Foundation Medicine, Inc. (FMI)

Initiating Coverage at Market Outperform; Leading the Charge in NGS-based Molecular Diagnostics

MARKET OUTPERFORM | Price: $23.12 | Target Price: $33.00

MARKET DATA

Price	$23.12
52-Week Range:	$20.00 - $41.50
Shares Out. (M):	28.1
Market Cap ($M):	$649.7
Average Daily Vol. (000):	202.0

Price: Price as of 12/16/2013
Source: Thomson Reuters and JMP Securities LLC

FY DEC		2012A	2013E	2014E
Revenue ($M)	1Q	$1.0	$5.2	$10.0
	2Q	$1.0	$5.9	$11.1
	3Q	$3.0	$8.2	$12.9
	4Q	$7.0	$8.5	$15.9
	FY	**$12.0**	**$27.8**	**$50.0**
EPS	1Q	($16.54)	($0.33)	($0.36)
	2Q	($5.90)	($0.48)	($0.39)
	3Q	($6.90)	($0.44)	($0.39)
	4Q	($4.90)	($0.39)	($0.44)
	FY	**($3.90)**	**($1.64)**	**($1.57)**
	P/E	NM	NM	NM

Source: Company reports and JMP Securities LLC

STOCK PRICE PERFORMANCE

INVESTMENT HIGHLIGHTS

We are initiating coverage on Foundation Medicine (FMI) with a Market Outperform rating and $33 price target. The company's FoundationOne test is currently the only commercially available pan-cancer panel that delivers concise, comprehensive, actionable, and patient-specific treatment options. The company has a clear first-mover advantage, and while there is uncertainty around the timing of reimbursement and the sustainability of pricing, we believe the company can maintain its position even in the face of increased competition in the space. Our $33 price target implies a 2015 EV/Sales multiple of 11.8x, representing an 18% premium relative to its same peer group. FMI is also being valued as a biotech company and we think it reasonable that our price target reflects an enterprise value (using projected levels of debt and cash) that is ~13x our revenue estimate for the twelve months ended September 2015, a multiple that is in line with the peer group median.

Targeted cancer therapies demand a new kind of cancer diagnostic. Systemic cancer treatment is evolving. The field is rapidly shifting away from a paradigm in which the disease is treated primarily with chemotherapy, toward the use of targeted drugs prescribed to selected subsets of patients across multiple tumor types. Foundation Medicine brings to market the only NGS-based, pan-cancer test that bridges the gap between genomic information and personalized targeted therapy. Foundation Medicine meets a growing need and has a first-mover advantage.

The FoundationOne test is the first, but likely not the last, NGS-based cancer panel designed for use in routine clinical decision making. It assesses 236 biologically relevant cancer genes for all four major classes of genetic alterations in solid tumors and links them to FDA-approved treatments or to drugs currently in ongoing clinical trials. The test delivers a highly personalized regimen from a menu of available treatment options. To date, >1,600 physicians across 25+ countries have ordered the FoundationOne test. The launch of the company's hematologic malignancy panel in 2014 could drive additional volume.

Reimbursement and competition are a well-understood risk, in our view. We believe that partial reimbursement may be attainable in 2015, and that full coverage is possible in 2018. Foundation may have the first-mover advantage, but, inevitably, there will be other companies entering the field. We believe that the company's ability to increase the number of genes in its test, coupled with the global network of physicians tied to its Interactive Cancer Explorer, can keep competition at bay.

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INVESTMENT THESIS

Initiating coverage on Foundation Medicine with a Market Outperform rating

We are initiating coverage on Foundation Medicine (FMI) with a Market Outperform rating and $33 price target. FMI recently went public on September 24, 2013. The company's FoundationOne test is currently the only commercially available pan-cancer panel to deliver concise, comprehensive, actionable, and patient-specific treatment options. The company has a clear first-mover advantage, in our view, and while there is uncertainty around the timing of reimbursement and the sustainability of pricing, we believe the company can sustain its position even in the face of increased competition in the space.

Targeted cancer therapies demand a new kind of cancer diagnostic.

Systemic cancer treatment is evolving. The field is rapidly shifting away from a paradigm in which the disease is treated primarily with chemotherapy, toward the use of targeted drugs prescribed to selected subsets of patients across multiple tumor types. Personalized cancer therapy cannot be done without diagnostic tests that comprehensively characterize the genomic alterations occurring within individual tumors. However, well-established genetic tests are limited in their capability to assess large numbers of oncogenic markers as the small amount of material obtained from biopsies prevents testing against hundreds of cancer-related genes and the genomic alterations associated with them. Next-generation sequencing, or NGS, has enabled scientists to rapidly detect genomic alterations in hundreds of genes in a single test. It has substantially driven down the cost of sequencing by allowing multiple genes to be sequenced at once. Foundation Medicine brings to market the only NGS based pan-cancer test that bridges the gap between genomic information and personalized targeted therapy. The FoundationOne test is the first NGS based cancer panel designed for use in routine clinical decision making. It assesses 236 biologically relevant cancer genes for all four major classes of genetic alterations in solid tumors and links them to FDA-approved treatments or to drugs currently in clinical trials; the number of genes should grow as scientists continue to make more discoveries but the price will remain the same. The test delivers a highly personalized regimen from a menu of available treatment options.

Foundation Medicine has a sustainable first-mover advantage

To date, >1,600 physicians across 25+ countries have ordered the FoundationOne test. The launch of the company's hematologic malignancy panel in 2014 could drive more volume. There will inevitably be other companies entering the field. Well-established players such as Illumina (ILMN, MO, $125 PT) , along with private companies like OncoDNA or academic labs, CROs, or a host of other organizations could enter the market. Nevertheless, we believe that FMI's ability to maintain its leadership position is sustainable because: 1) the gene set in FoundationOne will grow as science advances; 2) the test delivers actionable recommendations, not just information; 3) the company has spent several years developing a network of oncologists, physicians, and scientists.

Reimbursement remains the biggest risk to the story

On the commercial side, FMI uses a stacked subset of molecular CPT codes to submit reimbursement claims. The process nets the company $3,300-3,700 per test, though the list price for FoundationOne is $5,800. We believe that partial Medicare reimbursement may be attainable in 2015, and that full coverage should be attainable in 2018.

VALUATION

Our $33 price target is a blend of a discounted cash flow analysis and a relative, multiple-based, approach against a group of peers. Our DCF-derived price target assumes a discount rate of 12% and a 4.0% terminal growth rate (Figure 1). We have included a sensitivity analysis for the equity value relative to the discount rate and terminal growth rate.

We use forward EV/Sales as the preferred metric for relative valuation of a non-profitable company. The peer group includes a broad swath of diagnostic as well as oncology/biopharma and big data software companies. On a relative basis, FMI currently trades at a 2014 EV/Sales multiple of 14.3x versus an average of 8.8x for diagnostic peers and 14.2x for the biopharma peer group. Our price target implies a 2015 EV/Sales multiple of 12.0x, representing an 18% premium relative to the same peer group. FMI is also being valued as a biotech company, we think it reasonable that our $33 price target reflects an enterprise value (using projected levels of debt and cash) that is ~13x our revenue estimate for the twelve months ended September 2015, a multiple in line with the biotech median. We note that the current $23 stock price implies a 2015 EV/Sales multiple of 7.9x.

FIGURE 1. DCF Valuation

		Foundation Medicine Therapeutics Projections												
		2013	2014		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Revenue		27.8	50.0	85.1	158.2	186.1	303.5	346.5	427.8	477.9	552.3	625.7	775.1	901.8
% Revenue Growth			*80%*	*70%*	*86%*	*18%*	*63%*	*14%*	*23%*	*12%*	*16%*	*13%*	*24%*	*16%*
Total COGs		11	17	29	52	60	91	104	128	143	166	188	233	271
Gross Profit (US)		17	32	56	106	127	212	243	299	335	387	438	543	631
Gross Margin		17	32	56	106	127	212	243	299	335	387	438	543	631
% Gross Margin		*62%*	*65%*	*66%*	*67%*	*68%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*
Total S&M		13	16	20	47	47	61	62	67	71	74	78	82	86
% of Revenue		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Total R&D		18	30	34	47	37	46	42	43	45	47	49	51	58
% of Revenue		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Total G&A		25	36	42	59	47	76	87	95	100	104	108	113	117
% of Revenue		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Total Operating Expenses		57	82	96	153	130	182	191	206	216	225	235	245	261
Operating Income		**($40)**	**($50)**	**($40)**	**($47)**	**($4)**	**$30**	**$52**	**$94**	**$119**	**$162**	**$203**	**$298**	**$370**
		DCF Valuation												
Operating Income		(40)	(50)	(40)	(47)	(4)	30	52	94	119	162	203	298	370
NOL - Beginning		40	80	130	170	217	221	190	138	45	-	-	-	-
NOL - Ending		80	130	170	217	221	190	138	45	-	-	-	-	-
Less: Income Taxes	35%	-	-	-	-	-	-	-	-	26	57	71	104	130
After-Tax Operating Income		(40)	(50)	(40)	(47)	(4)	30	52	94	93	105	132	193	241
Ch. In Revs	10%	-	22	35	73	28	117	43	81	50	74	73	149	127
Less: Net Change in W/C		-	(2)	(4)	(7)	(3)	(12)	(4)	(8)	(5)	(7)	(7)	(15)	(13)
Unlevered Free Cash Flow (FCF)		(40)	(52)	(43)	(55)	(7)	19	48	85	88	98	125	178	228
		0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5
PV of FCF		(38)	(45)	(33)	(38)	(4)	10	24	39	36	36	42	54	62

Equity Value Per Share		Perpetuity Growth Rate		
		1.5%	4.0%	6.5%
Discount Rate	10.0%	$36	$47	$74
	11.0%	$30	$38	$53
	12.0%	$25	$31	$41
	13.0%	$22	$25	$32
	14.0%	$19	$21	$26

Equity Value Per Share		Exit Multiple		
		3.2x	4.0x	4.8x
Discount Rate	10.0%	$38	$45	$52
	11.0%	$34	$41	$47
	12.0%	$31	$37	$42
	13.0%	$28	$33	$38
	14.0%	$25	$30	$34

Source: JMP Securities LLC

FIGURE 2. Relative Valuation, Diagnostics, and Biotech Comparables

Company	Ticker	Price	Market Cap ($M)	Enterprise Value ($M)	FY13 Revenue	FY14 Revenue	EV / Rev FY13	EV / Rev FY14
Illumina	ILMN	$102.60	$12,947	$12,778	$1,403.4	$1,582.8	9.1x	8.1x
Hologic	HOLX	$22.15	$6,012	$9,988	$2,513.7	$2,470.2	4.0x	4.0x
Qiagen	QGEN	$22.63	$3,883	$5,900	$1,310.2	$1,382.1	4.5x	4.3x
Cephei	CPHD	$44.96	$2,998	$2,926	$390.3	$447.2	7.5x	6.5x
Myriad Genetics	MYGN	$23.49	$1,827	$1,470	$598.8	$717.6	2.5x	2.0x
Intrexon	XON	$19.74	$1,915	$1,750	$40.2	$103.7	43.6x	16.9x
Genomic Health	GHDX	$29.70	$933	$819	$261.6	$294.6	3.1x	2.8x
Meridian Biosci	VIVO	$25.19	$1,032	$988	$188.9	$204.4	5.2x	4.8x
Exact Sci	EXAS	$12.14	$861	$716	$4.1	$28.3	173.6x	25.3x
Luminex	LMNX	$18.25	$762	$701	$214.6	$235.0	3.3x	3.0x
Fluidigm	FLDM	$32.09	$821	$757	$69.8	$84.4	10.8x	9.0x
Genmark	GNMK	$11.75	$487	$354	$27.1	$27.2	13.1x	13.0x
Pacbio	PACB	$5.01	$321	$210	$28.2	$44.2	7.5x	4.8x
Cdi	ICEL	$15.37	$242	$375	$12.0	$28.7	31.1x	13.0x
							22.8x	**8.4x**
Foundation Medn	**FMI**	**23.12**	**$651**	**$515**	**$18.8**	**$49.9**	**27.4x**	**10.3x**

