BARCLAYS

Equity Research

Healthcare | U.S. Specialty Pharmaceuticals

10 February 2014

Aratana Therapeutics Inc.

Redefining pet care; initiate at OW

We initiate coverage on Aratana with an Overweight rating and $30 price target.

We believe Aratana Therapeutics has positioned itself for market leadership in the emerging companion-animal health market. In just three years since its founding in 2010, Aratana has built a strong pipeline of commercial prospects through both in-licensing as well as M&A. Over the last 12 months, Aratana has made two significant acquisitions, one of which accelerated its time to commercialization and also made it a leader in oncology, and other which gave it a platform for antiretrovirals which can address prevalent conditions such as feline herpes. These two deals complemented the "core three" product for osteoarthritis, inappetance and post-surgical pain, each of which we believe has the potential to reach $100 million in sales. We expect those core programs to come to market in 2016.

While the animal health is already a big industry, we believe Aratana is differentiated by focusing on companion animal heath rather the agricultural/livestock segment. The companion animal health market is attractive as Americans increasingly view pets as "family members" and deserving of best-available medical care.

Pipeline in motion: We think Aratana's management team has done an impressive job building out the company's pipeline which has tripled in size over the last twelve months. We expect it to expand further with the company exercising on some of the "option" agreements that it has in place. We believe this option agreements are attractive way for traditional biopharma companies to generate incremental revenue and expect additional option agreements to be signed in upcoming months. While there's certainly development risk in each of the company's individual programs, we believe the lower cost of product acquisition allows Aratana to pursue a "portfolio approach" and backfill pipeline setbacks with new opportunities.

Depth of experience: Aratana's senior leadership brings invaluable experience in the development and commercialization of companion animal health products.

PETX: Quarterly and Annual EPS (USD)

	2012	2013			2014			Change y/y	
FY Dec	Actual	Old	New	Cons	Old	New	Cons	2013	2014
Q1	-0.01A	N/A	-2.43A	N/A	N/A	-0.25E	-0.32E	-24200%	90%
Q2	-0.01A	N/A	-4.62A	-4.62A	N/A	-0.26E	-0.32E	-46100%	94%
Q3	-0.01A	N/A	-0.22A	-0.22A	N/A	-0.29E	-0.31E	-2100%	-32%
Q4	-0.01A	N/A	-0.21E	-0.21E	N/A	-0.28E	-0.19E	-2000%	-33%
Year	-0.03A	N/A	-7.48E	-7.48E	N/A	-1.08E	-1.06E	-24833%	86%
P/E	N/A		N/A			N/A			

Source: Barclays Research.
Consensus numbers are from Thomson Reuters

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PLEASE SEE ANALYST CERTIFICATION(S) AND IMPORTANT DISCLOSURES BEGINNING ON PAGE 12.

Stock Rating	OVERWEIGHT from N/A
Industry View	NEUTRAL Unchanged
Price Target	USD 30.00 from N/A

Price (05-Feb-2014)	USD 21.17
Potential Upside/Downside	+42%
Tickers	PETX

Market Cap (USD mn)	616
Shares Outstanding (mn)	29.10
Free Float (%)	87.79
52 Wk Avg Daily Volume (mn)	0.1
Dividend Yield (%)	N/A
Return on Equity TTM (%)	N/A
Current BVPS (USD)	1.84

Source: Thomson Reuters

Price Performance	Exchange-Nasdaq
52 Week range	USD 29.32-6.56

Link to Barclays Live for interactive charting

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U.S. Specialty Pharmaceuticals — **Industry View: NEUTRAL**

Aratana Therapeutics Inc. (PETX)

Stock Rating: OVERWEIGHT

Income statement ($k)	2012A	2013E	2014E	2015E	CAGR
Revenue	0	0	560	5,920	N/A
EBITDA (adj)	-11,765	20	-31,518	-28,640	N/A
EBIT (adj)	-11,778	0	-31,540	-28,664	N/A
Pre-tax income (adj)	-11,636	0	-31,540	-28,664	N/A
Net income (adj)	-11,636	0	-31,540	-28,664	N/A
EPS (adj) ($)	-0.03	-7.48	-1.08	-0.97	N/A
Diluted shares (k)	395,918.0	N/A	29,162.5	29,662.5	-57.8%
DPS	N/A	N/A	N/A	N/A	N/A

Margin and return data					Average
EBITDA (adj) margin (%)	N/A	N/A	-5,632.1	-484.2	-3,058.2
EBIT (adj) margin (%)	N/A	N/A	-5,632.1	-484.2	-3,058.2
Pre-tax (adj) margin (%)	N/A	N/A	-5,632.1	-484.2	-3,058.2
Net (adj) margin (%)	0.0	N/A	-5,632.1	-484.2	-2,038.8
ROIC (%)	N/A	N/A	N/A	N/A	N/A
ROA (%)	N/A	N/A	N/A	N/A	N/A
ROE (%)	N/A	N/A	N/A	N/A	N/A

Balance sheet and cash flow					CAGR
Tangible fixed assets ($k)	19	500	1,200	1,300	309.0%
Intangible fixed assets	N/A	N/A	N/A	N/A	N/A
Cash and equivalents ($k)	13,973	49,006	56,269	27,605	25.5%
Total assets ($k)	21,222	59,127	68,116	42,581	26.1%
Short and long-term debt	N/A	N/A	N/A	N/A	N/A
Other long-term liabilities ($k)	96	32,820	14,928	14,928	437.7%
Total liabilities ($k)	3,580	36,677	19,157	20,089	77.7%
Net debt/(funds)	N/A	N/A	N/A	N/A	N/A
Shareholders' equity ($k)	17,642	22,450	48,959	22,492	8.4%
Change in working capital	N/A	N/A	N/A	N/A	N/A
Cash flow from operations	N/A	N/A	N/A	N/A	N/A
Capital expenditure	N/A	N/A	N/A	N/A	N/A
Free cash flow	N/A	N/A	N/A	N/A	N/A

