up institutional multi-gene testing which will be easier to integrate into research studies.
More targeted therapy
Need Medicare to cover this test
Turnaround time and cost
We are testing a panel for FDA approved drugs
I fully believe in molecular analysis and finding new categories of therapy.
I would prefer FoundationOne because it is more comprehensive
Needs to be connected to FDA approved indications
Need to have broader coverage and more physicians using the test to make in more useful.
Hotspot testing is much less expensive and will identify evidence proven valuable in genetic information.
It has more info and more novel mutations
Single marker and hotspot panels still have a role as there is too much unpredictability to abandon these services entirely
We have a long-standing relationship with Neogenomics.
Hotspot tech is outdated. I only send if it is a marker not included on F1 or if standardized single marker needed EG her2 or braf kras etc

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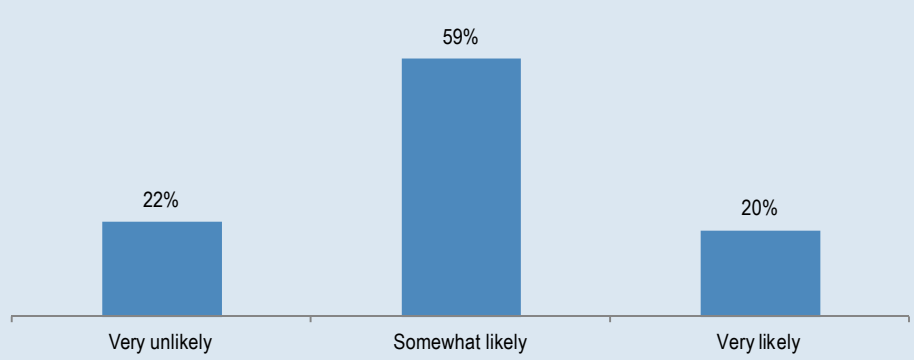
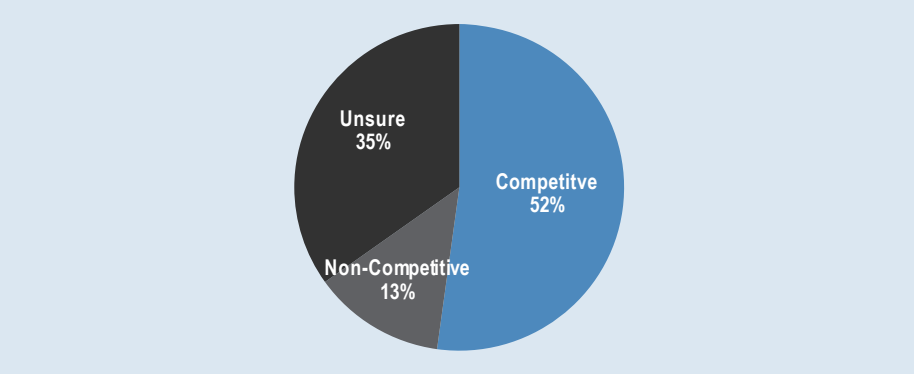
Source: J.P. Morgan.

Figure 66: Q30 – Based upon your experience with the FoundationOne test in your solid tumor patients, how likely are you to order the FoundationOne test for hematologic malignancies once it is launched? (n=51)



Source: J.P. Morgan.

Figure 67: Q31 – Longer-term, how do you see a test like FoundationOne competing with in-house efforts (next gen sequencing on MiSeq, HiSeq, etc.)? (n=46)



Source: J.P. Morgan.

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Foundation Medicine: Summary of Financials

Income Statement - Annual	FY12A	FY13E	FY14E	FY15E
Revenues	11	23	43	88
Cost of products sold	(6)	(10)	(17)	(31)
Gross profit	-	-	-	-
SG&A	(9)	(23)	(41)	(63)
R&D	(15)	(23)	(29)	(33)
Operating income	(22)	(36)	(47)	(43)
EBITDA	(19)	(33)	(43)	(39)
Net interest (income) / expense	(0)	(0)	(0)	0
Other income / (expense)	(0)	(2)	0	0
Income taxes	0	0	0	0
Net income	(23)	(39)	(47)	(43)
Diluted shares outstanding	9	17	29	29
Diluted EPS	(2.62)	(2.26)	(1.62)	(1.49)