Company	Ticker	Price	Market Cap ($M)	Enterprise Value ($M)	FY13 Revenue	FY14 Revenue	EV / Rev FY13	EV / Rev FY14
Ariad Pharm	ARIA	$3.86	$739	$521	$44.5	$45.6	11.7x	11.4x
Agrn Phrmctcl	AEGR	$66.25	$1,936	$1,818	$49.8	$205.5	36.5x	8.9x
Ariad Pharm	ARIA	$3.86	$739	$521	$44.5	$45.6	11.7x	11.4x
Arena Pharma	ARNA	$5.66	$1,215	$1,108	$115.4	$55.7	9.6x	19.9x
Aveo	AVEO	$1.68	$89	-$20	$1.2	$1.3	-17.1x	-16.1x
Biomarin Pharma	BMRN	$69.21	$9,888	$9,587	$546.1	$669.0	17.6x	14.3x
Celgene Corp	CELG	$163.38	$67,950	$66,737	$6,429.9	$7,436.2	10.4x	9.0x
Clovis Oncology	CLVS	$53.89	$1,785	$1,428	$0.0	$0.0	N.A.	N.A.
Dendreon	DNDN	$3.31	$522	$953	$284.3	$314.3	3.4x	3.0x
Exelixis	EXEL	$5.72	$1,072	$1,122	$32.6	$36.0	34.4x	31.2x
Immunogen	IMGN	$14.56	$1,226	$1,051	$33.8	$71.5	31.1x	14.7x
Incyte	INCY	$49.65	$7,877	$7,773	$352.5	$501.9	22.1x	15.5x
Infinity Pharma	INFI	$12.73	$623	$373	$0.0	$27.8	N.A.	13.4x
Isis Pharma	ISIS	$37.86	$4,311	$3,806	$137.7	$142.3	27.6x	26.7x
Medivation	MDVN	$61.89	$4,764	$4,726	$247.9	$425.3	19.1x	11.1x
Onyx Pharma	ONXX	$124.70	$9,145	$8,576	$637.7	$872.4	13.4x	9.8x
Orexigen	OREX	$5.51	$566	$483	$3.4	$58.7	141.7x	8.2x
Pharmacyclics	PCYC	$107.88	$7,952	$7,392	$203.9	$329.6	36.3x	22.4x
Regeneron Pharm	REGN	$268.45	$27,349	$26,839	$2,058.0	$2,622.6	13.0x	10.2x
Seattle Genetics	SGEN	$40.02	$4,925	$4,551	$260.7	$285.7	17.5x	15.9x
Theravance	THRX	$35.25	$3,938	$3,719	$8.9	$112.5	417.4x	33.1x
Vertex Pharma	VRTX	$64.76	$15,236	$14,482	$1,075.9	$703.3	13.5x	20.6x
Vivus	VVUS	$9.50	$991	$854	$65.5	$121.5	13.0x	7.0x
Pharmacyclics	PCYC	$107.88	$7,952	$7,392	$203.9	$329.6	36.3x	22.4x
							41.8x	**14.1x**
Foundation Medn	**FMI**	**23.12**	**$651**	**$515**	**$18.8**	**$49.9**	**27.4x**	**10.3x**

Price (12/16/2013)	$23.12	**EV to 2015 Sales Mulitple**	**12.0x**
Share Count	28.132	2015 sales	$85.1
Market Cap ($M)	$650.4	Enterprise Value ($M)	$1,021.5
		Discount rate	11%
Cash ($M)	$137.9	Market Cap ($M)	$920.24
Debt ($M)	$0.0	Share Count	28.1
Enterpise Value ($M)	**$512.5**	**Fair Value/Share**	**$32.75**
JMP Estimates- 2014 Sale	$50.0		
JMP Estimates- 2015 Sale	$85.1		
EV to 2014 Sales	**10.3x**		
EV to 2015 Sales	**6.0x**		

Source: ThomsonOne, JMP Securities LLC (Priced as of 12/16/2013)

INVESTMENT RISKS

Timing of Medicare and commercial payer coverage remains uncertain. FMI does not have a positive coverage decision from any commercial payor. Further, it has not begun to even submit claims to Medicare. To date, the company has had a modest amount of success at being paid for its services. The test is reimbursed at a rate of $3,300-$3,700, below the list price of $5,800, but in line with other genetic tests currently on the market.

Competition is likely to increase. Foundation may have first-mover advantage, but given that the genes found on FoundationOne are not proprietary, it is only a matter of time before another competitor surfaces. What the platform lacks in traditional IP protection is compensated by extensive trade secrets and know-how. Furthermore, the gene set in FoundationOne is not static, it should grow to include other genes as science advances; however, management intends to keep the price of the test at the same level

Clinical utility remains unproven. The company has not completed a clinical utility trial to demonstrate the value of FoundationOne beyond current tests. While the company is currently in the process of running several trials to demonstrate clinical utility, physicians and payers may hesitate to adopt the test.

Regulation is likely to increase. Over the last few years the FDA has stated its intent to more thoroughly regulate laboratory diagnostic tests (LDTs). The agency believes there is an increasing need to ensure the accuracy and clinical validity of a test before it comes to market. However, the timing of increased regulation remains uncertain.

COMPANY DESCRIPTION

Foundation Medicine is a commercial-stage, molecular diagnostics company. The company's FoundationOne test for solid tumors is the only commercially available, comprehensive molecular information product designed for use in routine clinical care. The test generates actionable genomic information about an individual patient's disease, enabling physicians to personalize and optimize treatments in clinical practice. The same platform allows biopharmaceutical companies to more effectively develop targeted oncology therapies. Since the FoundationOne test was launched in 2012, more than 1,600 physicians have placed orders. The company has 18 biopharmaceutical partners that use the platform for biopharmaceutical discovery. The company is located in Cambridge, Massachusetts and went public on September 24, 2013 and trades on NASDAQ under the ticker, FMI.

TECHNOLOGY OVERVIEW

Systemic cancer treatment is evolving. The field is rapidly shifting away from a paradigm in which the disease is treated primarily with chemotherapy, toward the use of targeted drugs prescribed to selected subsets of patients across multiple tumor types. These molecularly targeted drug regimens promise to be safer. The success of trastuzumab (Herceptin) in *ERBB2* (also known as *HER2*)-amplified breast cancer, imatinib (Gleevec) in Philadelphia chromosome–positive chronic myelogenous leukemia, and erlotinib (Tarceva) in *EGFR*-mutated, non-small cell lung cancer are just some examples of this dynamic. The success of genomics-based discovery has led to hundreds of compounds in clinical development, targeting more than 100 genomic alterations in cancer-related genes representing multiple cellular pathways. Clearly, more personalized cancer therapy may be achieved by targeting the specific molecular drivers of an individual patient's disease.

Personalized cancer therapy cannot be done without diagnostic tests that comprehensively characterize the genomic alterations occurring within individual tumors. Effective genetic diagnostic testing enables patients to be matched to known drugs. However, well-established technologies such as PCR, Sanger sequencing, mass spectrometric genotyping, fluorescence *in situ* hybridization (FISH), and immunohistochemistry (IHC), are limited in their capability to assess large numbers of oncogenic markers due to the small amount of material obtained from biopsies that prevents testing against hundreds of cancer related genes and the genomic alterations associated with them.

Next-generation sequencing, or NGS, has enabled scientists to rapidly detect genomic alterations in hundreds of genes in a single test. It has substantially driven down the cost of sequencing by allowing multiple genes to be sequenced at once. NGS data output has increased at a rate outpacing Moore's law, more than doubling each year since it was invented six years ago. In 2007, a single-sequencing run could produce a maximum of roughly one gigabase (Gb) of data. By 2011, that rate had reached a terabase (Tb) of data in a single run – nearly a 1,000x increase in four years. NGS enables scientists to move quickly from an idea to full data sets in a matter of hours or days. Five human genomes can be sequenced in a single run, producing data in one week, for a reagent cost of $5,000 per genome, or less. As a reminder, the first human genome required 10 years to sequence and three years to analyze, and the total cost was $3 billion.

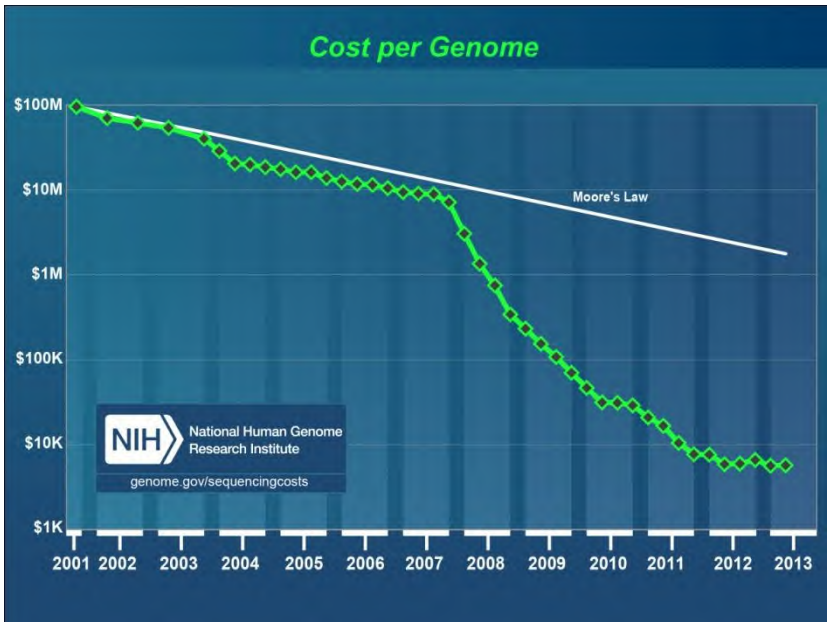
FIGURE 3. Comparison of NGS vs. Traditional Sanger Sequencing

Technology	Starting Material	Samples per Run	Run Time*	Read Length	Number of Clusters	Output per Run	Applications
CE-based Sanger Method	1–3 µg	1-96	0.5 hrs	550 bp†	1–96	0.550–52.5 kb	DNA sequencing, resequencing, microsatellite analysis, SNP genotyping
			3 hrs	900 bp†	1–96	0.9–86.4 kb	
Illumina MiSeq® System	50 ng Nextera® kit	1 lane flow cell	4 hrs	1 × 36 bp§	25 million	15 Gb	DNA sequencing, gene regulation analysis, quantitative and qualitative sequencing-based transcriptome analysis, SNP discovery and structural variation analysis, cytogenetic analysis, DNA-protein interaction analysis (ChIP-Seq), sequencing-based methylation analysis, small RNA discovery and analysis, de novo, metagenomics, metatranscriptomics
	0.1–1 µg TruSeq® kit		65 hrs	2 × 300 bp**			
Illumina HiSeq® System	50 ng Nextera kit	Single or dual 8-lane flow cell	1.5–11 days	2 × 100 bp‡	3 billion	Up to 600 Gb	
	0.1–1 µg TruSeq kit						

* CE-based run time does not include 4-hour sequencing reaction on the thermocycler prior to loading. NGS sequencing and base detection occurs concurrently during the run.
† Base pairs with quality scores of 20 (Q20).
§ > 90% of base pairs have quality scores of 30 (Q30).
** > 70% of base pairs have quality scores of 30 (Q30).
‡ > 80% of base pairs have quality scores of 30 (Q30).

Source: Illumina

FIGURE 4. NGS has Dramatically Reduced Sequencing Costs/Genome



Source: NIH

FoundationOne is an assay based on next-generation sequencing (NGS). FoundationOne currently contains 236 genes identified by leading oncologists and cancer biologists as they are known to be altered in human solid tumors, are drivers for tumor growth, and are, therefore, targets for therapy. The test looks for all four classes of genomic alterations – base pair substitutions, copy number alterations, short insertions/deletions, and gene rearrangements and fusions, and 47 introns of 19 known genes involved in rearrangements. The list of genes will grow undoubtedly grow in the future.

FIGURE 5. List of Genes Currently in FoundationOne

CURRENT GENE LIST							
ABL1	BTK	CTNNB1	FGF23	IL7R	MLH1	PDGFRA	SMO
AKT1	CARD11	DAXX	FGF3	INHBA	MLL	PDGFRB	SOCS1
AKT2	CBFB	DDR2	FGF4	IRF4	MLL2	PDK1	SOX10
AKT3	CBL	DNMT3A	FGF6	IRS2	MPL	PIK3CA	SOX2
ALK	CCND1	DOT1L	FGFR1	JAK1	MRE11A	PIK3CG	SPEN
APC	CCND2	EGFR	FGFR2	JAK2	MSH2	PIK3R1	SPOP
AR	CCND3	EMSY (C11orf30)	FGFR3	JAK3	MSH6	PIK3R2	SRC
ARAF	CCNE1	EP300	FGFR4	JUN	MTOR	PPP2R1A	STAG2
ARFRP1	CD79A	EPHA3	FLT1	KAT6A (MYST3)	MUTYH	PRDM1	STAT4
ARID1A	CD79B	EPHA5	FLT3	KDM5A	MYC	PRKAR1A	STK11
ARID2	CDC73	EPHB1	FLT4	KDM5C	MYCL1	PRKDC	SUFU
ASXL1	CDH1	ERBB2	FOXL2	KDM6A	MYCN	PTCH1	TET2
ATM	CDK12	ERBB3	GATA1	KDR	MYD88	PTEN	TGFBR2
ATR	CDK4	ERBB4	GATA2	KEAP1	NF1	PTPN11	TNFAIP3
ATRX	CDK6	ERG	GATA3	KIT	NF2	RAD50	TNFRSF14
AURKA	CDK8	ESR1	GID4 (C17orf39)	KLHL6	NFE2L2	RAD51	TOP1
AURKB	CDKN1B	EZH2	GNA11	KRAS	NFKBIA	RAF1	TP53
AXL	CDKN2A	FAM123B (WTX)	GNA13	LRP1B	NKX2-1	RARA	TSC1
BAP1	CDKN2B	FAM46C	GNAQ	MAP2K1	NOTCH1	RB1	TSC2
BARD1	CDKN2C	FANCA	GNAS	MAP2K2	NOTCH2	RET	TSHR
BCL2	CEBPA	FANCC	GPR124	MAP2K4	NPM1	RICTOR	VHL
BCL2L2	CHEK1	FANCD2	GRIN2A	MAP3K1	NRAS	RNF43	WISP3
BCL6	CHEK2	FANCE	GSK3B	MCL1	NTRK1	RPTOR	WT1
BCOR	CIC	FANCF	HGF	MDM2	NTRK2	RUNX1	XPO1
BCORL1	CREBBP	FANCG	HRAS	MDM4	NTRK3	SETD2	ZNF217
BLM	CRKL	FANCL	IDH1	MED12	NUP93	SF3B1	ZNF703
BRAF	CRLF2	FBXW7	IDH2	MEF2B	PAK3	SMAD2	
BRCA1	CSF1R	FGF10	IGF1R	MEN1	PALB2	SMAD4	
BRCA2	CTCF	FGF14	IKBKE	MET	PAX5	SMARCA4	
BRIP1	CTNNA1	FGF19	IKZF1	MITF	PBRM1	SMARCB1	

SELECT REARRANGEMENTS							
ALK	BCR	BCL2	BRAF	EGFR	ETV1	ETV4	ETV5
ETV6	EWSR1	MLL	MYC	NTRK1	PDGFRA	RAF1	RARA
RET	ROS1	TMPRSS2					

Source: Foundation Medicine

Foundation Medicine's approach bridges the gap between genetic information and clinical practice. There are already many types of tests on the market; however, more often than not, physicians are unable to gain a more unified view of a person's cancer as existing methods only target one (or a few) genes at a time. Most commonly referred to as hotspot panels, existing tests are only able to identify base pair substitutions and specific gene rearrangements and exclude copy number and short insertions/deletions. Moreover, running multiple tests is often not an option due to the limited availability of high-quality tissue samples. FoundationOne only requires a single tissue sample to test against all 236 genes. The greatest advantage of the test, in our opinion, is that it aggregates all the information from 236 genes into one, actionable report. Physicians who order hotspot panels have to interpret results from different laboratories and take the time to design a personalized treatment protocol for the patient. This process is time consuming, expensive, and may require a level of expertise in genomics that the physician does not have. FoundationOne links this information to known therapies, resulting in an actionable, optimized, and comprehensive set of options for the patient.

The test's objective is to provide a clinician with a course of action. Thus, the test includes only genes that have been implicated in cancers for which there is an FDA approved therapy OR for which there is a therapy in the later stages of clinical development. The output of the FoundationOne test is a report that provides options for patients. The report also identifies noteworthy absences of genomic alterations typically associated with anatomical tumors of the same type, and the report incorporates analyses of peer-reviewed studies and other publicly available information. These analyses and information may include associations between a molecular alteration (or lack of alteration) and one or more drugs with potential clinical benefit (or potential lack of clinical benefit), including drug candidates that are being studied in clinical research. Turnaround time for the test is approximately 14-17 days.

The FoundationOne process:

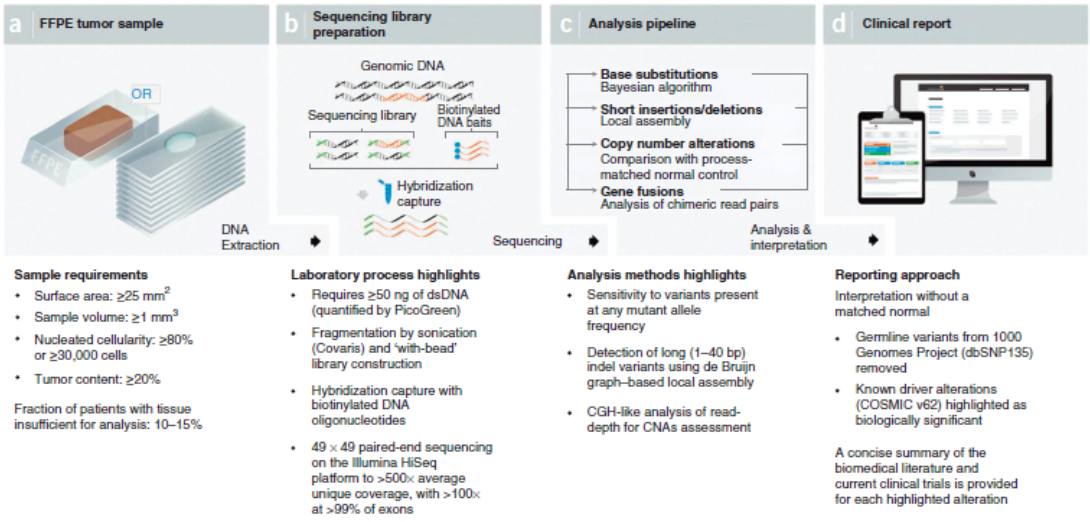
***Step 1: Sample preparation*:** Samples must be at least 40 microns thick and consist of at least 20% tumor cells to enable the extraction of at least 50 nanograms of DNA. About 95% of all incoming samples meet these requirements. The company uses a proprietary target enrichment method to capture the exons of 236 cancer-related genes plus 47 introns from 19 genes often rearranged or altered in cancer.

***Step 2: Sequencing*:** Next, FMI determines the content of each DNA molecule using next-gen sequencing, specifically ILMN's HiSeq 2500. The company sequences the target molecules to an average depth of coverage of greater than 250x. Thus, FoundationOne is able to detect genomic alterations that may be present in as low as 1% of all cells being tested.

***Step 3: Data analysis*:** After sequencing, each DNA molecule that meets the tests' quality thresholds is analyzed via the company's computational algorithms in order to detect and identify all genomic alterations present in the cancer sample. The company then further distills the genomic alterations into those where there is an available FDA-approved drug or clinical trial for which the patient is eligible for therapy based on the genomic characteristics of his or her sample. The last part of the process involves synthesizing the information regarding the identified alterations into actionable information. This resultant report is then returned to the ordering physician who can use the data in conjunction with clinical assessment to form his or her treatment decisions.

Physicians access the FoundationOne report through the Interactive Cancer Explorer – a web-based portal developed in conjunction with Google Ventures. The Explorer links information about the reported genomic alteration found by the test to known therapies and clinical trials.

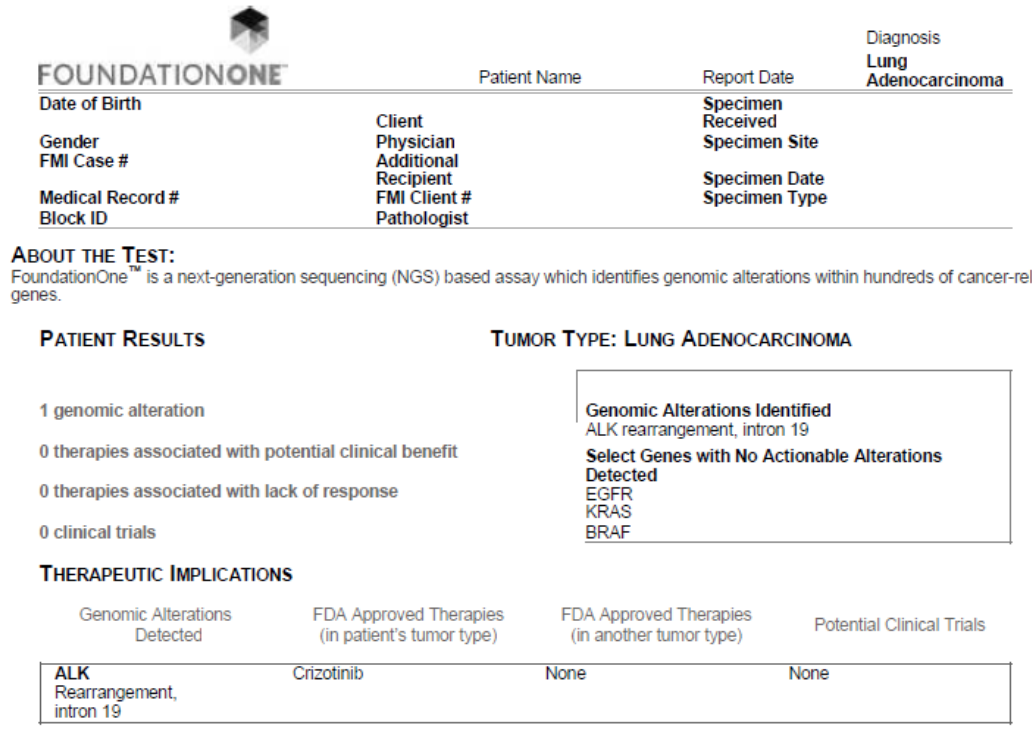
FIGURE 6. Schematic of FoundationOne Testing Process



NGS-based cancer genomic profiling test workflow. (**a**) DNA is extracted from routine FFPE biopsy or surgical specimens. (**b**) 50–200 ng of DNA undergoes whole-genome shotgun library construction and hybridization-based capture of 4,557 exons of 287 cancer-related genes and 47 introns of 19 genes frequently rearranged in solid tumors. Hybrid-capture libraries are sequenced to high depth using the Illumina HiSeq2000 platform. (**c**) Sequence data are processed using a customized analysis pipeline designed to accurately detect multiple classes of genomic alterations: base substitutions, short insertions/deletions, copy-number alterations and selected gene fusions. (**d**) Detected mutations are annotated according to clinical significance and reported.