Balance Sheet and Cash Flow Data	FY12A	FY13E	FY14E	FY15E
Cash and cash equivalents	55	98	50	12
Accounts receivable	2	3	5	10
Inventories	1	1	1	2
Other current assets	1	1	2	4
Current assets	58	103	59	28
PP&E	7	10	14	18
Total assets	66	115	75	48
Total debt	3	1	0	0
Total liabilities	11	11	18	35
Shareholders' equity	55	104	57	14
Net income (including charges)	(22)	(39)	(47)	(43)
D&A	3	3	3	4
Change in working capital	0	1	4	8
Other	2	2	0	1
Cash flow from operations	(17)	(32)	(40)	(30)
Capex	(3)	(6)	(7)	(8)
Free cash flow	(20)	(38)	(46)	(39)
Cash flow from investing activities	(3)	(7)	(7)	(8)
Cash flow from financing activities	64	82	(1)	1
Dividends	0	0	0	0
Dividend yield	-	-	-	-

Income Statement - Quarterly	1Q13A	2Q13A	3Q13E	4Q13E
Revenues	5A	6A	6	6
Cost of products sold	(2)A	(2)A	(2)	(3)
Gross profit	-	-	-	-
SG&A	(4)A	(7)A	(7)	(6)
R&D	(5)A	(6)A	(6)	(6)
Operating income	(7)A	(10)A	(10)	(9)
EBITDA	(6)A	(9)A	(9)	(8)
Net interest (income) / expense	(0)A	(0)A	(0)	(0)
Other income / (expense)	(0)A	(0)A	(3)	0
Income taxes	0A	0A	0	0
Net income	(7)A	(10)A	(13)	(9)
Diluted shares outstanding	11A	12A	17	28
Diluted EPS	(0.64)A	(0.84)A	(0.76)	(0.30)

Ratio Analysis	FY12A	FY13E	FY14E	FY15E
Sales growth	-	114.4%	89.0%	104.2%
EBIT growth	-	64.1%	29.5%	(6.9%)
EPS growth	-	(13.8%)	(28.1%)	(8.3%)
Gross margin	-	-	-	-
EBIT margin	(205.8%)	(157.6%)	(107.9%)	(49.2%)
EBITDA margin	(179.6%)	(142.9%)	(100.2%)	(44.3%)
Tax rate	0.0%	0.0%	0.0%	0.0%
Net margin	(213.0%)	(169.7%)	(108.1%)	(49.2%)
Net Debt / EBITDA	270.5%	294.7%	115.9%	31.6%
Net Debt / Capital (book)	(1448.8%)	(1272.0%)	(724.1%)	(926.4%)
Return on assets (ROA)	(68.7%)	(42.8%)	(49.0%)	(70.1%)
Return on equity (ROE)	(82.1%)	(48.7%)	(58.0%)	(122.7%)
Enterprise value / sales	-	-	-	-
Enterprise value / EBITDA	-	-	-	-
Free cash flow yield	(6.9%)	(6.4%)	(4.8%)	(3.9%)

Source: Company reports and J.P. Morgan estimates.
Note: $ in millions (except per-share data).Fiscal year ends Dec

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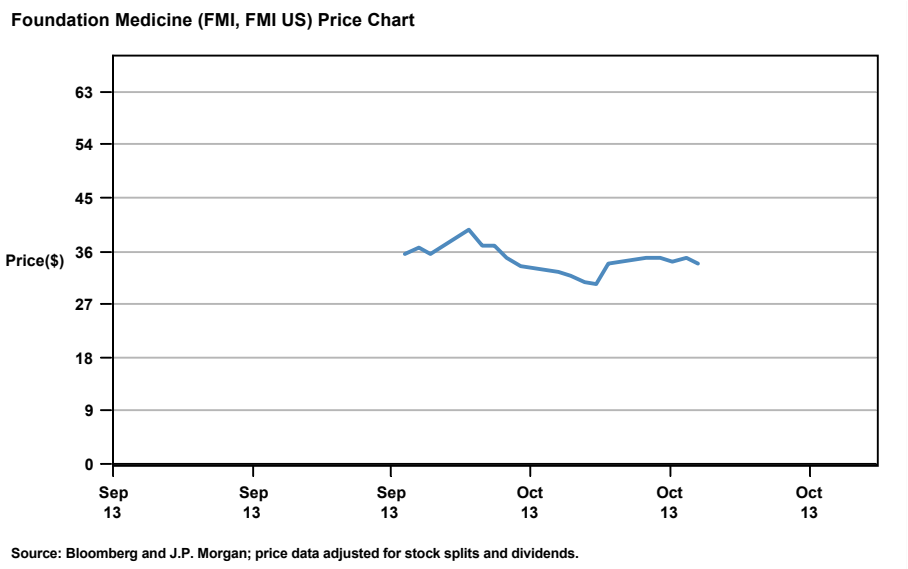

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IB clients*	76%	65%	57%

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