Source: Foundation Medicine

FIGURE 7. FoundationOne Sample Report



FOUNDATIONONE

Patient Name		Report Date	Diagnosis Lung Adenocarcinoma
Date of Birth		Specimen Received	
	Client		
Gender	Physician	Specimen Site	
FMI Case #	Additional Recipient	Specimen Date	
Medical Record #	FMI Client #	Specimen Type	
Block ID	Pathologist		

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

PATIENT RESULTS

1 genomic alteration

0 therapies associated with potential clinical benefit

0 therapies associated with lack of response

0 clinical trials

TUMOR TYPE: LUNG ADENOCARCINOMA

Genomic Alterations Identified
ALK rearrangement, intron 19

Select Genes with No Actionable Alterations Detected
EGFR
KRAS
BRAF

THERAPEUTIC IMPLICATIONS

Genomic Alterations Detected	FDA Approved Therapies (in patient's tumor type)	FDA Approved Therapies (in another tumor type)	Potential Clinical Trials
ALK Rearrangement, intron 19	Crizotinib	None	None

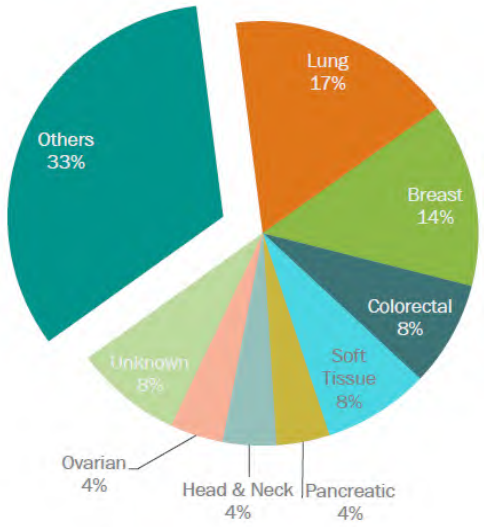
The first page of the report (shown) lists the genomic alterations identified in the hundreds of genes assayed. It also lists the targeted therapies that may be relevant to those genomic alterations in the patient tumor type and in other tumor types. Finally, it lists whether there are any relevant clinical trials. There are four other pages to this report (not shown). The second page of the report contains a more detailed interpretive statement that references the frequency of the genomic alteration, its biological implication and what it may mean f or the patient. The Therapies section of the report provides more details on approved therapies to which the patient's cancer may be sensitive or resistant based on its genomic profile. The clinical trials section of the report provides some detail on currently available clinical trials for which the patient may be eligible based on genomic profile of the patient's cancer. This section also provides guidance to the physician to help identify other trials in publicly available databases for which the patient The appendix of the report contains the full list of genes assayed in the test so you can see all the genes in which there were no alterations found. The appendix also lists the references used in creating the report and technical notes about the test.

Source: Foundation Medicine

USES IN TARGETED THERAPY AND BIOPHARMA R&D

FoundationOne can be used by physicians to find targeted therapies and by biopharmaceutical companies as an R&D platform. Approximately 82% of tests run to date (from a data set of 3,936 tests since the 2012 launch) have resulted in an actionable finding. Conversely, existing tests would have only yielded an actionable finding in 31% of cases. Figure 8 illustrates the use of FoundationOne across a broad variety of cancers. The company defines "actionable" as a test result that yields: a) an FDA-approved therapy for the specific tumor type being tested; b) an FDA-approved therapy for another tumor type; or c) an open clinical trial for which the genetic alteration confers patient eligibility.

FIGURE 8. Types of Cancer Screened for in *FoundationOne*



Source: Foundation Medicine

The cases below summarize previously published cases where FoundationOne was used to optimize therapy.

Case Study 1 – Identifying an actionable alteration missed by hotspot tests: FoundationOne detected an anaplastic lymphoma kinase (ALK) fusion in a tumor specimen from a 43-year-old man diagnosed with metastatic adenocarcinoma of the lung involving his bones and pleura. Previous traditional diagnostic tests, including a customary FISH (Fluorescence in Situ Hybridization) test failed to identify the mutation. The patient was then treated with Xalkori (crizotinib), a targeted therapy that inhibits the activity of the ALK fusion protein. The treatment shrunk the tumor and the patient experienced a nearly complete resolution of the disease for 16 months. The results were published in the Journal of Thoracic Oncology in September 2012.

Case Study 2 – Identifying an actionable mutation not tested for in breast cancer: FoundationOne detected an epidermal growth factor receptor (EGFR) point mutation in a tumor specimen from a middle-aged woman with metastatic inflammatory breast cancer (IBC); she initially had received a combination of chemotherapy and targeted therapy, including Herceptin (trastuzumab), although her disease progressed within 12 months. Based on the EGFR finding, the patient began Tarceva (erlotinib) therapy as part of a combination regimen and experienced durable symptomatic and radiographic benefit that lasted eight months. Since therapies are traditionally prescribed per the tumor's anatomical location, and EGFR mutations are commonly associated with lung cancer, it is not likely that other tests would have identified this alteration. The company plans to submit these results to a peer-reviewed journal in the near future.

Case Study 3 – Lung cancer from rare mutation responds to off-label agent and leads to further clinical trials. A 66-year-old man, a never-smoker, was referred to an oncology department for stage IV non-small-cell lung cancer (NSCLC); the patient had developed progressive left thoracic pain. A subsequent chest computed tomography (CT) scan showed massive left pleural effusion and pleural thickening, primarily involving the mediastinal pleura. Traditional testing did not reveal any activating epidermal growth factor receptor (EGFR) mutation or any specific ALK rearrangement. Given the patient's never-smoker status, additional molecular analyses were performed and revealed a BRAF V600E mutation. The patient was then treated with off-label vemurafenib monotherapy that induced rapid and complete metabolic and radiologic response. The Journal of Clinical Oncology published this case in July 2013.

Biopharmaceutical companies can use FoundationOne to enhance the development of targeted oncology therapies. The company deploys its molecular information platform to analyze tissue samples provided by biopharmaceutical partners from their clinical trials. The company then uses its proprietary platform testing, computational biology, and information technology capabilities to provide biopharmaceutical partners with comprehensive genomic profiling and information relevant to precision medicine strategies for both retrospective and prospective clinical studies and other drug development activities.

The platform capabilities enable Foundation's partners to:

- accelerate clinical development timelines and increase the likelihood of patient response by prospectively analyzing tumor specimens to identify patients with certain genomic alterations for enrollment in clinical trials for targeted cancer therapeutics;
- guide usage and inform future development opportunities for experimental and marketed therapies by retrospectively analyzing clinical trial patients to stratify them as responders or non-responders based on the presence or absence of certain genomic alterations;
- create opportunities for drug combination studies or new target discovery by identifying mechanisms of primary and acquired resistance; and
- inform improvements to clinical trial design by contributing to the understanding of why some clinical studies have not met their primary endpoints.

As of June 2013, Foundation had ongoing relationships with 18 biopharmaceutical partners, many of which are the leaders in developing targeted cancer therapies. Publicly announced biopharmaceutical customers include Agios Pharmaceuticals, Inc., ARIAD Pharmaceuticals, Inc. (ARIA, MP, King), Array BioPharma Inc., AstraZeneca UK Limited, Celgene Corporation (CELG, MO, $175 PT, King), Clovis Oncology, Inc., Eisai Co., Ltd., Johnson & Johnson, Novartis, and Sanofi.

In addition to customary clinical settings in which physicians prescribe an FDA-approved therapy, approximately 3% of patients with cancer in the United States are currently enrolled in clinical trials for experimental therapies sponsored by biopharmaceutical companies. By broadening its relationships with its biopharmaceutical partners, Foundation expects to deploy its molecular information platform for an increasing portion of patients with cancer enrolled in clinical trials both in and outside the United States. These relationships will continue to expand and may provide the company with opportunities to sell its molecular information products for companion diagnostics development, research and development projects, and new target discovery and validation.

In addition to generating revenue, the relationships with biopharmaceutical partners enable the company to identify new genes under investigation that can be incorporated early into its molecular information platform and its products, and more broadly allow the company to actively participate in the newest oncology therapeutics and practice. Foundation also believes that its activities with leading drug development companies focused on cancer therapeutics strengthens its relationships with the broader oncology community, including thought leaders, who are important to the adoption of its commercial products.

COMMERCIALIZATION AND GROWTH STRATEGY

Foundation Medicine aims to drive awareness and adoption of its comprehensive molecular information products through a commercialization plan that entails:

- Building an experienced, oncology-focused sales force in the United States and international distribution channels supported by dedicated company personnel.
- Collaborate with oncology thought leaders and leading institutions on FoundationOne clinical cases, clinical research, publications, and product development;
- Publish important medical and scientific data in peer-reviewed journals, present at major industry conferences and conduct clinical trials.
- Foster adoption and promote physician engagement through medical affairs and client services efforts, and by developing and deploying practice-friendly technology resources to physicians.

Foundation Medicine's sales force in the United States targets oncologists and pathologists at hospitals and cancer centers. The company launched FoundationOne for solid tumors in June 2012 with a sales force of only two people that has grown to 15 sales professionals, as of June 30, 2013, with backgrounds in oncology, pathology, therapeutics, and/or laboratory services. These sales professionals have an average of eleven years of experience in clinical oncology sales working at leading biopharmaceutical or specialty reference laboratory companies. The company will continue to grow this specialized, oncology-focused sales force and support it with medical specialists with extensive knowledge in the design and use of molecular information products. We expect the company to end 2013 with 28 salespeople and we expect this to ramp to 140 by 2018. As FMI grows its sales force, it will increasingly have to target community hospitals and community-based cancer centers that need a reliable and collaborative partner for comprehensive molecular information testing.

The current sales efforts focus on building relationships with thought leaders at leading academic research institutions to demonstrate the clinical usefulness of FoundationOne. The company is also building relationships in community oncology practice settings through leading physician networks. For example, The U.S. Oncology Network, whose members include approximately 10% of all U.S. oncologists, selected FMI as one of its preferred molecular information partners. Other oncology networks, such as Cancer Treatment Centers of America, which has five centers nationally, has chosen to use FoundationOne across all their centers. These networks expect to use FoundationOne to streamline ordering and data collection, to provide access to and guidance about the use of the most advanced cancer testing and treatments, and to support their clinical trials.

The company's international sales strategy is currently focused on partnering with leading distributors and selling directly to academic and medical centers. FMI has targeted various markets outside of the United States, principally based on the demand from those markets and its own market assessments. As a result of these factors, the company is responding to opportunities in Central and South America, Western Europe, portions of the Middle East, and Asia, and it anticipates exploring opportunities in other geographic areas as well. FMI is expanding its internal capacity to serve high-demand markets by adding dedicated regional managers located outside the United States to oversee its relationships at the local level.

One key aspect of the company's commercial strategy is to integrate the results of its products into the everyday clinical practice of oncologists in an effort to become an even more important partner in their efforts to treat patients with cancer. FMI's goal is for physicians to use the Interactive Cancer Explorer, an online portal developed in consultation with Google Ventures, to shape each patient's treatment plan. Through Interactive Cancer Explorer, FMI delivers the key genomic information identified by FoundationOne in an organized fashion along with access to current information about the reported genomic alterations, associated therapies, and clinical trials. Launched in December 2012, already more than 40% of FoundationOne customers use Interactive Cancer Explorer. In our view, it is this network that entrenches the product in routine clinical use and protects Foundation Medicine against future competition.

Interactive Cancer Explorer presents complex genomic information in a practice-friendly interface that links directly into publicly available databases, such as PubMed and clinicaltrials.gov. The portal also provides direct links or references to journal articles and clinical trials to information relevant to a patient's identified genomic alterations. In the future, FMI intends to link Interactive Cancer Explorer to additional public and private data sources such as The Cancer Genome Atlas, the Cancer Genome Project, and others, as it continues to rationalize, correlate, and incorporate disparate sources of information into its products. By making this information more readily accessible to physicians, FMI will make it easier for them to bring new, relevant information to each patient's treatment plan. The company is also developing additional applications for the Interactive Cancer Explorer, which we expect to launch in 2014.

With regard to pipeline development, Foundation Medicine plans on launching FoundationOne for hematologic oncology in 1Q14. FMI has been developing FoundationOne for hematologic malignancies in collaboration with Memorial Sloan-Kettering Cancer Center. The assay will sequence RNA and DNA to identify the genes and genomic alterations characteristic of hematologic malignancies. Hematologic malignancies account for approximately 10% of new cancer diagnoses in the United States. Beyond 2015, the company will look to expand its offerings into areas such as recurrence monitoring, therapeutic resistance, and incorporating RNA into its gene sets. Its technology platform will also likely evolve toward mobile platforms, facilitate more advanced clinical trials search, and begin to incorporate clinical outcomes.

REIMBURSEMENT

Foundation Medicine currently does not have broad Medicare coverage for the FoundationOne test. Revenue currently comes from several sources. Pharmaceutical companies pay according to contractual agreements. Select hospitals, cancer centers, international patients, and distributors pay directly at fixed and negotiated rates. Patients pay required co-pays and deductibles. Foundation Medicine is not a covered provider with any third-party payer and, therefore, does not have any established payment rates. These payers reimburse FoundationOne claims based on stacked CPT codes or percentages of charges or some other method. In general, payer coverage yields an ASP of ~$3,600 per test; this puts it in the ball park of other genomic tests currently on the market. For example, Genomic Health's OncotypeDx and Agendia's MammaPrint currently have an ASP of $3,100 and $4,200, respectively.

With regards to Medicare, FoundationOne is not covered by any state program. It does not have a national coverage decision and has not submitted claims to Medicare. The company plans to begin submitting claims for FoundationOne tests for Medicare patients by the end of 2013. We expect some form of Medicare coverage to begin in 2015 (30% coverage), rising to 100% after 2017. We expect that 50% of all tests will be billed to commercial payors, 33% to Medicare, and 10% billed directly to patients. These estimates are based on the assumption that most genetic tests receive full reimbursement five years after they are approved.

We note that while timing and reimbursement levels are a risk, the company had been working with Medicare and private payors for several years prior to the product first launching. The FoundationOne test does not fit into the historical paradigm of a single gene panel focused on a single disease. At the same time, the private and public payers cannot deny that FoundationOne's use is impacting clinical decision making. This shift away from the status quo means that Foundation Medicine is faced with the daunting task of forcing a change in the way Medicare and other payers value genetic tests. In our opinion, key components to the company's success will be: a) continued publication (they already have 15 with 12 more in the queue) of clinical data in peer reviewed journals; b) demonstrating (and publishing) decision impact studies; and c) demonstrating economic impact.

COMPETITION

Foundation Medicine is the first in what we expect to be a long-line of NGS-based testing platforms. Pricing pressure has already forced many established players, such as Myriad and Genomic Health, to move toward panel-based testing, and we believe it is only a matter of time before these and other players shift toward an NGS platform. There are other companies, like OncoDNA, that are based on an NGS platform but simply lack the scale of FMI. We envision that academic labs, CROs, laboratory diagnostics players like Quest and Lab Corp, or even platformers, such as Illumina, may eventually enter the market. We assume pricing in the space will continue to decline.

The ASP for the FoundationOne test is approximately $5,800, but the company currently brings in approximately $3,300-$3,700 for each test, putting it on par with some of the tests marketed by Genomic Health and Myriad. InVitae is currently marketing its test for $1,500, regardless of how many genes a physician orders. The main difference is that Foundation provides actionable options to physicians in the FoundationOne report. Moreover, the company's Interactive Cancer Explorer allows physicians to augment their cancer knowledge and encourages users to share genomic and treatment data and other clinical information. It provides a level of comprehensive molecular data that has never before been available to physicians.

FIGURE 9. Potential Competitors to FoundationOne

Pan-Cancer Panels	Invitae, OncoDNA, Myriad Genetics
Single Marker and Hotspots	NanoString, Fluidigm, Genomic Health, Life Technologies, Illumina, 23 and Me, Knome, Natera, Ambry Genetics, RainDance, bioMereux
CROs	Covance, Charles River, Quintiles
NGS Platformers	Illumina, Roche, Affymetrix, Life Technologies
Diagnostic Companies	Lab Corp, Quest Diagnostics, Gene by Gene, Luminex
Interpretation Companies	N of One, CollabRx

Source: Foundation Medicine, other Company reports, JMP Securities LLC

:

CLINICAL ACTIVITIES

One of Foundation Medicine's core growth strategies is to strengthen its relationship to the oncology community by publishing strong clinical data. From the beginning of 2012 through June 2013, FMI had:

- Twelve peer-reviewed articles published or accepted for publication, including by Nature Medicine, Cancer Discovery, Journal of Clinical Oncology, Journal of Thoracic Oncology, Blood, and Genome Medicine;
- Another dozen additional manuscripts under consideration for publication by major journals, including Nature, Nature Medicine, Nature Genetics, Nature Biotechnology, Journal of Clinical Oncology, and Cancer Discovery;
- Over 35 poster presentations based on clinical and research data that have been accepted and presented at major scientific conferences on themes that include the identification of multiple novel actionable drug targets, known drug targets in novel tumor types, novel resistance mechanisms to targeted therapies, new insights into models of metastasis and novel hypotheses on the molecular basis of response or resistance to certain targeted therapies; and
- Delivered more than 20 speaking presentations at scientific meetings such as ASCO, American Association of Cancer Research (AACR), San Antonio Breast Cancer Symposium, U.S. and Canadian Association of Pathology (USCAP), and Advances in Genome Biology and Technology (AGBT), among others.

The company has a number of ongoing company-sponsored clinical trials and clinical trials sponsored by individual physicians, or investigator-initiated clinical trials, such as:

- ***The U.S. Oncology Decision Impact Study.*** This study is designed to assess the impact of FoundationOne on physician decision-making in a real world setting. FoundationOne will be performed on solid tumors from 300 patients during their second or later-lines of therapy. When the patient progresses, the impact of FoundationOne in switching a physician's recommended next course of treatment will be evaluated. Other endpoints may be evaluated as well.
- ***The FoundationOne Registry.*** The objective of this study is to better understand the impact of FoundationOne on a clinical population including, importantly, how physicians act on the results and how the results impact care and outcomes. The study is designed to recruit 3,000 patients over three years, with the initial 500 patients drawn from all patients for whom the FoundationOne test is ordered. A wide array of clinical variables will be assessed, including subsequent treatments and responses to those treatments. These patients will be followed for one year. The later cohorts of patients will be adaptive, with entry criteria to be determined based on initial outcomes of the study.
- ***The MD Anderson Prospective Study***. This study aims to compare the clinical outcomes of patients treated with targeted therapy after testing with FoundationOne compared to historical outcomes for patients treated with chemotherapy. The study is designed to enroll a group of 300 patients with advanced solid tumors who are screened at enrollment with FoundationOne. These patients will then be treated with a targeted therapy selected on the basis of the FoundationOne test. Clinical outcomes for these patients will be compared to recent historical results for patients who received treatment with conventional chemotherapy for the same tumor types and stage.

FIGURE 10. List of Publications Regarding FoundationOne

Vaishnavi A, Capelletti M, Le AT, Kako S, Butaney M, Ercan D, Mahale S, Davies KD, Aisner DL, Pilling AB, Berge EM, Kim J, Sasaki H, Park S, Kryukov G, Garraway LA, Hammerman PS, Haas J, Andrews SW, Lipson D, Stephens PJ, Miller VA, Varella-Garcia M, Jänne PA, Doebele RC. **Oncogenic and drug-sensitive *NTRK1* rearrangements in lung cancer.** Nature Medicine. Advance online publication. 2013 Oct 27.

Frampton GM, Fichtenholtz A, Otto GA, Wang K, Downing SR, He J, Schnall-Levin M, White J, Sanford EM, An P, Sun J, Juhn F, Brennan K, Iwanik K, Maillet A, Buell J, White E, Zhao M, Balasubramanian S, Terzic S, Richards T, Banning V, Garcia L, Mahoney K, Zwirko Z. **Development and validation of a clinical cancer genomic profiling test based on massively parallel DNA sequencing.** Nature Biotechnology. Advance online publication. 2013 Oct 20..

Ross JS, Wang K, Al-Rohil RN, Nazeer T, Sheehan CE, Otto GA, He J, Palmer G, Yelensky R, Lipson D, Ali S, Balasubramanian S, Curran JA, Garcia L, Mahoney K, Downing SR, Hawryluk M, Miller VA, Stephens PJ.**Advanced urothelial carcinoma: next-generation sequencing reveals diverse genomic alterations and targets of therapy**. Mod Pathol. 2013 Jul 26.

Ross JS, Ali SM, Wang K, Palmer G, Yelensky R, Lipson D, Miller VA, Zajchowski D, Shawver LK, Stephens PJ. **Comprehensive Genomic Profiling Of Epithelial Ovarian Cancer By Next Generation Sequencing-Based Diagnostic Assay Reveals New Routes To Targeted Therapies**. Gynocologic Oncology. 19 Jun 2013.

Wheler J, Hong D, Swisher SG, Falchook G, Tsimberidou AM, Helgason T, Naing A, Stephen B, Janku F, Stephens PJ, Yelensky R, Kurzrock R. **Thymoma Patients Treated in a Phase I Clinic at MD Anderson Cancer Center: Responses to mTOR Inhibitors and Molecular Analyses.** Oncotarget. 10 Jun 2013.

Ross JS, Wang K, Sheehan CE, Boguniewicz AB, Otto G, Downing SR, Sun J, He J, Curran JA, Ali S, Yelensky R, Lipson D, Palmer G, Miller VA, Stephens PJ. **Relapsed classic E-cadherin (CDH1) mutated invasive lobular breast cancer demonstrates a high frequency of HER2 (ERBB2) gene mutations.**Clinical Cancer Research. 30 April 2013.

Vignot S, et al. **Next-Generation Sequencing Reveals High Concordance of Recurrent Somatic Alterations Between Primary Tumor and Metastases From Patients With Non-Small-Cell Lung Cancer.**Journal of Clinical Oncology. 29 April 2013.

Drilon A, et al. **Response to Cabozantinib in Patients with RET Fusion-Positive Lung Adenocarcinomas**. Cancer Discovery. 2013 Mar 26.

Giulino-Roth L, et al.**Targeted genomic sequencing of pediatric Burkitt lymphoma identifies recurrent alterations in antiapoptotic and chromatin-remodeling genes**. Blood. 2012 Dec 20;120(26):5181-4. doi

Beltran H, et al. **Targeted Next-generation Sequencing of Advanced Prostate Cancer Identifies Potential Therapeutic Targets and Disease Heterogeneity**. Eur Urol (2012).

Peled N, et al. Journal of Thoracic Oncology. **Next-Generation Sequencing Identifies and Immunohistochemistry Confirms a Novel Crizotinib-Sensitive ALK Rearrangement in a Patient with Metastatic Non-Small-Cell Lung Cancer**. 2012 Sep; 7(9):e14-6.

Lipson, D, et al. Nature Medicine. **Identification of new ALK and RET gene fusions from colorectal and lung cancer biopsies**. 2012 March 18(3):382-382.

Biomarkers in Medicine review article. **Comprehensive next-generation cancer genome sequencing in the era of targeted therapy and personalized oncology**.

Source: Foundation Medicine

Foundation Medicine plans to launch FoundationOne for hematological cancers in 2014. At the recent American Society for Hematology (ASH) conference, scientists affiliated with the company presented ten posters or presentations regarding the new product. There are two key takeaways we drew from the presentations.

- The presentations demonstrated the utility of FoundationOne in multiple hematological cancers, including Acute Myeloid Leukemia (AML), Diffuse Large B-Cell Lymphoma (DLBCL), Chronic Lymphocytic Leukemia (CLL), Myelodysplastic Syndrome (MDS), Multiple Myeloma (MM), and Myeloproliferative Neoplasms (MPL).
- In every study, use of the FoundationOne test identifies new mutations suggestive of specific, alternative therapeutic options for treating a particular disease.

FIGURE 11. Foundation Medicine Presentations at ASH 2013

Mutational Profiling Of Myeloid Malignancies For Prediction Of Disease Relapse Following Allogeneic Stem Cell Transplantation. *Alan M Hanash, MD, PhD.* Memorial Sloan Kettering Cancer Center

Patient Derived Xenograft (PDX) Models Faithfully Recapitulated The Genetic Composition Of Primary AML.*Andrei V. Krivtsov, PhD.* Memorial Sloan Kettering Cancer Center

Integrated Genetic Profiling Of JAK2 Wildtype Chronic-Phase Myeloproliferative Neoplasms. *Raajit K. Rampal, M.D., Ph.D.* Memorial Sloan Kettering Cancer Center

Profiling Genomic Alterations Of Diffuse Large B-Cell Lymphoma (DLBCL) At Diagnosis, Relapse, and Transformation, Using a Novel Clinical Diagnostic Targeted Sequencing Platform. *Andrew M. Intlekofer, MD, PhD.* Memorial Sloan Kettering Cancer Center

Comprehensive Mutational Profiling In Myelodysplastic Syndromes Treated With Decitabine and Tretinoin. *Alan H. Shih, MD PhD.* Memorial Sloan Kettering Cancer Center. Memorial Sloan Kettering Cancer Center

Extensive High-Depth Sequencing Of Longitudinal CLL Samples Identifies Frequent Mutations In MAP Kinase Signaling and Novel Mutations Activating Notch and Beta-Catenin. *Jeffrey R Gardner, MBA.* Memorial Sloan Kettering Cancer Center

Identification Of Actionable Genomic Alterations In Hematologic Malignancies By a Clinical Next Generation Sequencing-Based Assay. *Doron Lipson, PhD.* Memorial Sloan Kettering Cancer Center

Pilot Study To Evaluate The Prevalence Of Actionable Oncogenic Mutations In Patients With Relapsed Refractory Multiple Myeloma.*Alexander Lesokhin, MD.* Memorial Sloan Kettering Cancer Center

Overview Of The Genomic Landscape Of High-Risk Diffuse Large B-Cell Lymphoma Using Targeted DNA and RNA Sequencing. *Kai Wang, MD PhD. Hackensack University Medical Center*

High-throughput mutational profiling of post-myeloproliferative neoplasm acute myeloid leukemia reveals frequent mutations in NRAS in JAK2V617F-negative post-MPN AML. *Raajit Rampal, M.D., Ph.D.* Memorial Sloan Kettering Cancer Center

Source: Foundation Medicine

ESTIMATES

The market for FoundationOne consists of patients who have failed traditional therapeutic strategies or for whom standard genetic testing has failed to yield an actionable result. We assume that in the U.S. this is ~1M patients annually. The market could expand beyond this 1M as physicians begin to use FoundationOne earlier in the treatment algorithm. We assume pricing compresses from ~$3,700 today (average revenue per FoundationOne test for clinical use that met FMI's revenue recognition criteria during 1H13) to $2,500 in 10 years, driven by intensifying competition and reimbursement pressure, a phenomenon we are currently seeing in the market for hereditary breast and ovarian cancer (HBOC) testing, as well as hereditary colorectal cancer testing. This assumption could prove conservative as there is some opportunity for pricing to survive given that the test's value will grow as the number of genes expands beyond the current 236.

For the forthcoming FoundationOne hematology product, we assume a U.S. market opportunity of ~150k patients annually, 60% penetration in 10 years, and 50% share for FMI. Similar to solid tumor, international expansion would offer upside. We expect similar pricing compression from ~$5,500 per test initially to ~$4,000 in 10 years, but believe that absolute pricing will be well higher than the solid tumor test, partially to reflect what we believe will be higher costs associated with this test.

Despite expectations of price pressure and competition, we believe FMI can maintain a healthy 70% gross margin over time. We believe it is appropriate to project the margin conservatively below the 80%+ margins of GHDX (MO, $38 PT) and MYGN (MP), but well above ~40% gross margins of the national reference labs, which derive most of their revenue from commodity testing. We believe it is important to note that FMI already achieved a 62.5% gross margin in 2Q13 on only ~$6M of revenue, which suggests to us that 70% is reasonable, if not conservative, even in the face of competition.

MANAGEMENT TEAM

Michael Pellini, MD, *President and Chief Executive Officer*
Dr. Pellini joined Foundation Medicine as President and Chief Executive Officer in May 2011, bringing a breadth of experience in life sciences and the clinical diagnostics and laboratory industries to the company. Dr. Pellini came to Foundation Medicine from Clarient, a GE Healthcare Company. Prior to his tenure with Clarient, Dr. Pellini served as Vice President, Life Sciences at Safeguard Scientifics, Inc. Prior to Safeguard, he was Executive Vice President and Chief Operating Officer at Lakewood Pathology Associates, a national molecular and pathology services company, which was acquired by Water Street Healthcare Partners in 2006. Prior to that, Dr. Pellini was an Entrepreneur-in-Residence at BioAdvance, where he was responsible for reviewing and evaluating early-stage life science companies. He also served as President and Chief Executive Officer of Genomics Collaborative, Inc., a Boston-based biotech firm that was acquired by SeraCare Life Sciences, Inc. in 2004.

Steven Kafka, **PhD**, *Chief Operating Officer*
Dr. Kafka joined Foundation Medicine in January 2013. Dr. Kafka was previously chief operating officer and chief financial officer at Aileron Therapeutics, where he led the company's operations, finance, and human resources functions. Before this, Dr. Kafka was vice president of finance at Infinity Pharmaceuticals where he led finance, investor, and public relations and business operations. While at Infinity, he worked on a number of innovative collaborations with leading pharmaceutical companies, including the company's strategic alliance with Purdue Pharmaceuticals. Earlier in his career, Dr. Kafka was senior director of finance at Millennium Pharmaceuticals, where he was a key member of the product team in driving strategic planning and alliance management efforts with partner Johnson & Johnson for VELCADE, a novel targeted cancer therapeutic.

Kevin Krenitsky, MD**,** *Chief Commercial Officer and Senior Vice President, International Strategy*
Dr. Krenitsky joined Foundation Medicine in June 2011, bringing 15 years of experience in building and managing global diagnostic and biotechnology operations to the company. He joined Foundation Medicine from Enzo Clinical Labs where he served as president. Prior to Enzo Clinical Labs, he was chief executive officer at BioServe Biotechnologies, a global biotechnology company specializing in processing genetic diagnostic tests, and before that, he served as chief executive officer at Parkway Clinical Laboratories, a clinical diagnostic lab providing comprehensive routine and esoteric testing. Before joining Parkway Clinical Laboratories, Dr. Krenitsky held multiple senior level positions within Genomics Collaborative, Inc. (a SeraCare Life Sciences Company), a full-scale clinical and genomics research company.

Ronald Collette, *Chief Information Officer*
Ronald Collette assumed the role of Chief Information Officer for Foundation Medicine in January 2012, bringing 25 years of professional experience in information technologies. Before joining Foundation Medicine, he was the Chief Information Officer for Clarient, a GE Healthcare Company. Prior to joining Clarient, he was a founding partner of the highly regarded Traxx Consulting Inc.; a boutique consultancy focused on information security, team development, and technical architecture. Mr. Collette is a regular speaker at a number of security and IT-related events, such as International Standards Organization (ISO) conference, SecureWorld Expo, and InfoSeCon. He is also a regular

columnist and research analyst for Computer Economics. Mr. Collette has co-authored two books on information security, “The CISO Handbook: A Practical Guide to Securing Your Company" and the companion publication, "CISO Soft Skills: Securing Organizations Impaired by Employee Politics, Apathy and Intolerant Perspectives." Both of these books are utilized as course material for numerous advanced educational and university masters programs on security leadership. His contribution to the information technology industry is represented by numerous publications, papers, and presentations.

Vincent Miller, MD, *Chief Medical Officer*
Dr. Miller joined Foundation Medicine in October 2011 after nearly 20 years at Memorial Sloan-Kettering Cancer Center where he served as an Attending Physician. His work in clinical and translational research in lung cancer culminated in observations and collaborative efforts critical to identification of EGFR sensitizing and resistance mutations. He is considered a world’s expert in lung cancer and clinical trial design and interpretation. Dr. Miller has authored and co-authored numerous abstracts, reviews, and peer-reviewed articles, which have appeared in such journals as *Proceedings of the National Academy of Science USA, Cancer Research, Clinical Cancer Research,* and the *Journal of Clinical Oncology.*

Gary Palmer, MD/JD/MBA/MPH, *Senior Vice President, Medical Affairs and Commercial Development*
Dr. Palmer is a medical oncologist and joined Foundation Medicine from On-Q-ity, where he was chief medical officer and head of development for DNA repair marker development and circulating tumor cell technology. He also served as vice president of medical affairs at Genomic Health, Inc., where he was instrumental in the commercialization of the Oncotype DX Breast Cancer Assay. Prior to Dr. Palmer’s tenure with Genomic Health, he held leadership positions at Kosan Biosciences and Salmedix, Inc. He also spent five years at Amgen, Inc. where he was involved in the clinical development and commercialization of Neupogen, Neulasla, and Aranesp. Prior to joining the industry, he served as director of the Medical Breast Service at the University of California Davis Cancer Center and chief of medical oncology at Mercy Health System, Sacramento.

Phil Stephens, PhD, *Vice President, Cancer Genomics*
Dr. Stephens joined Foundation Medicine in March 2011, bringing more than a decade of experience in cancer genomics to the company. Dr. Stephens is a world-renowned expert in next-generation sequencing and cancer genome analysis and has authored numerous publications in *Nature*, *Nature Genetics*, *Nature Medicine, Cell,* and other high-profile journals. Prior to joining Foundation Medicine, Dr. Stephens held various senior research positions during his 11-year tenure with the Cancer Genome Project at the Wellcome Trust Sanger Institute under the direction of Professor Michael Stratton. During this time, Dr. Stephens was a member of the team that sequenced the first two comprehensive melanoma and lung cancer genomes, and was co-lead author in the discovery of BRAF in melanoma and ERBB2 in lung cancer.

Source: Company website

FIGURE 12. Foundation Medicine – FoundationOne Solid Tumor Revenue Build

FoundationOne Solid Tumors

	2013 E					2014 E					2015 E	2016 E	2017 E	2018 E	2019 E	2020 E	2021 E	2022 E	2023 E	2024 E	2025 E
	1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
US - Solid Tumors																					
Annual incidence	250	250	250	250	1,000	250	250	250	250	1,000	1,000	1,000	1,000	1,200	1,500	1,600	1,800	1,800	1,800	1,800	1,800
FoundationOne penetration			*1.03%*	*1.05%*		*1.50%*	*1.60%*	*1.80%*	*2.00%*	1.73%	*5.00%*	*7.00%*	*10.00%*	*11.00%*	*12.00%*	*11.00%*	*15.00%*	*11.00%*	*25.00%*	*15.00%*	*50.00%*
FoundationOne Solid Tumor																					
Billed this Quarter			977	998	1,975	1,425	1,520	1,710	1,900	6,555	19,000	26,600	38,000	50,160	68,400	66,880	102,600	75,240	171,000	102,600	342,000
% of total			*38%*	*38%*		*38%*	*38%*	*38%*	*38%*		*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*
Billed Quarter + 1 (assumes 50% of non-billed)			500	464		681	668	721	856		15,140	13,702	24,149	21,276	38,311	23,330	61,397	11,526	122,072	(8,034)	277,254
% of total			*19%*	*18%*		*18%*	*17%*	*16%*	*17%*		*30%*	*20%*	*24%*	*16%*	*21%*	*13%*	*23%*	*6%*	*27%*	*-3%*	*31%*
Billed Quarter + 2			500	464		681	668	721	856		15,140	13,702	24,149	21,276	38,311	23,330	61,397	11,526	122,072	(8,034)	277,254
% of total			*19%*	*18%*		*18%*	*17%*	*16%*	*17%*		*30%*	*20%*	*24%*	*16%*	*21%*	*13%*	*23%*	*6%*	*27%*	*-3%*	*31%*
Billed from Prior Quarter			600	700		964	1,144	1,348	1,389		721	15,995	13,702	39,288	34,978	62,460	44,606	99,708	34,856	183,469	3,492
FoundationOneSolid Tumor Total ordered			2,577	2,625	5,202	3,750	4,000	4,500	5,000	17,250	50,000	70,000	100,000	132,000	180,000	176,000	270,000	198,000	450,000	270,000	900,000
FoundationOne revenue recognized			*1,377*	*1,698*		*2,389*	*2,664*	*3,058*	*3,289*		*19,721*	*42,595*	*51,702*	*89,448*	*103,378*	*129,340*	*147,206*	*174,948*	*205,856*	*286,069*	*345,492*
% Medicare			*10%*	*10%*		*10%*	*10%*	*10%*	*5%*		*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*
% Private Pay			*5%*	*5%*		*5%*	*5%*	*5%*	*10%*		*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
% Commercial			*70%*	*70%*		*70%*	*70%*	*70%*	*70%*		*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*	*70%*
% Not Paying			*15%*	*15%*		*15%*	*15%*	*15%*	*15%*		*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*
Volumes																					
Medicare Volume			138	170	307	239	266	306	164	976	1,972	4,260	5,170	8,945	10,338	12,934	14,721	17,495	20,586	28,607	34,549
Private Pay Volume			69	50	119	71	76	86	190	423	950	1,330	1,900	2,508	3,420	3,344	5,130	3,762	8,550	5,130	17,100
Commercial Volume			964	1,188	2,152	1,672	1,865	2,141	2,302	7,980	13,805	29,817	36,192	62,614	72,365	90,538	103,044	122,464	144,099	200,248	241,844
Not Paying			207	150	356	214	228	257	285	983	2,850	3,990	5,700	7,524	10,260	10,032	15,390	11,286	25,650	15,390	51,300
ASP																					
% price declines ***3%***																					
Medicare ASP			$ 2,805	$ 2,805	$ 2,805	$ 2,805	$ 2,805	$ 2,805	$ 2,805	$ 2,805	$ 2,721	$ 2,639	$ 2,560	$ 2,483	$ 2,409	$ 2,336	$ 2,266	$ 2,198	$ 2,132	$ 2,068	$ 2,006
Private Pay ASP			$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,201	$ 3,105	$ 3,012	$ 2,921	$ 2,834	$ 2,749	$ 2,666	$ 2,586	$ 2,509	$ 2,433	$ 2,360
Commercial ASP			$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,300	$ 3,201	$ 3,105	$ 3,012	$ 2,921	$ 2,834	$ 2,749	$ 2,666	$ 2,586	$ 2,509	$ 2,433	$ 2,360
Not paying ASP			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue (000's USD)																					
Medicare			$ 15	$ 19		$ 27	$ 30	$ 34	$ 18		$ 215	$ 450	$ 529	$ 888	$ 996	$ 1,209	$ 1,335	$ 1,538	$ 1,756	$ 2,367	$ 2,773
Private Pay			$ 227	$ 165		$ 235	$ 251	$ 282	$ 627		$ 3,041	$ 4,130	$ 5,722	$ 7,327	$ 9,692	$ 9,192	$ 13,678	$ 9,730	$ 21,450	$ 12,484	$ 40,364
Commercial			$ 3,181	$ 3,921		$ 5,518	$ 6,155	$ 7,065	$ 7,597		$ 44,188	$ 92,580	$ 109,003	$ 182,924	$ 205,069	$ 248,871	$ 274,751	$ 316,734	$ 361,511	$ 487,304	$ 570,872
Not paying			$ -	$ -		$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Solid Tumor Revenue			**$ 3,424**	**$ 4,105**	**$ 7,528**	**$ 5,780**	**$ 6,435**	**$ 7,381**	**$ 8,242**	**$ 27,839**	**$ 47,444**	**$ 97,159**	**$ 115,255**	**$ 191,140**	**$ 215,756**	**$ 259,272**	**$ 289,764**	**$ 328,002**	**$ 384,717**	**$ 502,155**	**$ 614,009**

Source: Foundation Medicine, JMP Securities LLC

FIGURE 13. Foundation Medicine – FoundationOne Hematology Revenue Build

	2013 E					2014 E					2015 E	2016 E	2017 E	2018 E	2019 E	2020 E	2021 E	2022 E	2023 E	2024 E	2025 E
	1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
Annual incidence (000)	50	50	50	50	200	50	50	50	50	200	200	200	200	200	200	200	200	200	200	200	200
FoundationOne penetration						*0.75%*	*0.80%*	*1.00%*	*2.00%*	1.14%	*5.00%*	*7.00%*	*10.00%*	*15.00%*	*20.00%*	*25.00%*	*30.00%*	*35.00%*	*40.00%*	*45.00%*	*50.00%*
FoundationOne - Hematology																					
Billed this Quarter						143	152	190	380		3,800	5,320	7,600	11,400	15,200	19,000	22,800	26,600	30,400	34,200	38,000
% of total						*38%*	*38%*	*38%*	*38%*		*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*
Billed Quarter + 1						116	66	122	191		3,039	2,725	4,837	5,362	8,357	8,903	11,468	11,788	14,455	14,939	17,637
% of total						*31%*	*16%*	*24%*	*19%*		*30%*	*19%*	*24%*	*18%*	*21%*	*18%*	*19%*	*17%*	*18%*	*17%*	*18%*
Billed Quarter + 2						116	66	122	191		3,039	2,725	4,837	5,362	8,357	8,903	11,468	11,788	14,455	14,939	17,637
% of total						*31%*	*16%*	*24%*	*19%*		*30%*	*19%*	*24%*	*18%*	*21%*	*18%*	*19%*	*17%*	*18%*	*17%*	*18%*
Billed from Prior Quarter						-	116	66	238		122	3,230	2,725	7,876	8,087	13,194	14,265	19,824	20,691	25,922	26,727
FoundationOneSolid Heme Total ordered						375	400	500	1,000		10,000	14,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000
FoundationOne revenue recognized						*143*	*268*	*256*	*618*		*3,922*	*8,550*	*10,325*	*19,276*	*23,287*	*32,194*	*37,065*	*46,424*	*51,091*	*60,122*	*64,727*
% Medicare																					
% Private Pay			*10%*	*10%*		*10%*	*10%*	*10%*	*10%*		*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*
% Commercial			*90%*	*90%*		*90%*	*90%*	*90%*	*90%*		*90%*	*90%*	*90%*	*90%*	*90%*	*90%*	*90%*	*90%*	*90%*	*90%*	*90%*
% Not Paying			*10%*	*10%*		*10%*	*10%*	*10%*	*10%*		*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*
Volumes																					
Medicare Volume																					
Private Pay Volume			-	-		14	15	19	38		380	532	760	1,140	1,520	1,900	2,280	2,660	3,040	3,420	3,800
Commercial Volume			-	-		128	241	230	556		3,530	7,695	9,293	17,349	20,958	28,975	33,358	41,782	45,982	54,110	58,254
Not Paying			-	-		14	15	19	38		380	532	760	1,140	1,520	1,900	2,280	2,660	3,040	3,420	3,800
ASP																					
% price declines ***3%***																					
Medicare ASP			$ 4,675	$ 4,675	$ 4,675	$ 4,675	$ 4,675	$ 4,675	$ 4,675	$ 4,675	$ 4,535	$ 4,399	$ 4,267	$ 4,139	$ 4,015	$ 3,894	$ 3,777	$ 3,664	$ 3,554	$ 3,447	$ 3,344
Private Pay ASP			$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,335	$ 5,175	$ 5,020	$ 4,869	$ 4,723	$ 4,581	$ 4,444	$ 4,311	$ 4,181	$ 4,056	$ 3,934
Commercial ASP			$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,500	$ 5,335	$ 5,175	$ 5,020	$ 4,869	$ 4,723	$ 4,581	$ 4,444	$ 4,311	$ 4,181	$ 4,056	$ 3,934
Not paying ASP			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue (000's USD)																					
Medicare			$ -	$ -		$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Private Pay			$ -	$ -		$ 78	$ 84	$ 105	$ 209	$ 475	$ 2,027	$ 2,753	$ 3,815	$ 5,551	$ 7,179	$ 8,705	$ 10,132	$ 11,466	$ 12,711	$ 13,871	$ 14,950
Commercial			$ -	$ -		$ 705	$ 1,328	$ 1,267	$ 3,061	$ 6,360	$ 18,832	$ 39,820	$ 46,646	$ 84,473	$ 98,986	$ 132,743	$ 148,241	$ 180,104	$ 192,262	$ 219,461	$ 229,181
Not paying			$ -	$ -		$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Solid Tumor Revenue			**$ -**	**$ -**	$ -	$ 784	$ 1,411	$ 1,371	$ 3,270	$ 6,836	**$ 20,859**	**$ 42,573**	**$ 50,461**	**$ 90,024**	**$ 106,165**	**$ 141,447**	**$ 158,373**	**$ 191,570**	**$ 204,974**	**$ 233,332**	**$ 244,131**

Source: Foundations Medicine, JMP Securities LLC

FIGURE 14. Foundation Medicine – Income Statement

	2013 E					2014 E					2015 E	2016 E	2017 E	2018 E	2019 E	2020 E	2021 E	2022 E	2023 E	2024 E	2025 E
	1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
FoundationOne																					
Physician Tests																					
Total Product revenue	2.1	2.9	4.4	4.5	13.9	6.6	7.8	8.8	11.5	34.7	68.3	139.7	165.7	281.2	321.9	400.7	448.1	519.6	589.7	735.5	858.1
Contract/collaboration revenue	3.1	3.0	3.8	4.0	13.9	3.4	3.3	4.2	4.4	15.3	16.8	18.5	20.4	22.4	24.6	27.1	29.8	32.8	36.1	39.7	43.6
Total revenue	**5.2**	**5.9**	**8.2**	**8.5**	**27.8**	**10.0**	**11.1**	**12.9**	**15.9**	**50.0**	**85.1**	**158.2**	**186.1**	**303.5**	**346.5**	**427.8**	**477.9**	**552.3**	**625.7**	**775.1**	**901.8**
Cost of goods sold	2.4	2.2	2.9	3.2	10.7	3.5	3.9	4.5	5.6	17.5	28.9	52.2	59.5	91.1	104.0	128.3	143.4	165.7	187.7	232.5	270.5
Gross profit	2.8	3.7	5.3	5.3	17.1	6.5	7.2	8.4	10.3	32.5	56.2	106.0	126.5	212.5	242.6	299.5	334.6	386.6	438.0	542.6	631.2
Selling and marketing	3.0	2.6	6.4	6.4	18.4	6.0	6.7	7.8	9.5	30.0	34.0	47.5	37.2	45.5	41.6	43.2	45.0	46.8	48.6	50.6	58.2
General and administrative expense	2.0	5.0	3.0	3.1	13.2	3.3	3.7	4.3	5.3	16.5	20.0	47.5	46.5	60.7	62.4	67.4	70.7	74.3	78.0	81.9	86.0
Research and development	5.0	6.1	7.0	7.2	25.3	8.0	9.0	9.0	10.0	36.0	42.0	58.5	46.5	75.9	86.6	95.3	100.1	104.1	108.2	112.6	117.1
Total operating expenses	**9.9**	**13.7**	**16.5**	**16.7**	**56.9**	**17.3**	**19.4**	**21.0**	**24.8**	**82.5**	**96.0**	**153.5**	**130.2**	**182.1**	**190.6**	**205.9**	**215.8**	**225.1**	**234.9**	**245.0**	**261.2**
Operating Income	**(7.1)**	**(10.0)**	**(11.1)**	**(11.5)**	**(39.7)**	**(10.8)**	**(12.1)**	**(12.6)**	**(14.5)**	**(50.0)**	**(39.9)**	**(47.5)**	**(3.7)**	**30.4**	**52.0**	**93.5**	**118.8**	**161.5**	**203.2**	**297.6**	**370.0**
Interest expense (net_	(0.1)	(0.1)	0.1	0.1	-	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest and other income/(expense), net	-	(0.2)	(1.3)	0.1	(1.4)	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Earnings before taxes	**(7.2)**	**(10.3)**	**(12.4)**	**(11.4)**	**(41.1)**	**(10.7)**	**(12.0)**	**(12.5)**	**(14.4)**	**(49.6)**	**(39.8)**	**(47.4)**	**(3.6)**	**30.5**	**52.1**	**93.6**	**118.9**	**161.6**	**203.3**	**297.7**	**370.1**
Taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.2	32.8	41.6	56.6	71.1	104.2	129.5
Tax Rate															*35%*	*35%*	*35%*	*35%*	*35%*	*35%*	*35%*
Net Income	**(7.2)**	**(10.3)**	**(12.4)**	**(11.4)**	**(41.1)**	**(10.7)**	**(12.0)**	**(12.5)**	**(14.4)**	**(49.6)**	**(39.8)**	**(47.4)**	**(3.6)**	**30.5**	**33.9**	**60.9**	**77.3**	**105.1**	**132.1**	**193.5**	**240.6**
EPS - GAAP	**($0.33)**	**($0.48)**	**($0.44)**	**($0.39)**	**($1.64)**	**($0.36)**	**($0.39)**	**($0.39)**	**($0.44)**	**($1.57)**	**($1.21)**	**($1.39)**	**($0.10)**	**$0.83**	**$0.88**	**$1.53**	**$1.86**	**$2.44**	**$2.95**	**$4.15**	**$4.96**
Shares outstanding - basic	22	22	28	29	25	30	31	32	33	32	33	34	35	37	38	40	41	43	45	47	48
% change																					
Shares outstanding - diluted	22	22	28	29	25	30	31	32	33	32	33	34	35	37	38	40	41	43	45	47	48
% change																					

	2013 E					2014 E					2015 E	2016 E	2017 E	2018 E	2019 E	2020 E	2021 E	2022 E	2023 E	2024 E	2025 E
Margins	1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
COGS	54.3%	62.4%	65.1%	62.0%	61.6%	65.0%	65.0%	65.0%	65.0%		66.0%	67.0%	68.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Sales and Marketing	38.5%	84.7%	37.0%	37.0%	47.4%	33.0%	33.0%	33.0%	33.0%		37.0%	30.0%	25.0%	20.0%	18.0%	20.0%	20.0%	16.0%	15.0%	20.0%	20.0%
G&A	56.9%	44.1%	78.6%	75.0%	66.1%	60.0%	60.0%	60.0%	60.0%		40.0%	30.0%	20.0%	15.0%	12.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
R&D	95.8%	103.3%	85.2%	85.0%	91.0%	80.0%	65.0%	55.0%	43.0%		37.0%	37.0%	25.0%	25.0%	25.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%
Operating Margins	-136.9%	-169.8%	-135.8%	-135.0%	-143.0%	-108.2%	-108.7%	-97.6%	-90.8%		-46.8%	-30.0%	-2.0%	10.0%	15.0%	21.9%	24.9%	29.2%	32.5%	38.4%	41.0%

	2013 E					2014 E					2015 E	2016 E	2017 E	2018 E	2019 E	2020 E	2021 E	2022 E	2023 E	2024 E	2025 E
Y/YGrowth	1Q	2Q	3Q	4Q	FY	1Q	2Q	3Q	4Q	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
FoundationOne																					
FoundationHeme	160%	490%	720%	183%	297%	-17%	114%	119%	94%	488%	70%	70%	55%	40%	30%	20%	15%	10%	5%	5%	5%
Sales & Marketing	100%	400%	204%	215%	230%	65%	-26%	40%	67%		21%	137%	-2%	31%	3%	8.0%	5.0%	5.0%	5.0%	5.0%	5.0%
G&A	48%	30%	222%	113%	104%	102%	157%	20%	50%		14%	39%	-22%	22%	-9%	4.0%	4.0%	4.0%	4.0%	4.0%	15.0%
R&D	66%	52%	133%	45%	69%	61%	48%	29%	38%		17%	39%	-21%	63%	14%	10.0%	5.0%	4.0%	4.0%	4.0%	4.0%

Source: Foundation Medicine, JMP Securities LLC

FIGURE 15. Foundation Medicine - Balance Sheet

	September 30, 2013	December 31, 2012
Assets		
Current assets:		
Cash and cash equivalents	$ 137,927	$ 54,838
Short-term restricted cash	161	—
Accounts receivable	4,437	2,195
Inventory	942	803
Prepaid expenses and other current assets	950	550
Total current assets	144,417	58,386
Property and equipment, net	19,480	7,465
Restricted cash	1,725	161
Other assets	54	27
Total assets	$ 165,676	$ 66,039
Liabilities, redeemable convertible preferred stock and stockholders' equity (deficit)		
Current liabilities:		
Accounts payable	$ 3,339	$ 1,609
Accrued expenses and other current liabilities	5,022	3,463
Deferred revenue	1,304	1,622
Current portion of deferred rent	149	132
Current portion of notes payable	1,540	1,704
Total current liabilities	11,354	8,530
Deferred revenue, net of current portion	26	156
Notes payable, net of current portion	397	1,441
Deferred rent, net of current portion	11,147	287
Warrant to purchase preferred stock	—	225
Restricted stock liability	107	139
Commitments and contingencies		

Source: Foundation Medicine, JMP Securities LLC

FIGURE 16. Foundation Medicine - Cash Flow Statement

	Nine Months Ended September 30th, 2013	2012
Operating activities		
Net loss	$ (29,853)	$ (16,833)
Adjustments to reconcile net loss to cash used in operating activities:		
Depreciation expense	3,159	2,071
Change in fair value of warrant liability	1,380	137
Stock-based compensation	4,980	908
Common stock issued in exchange for professional services	4	—
Non-cash interest expense	57	82
Changes in operating assets and liabilities:		
Accounts receivable	(2,242)	(1,318)
Inventory	(139)	(363)
Prepaid expenses and other current assets	(400)	(197)
Other assets	(27)	7
Accounts payable	530	(445)
Accrued expenses	600	1,240
Deferred rent	1,653	(80)
Deferred revenue	(448)	987
Net cash used in operating activities	(20,746)	(13,804)
Investing activities		
Purchases of property and equipment	(3,791)	(2,295)
Increase in restricted cash	(1,725)	—
Net cash used in investing activities	(5,516)	(2,295)
Financing activities		
Proceeds from issuance of restricted stock and stock option exercises	30	67
Proceeds from issuance of Series A Preferred Stock and related investor rights, net of issuance costs	—	10,228
Proceeds from issuance of Series B Preferred Stock, net of issuance costs	(10)	42,290
Proceeds from issuance of common stock from initial public offering, net of issuance costs	110,596	—
Payments of notes payable	(1,265)	(1,165)
Net cash provided by financing activities	109,351	51,420
Net increase in cash and cash equivalents	83,089	35,321
Cash and cash equivalents at beginning of period	54,838	10,852
Cash and cash equivalents at end of period	$ 137,927	$ 46,173
Supplemental disclosure of cash flow information		
Cash paid for interest	$ 141	$ 241
Supplemental disclosure of non-cash investing and financing activities		
Initial public offering costs include in accounts payable and accrued expenses	$ 656	$ —
Reclassification of warrant liability to additional paid-in capital	$ 1,605	$ —
Conversion of convertible preferred stock in common stock	$ 98,788	$ —
Accretion of convertible preferred stock to redemption value	$ 139	$ 239
Acquisition of property and equipment included in accounts payable and accrued expenses	$ 1,618	$ 99

Source: Foundation Medicine, JMP Securities LLC

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MARKET OUTPERFORM	Buy	231	*55.00%*	Buy	231	*55.00%*	89	*38.53%*
MARKET PERFORM	Hold	140	*33.33%*	Hold	140	*33.33%*	24	*17.14%*
MARKET UNDERPERFORM	Sell	5	*1.19%*	Sell	5	*1.19%*	0	*0%*
COVERAGE IN TRANSITION		44	*10.48%*		44	*10.48%*	0	*0%*
TOTAL:		420	*100%*		420	*100%*	113	*26.90%*

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