Valuation and leverage metrics					Average
P/E (adj) (x)	N/A	N/A	N/A	N/A	N/A
EV/EBITDA (adj) (x)	N/A	N/A	N/A	N/A	N/A
P/BV (x)	N/A	N/A	N/A	N/A	N/A
Dividend yield (%)	N/A	N/A	N/A	N/A	N/A
Total debt/capital (%)	N/A	N/A	N/A	N/A	N/A

Selected operating metrics					Average
SG&A/sales (%)	N/A	N/A	N/A	N/A	N/A
R&D/sales (%)	N/A	N/A	N/A	N/A	N/A
R&D growth (%)	232.0	105.7	43.3	-2.3	94.7
SG&A growth (%)	134.5	198.0	19.1	17.0	92.1

Source: Company data, Barclays Research
Note: FY End Dec

Price (05-Feb-2014)	USD 21.17
Price Target	USD 30.00

Why Overweight? We rate PETX at Overweight since we believe it will capitalize on the growing companion animal health market with its portfolio of in-development products for osteoarthritis, inappetance, post-surgical pain, and lymphoma. We believe PETX has a differentiated model that will attract a broad investor audience.

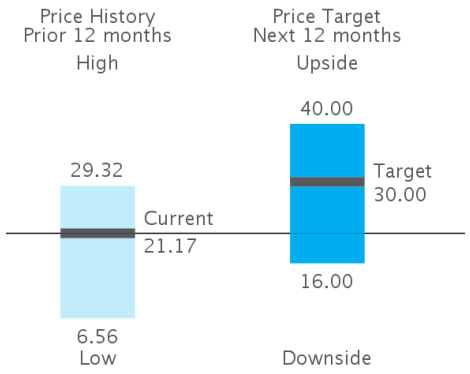
Upside case — **USD 40.00**

We believe upside could come from additional business development which accelerates the expansion of PETX's pipeline. Addiitonally, we could see earlier-than-expected approvals for pipeline assets which accelerates the company's earnings ramp.

Downside case — **USD 16.00**

Downside would come from setbacks to the company's pipeline assets. Additionally, PETX is developing treatments in many unproven markets, such as oncology, inappetance, and post-surgical pain. Those might not prove as attractive end-markets as we currently expect.

Upside/Downside scenarios



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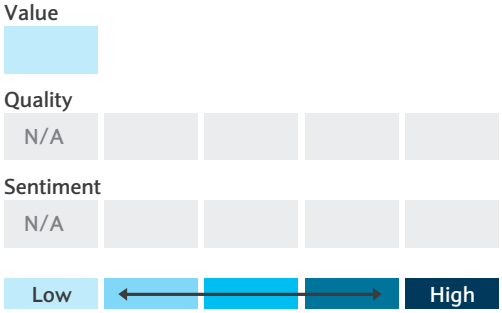

Source: POINT®. The scores are valid as of the date of this report and are independent of the fundamental analysts' views. To view the latest scores, please go to the equity company page on Barclays Live.

Overview

We believe Aratana is a compelling new investment opportunity in the specialty pharmaceutical sector, though we don't believe this is a story that will stay bound within the confines of spec pharma. We believe its focus on companion animal health has characteristics that we expect will appeal to a broad audience of investors. In our view, the companion animal health market will benefit from the manifest cultural trend as Americans increasingly view pets as "family members" and deserving of best-available medical care (anecdotally, we'd note the prominence of dogs and cats in holiday card photos certainly speaks to this). Moreover, the companion animal health market remains free of managed care gatekeepers and, in fact, there is alignment with the veterinarian who generates significant share of his/her practice revenue through the dispensing of medications (roughly 10% of total revenue excluding heartworm and flea/tick which represent an incremental 20%). Zoetis' Rimadyl retains market leadership even though it has faced generic competition for over 10 years which speaks to the "brand" friendliness of the end-market.

In our view, Aratana Therapeutics has positioned itself for market leadership in this end market. Since its founding in 2010, Aratana has built a very strong pipeline of commercial prospects through both in-licensing as well as M&A. Over the last 12 months, Aratana has made two significant acquisitions, one of which accelerated its time to commercialization and also made it a leader in oncology, and other which gave it a platform for antiretrovirals which can address prevalent conditions such as feline herpes. These two deals complemented the "core three" product for osteoarthritis, inappetance and post-surgical pain, which we believe each has the potential to reach $100 million in sales. We expect those core programs to come to market in 2016.

Aratana's management team has done an impressive job building out the company's pipeline which has tripled in size over the last twelve months. We expect it to expand further with the company exercising on some of the "option" agreements that it has in place. We believe this option agreements are attractive way for traditional biopharma companies to generate incremental revenue and expect additional option agreements to be signed in upcoming months. While there's certainly development risk in each of the company's individual programs, we believe the lower cost of product acquisition allows Aratana to pursue a "portfolio approach" and backfill pipeline setbacks with new opportunities.

Our $30 price target is based on 4.5x our FY20 sales estimate of $325 million discounted back to the present. We generally value development spec pharma companies on a price/sales basis, although we think this arguably understates Aratana's value since the business model could prove so profitable given the potential for significantly better R&D productivity and sales and marketing compared to traditional spec pharma companies. Indeed, we expect Aratana to generate $5/share on revenues at those levels which would justify upside well above our $30 price target. This "earnings" cushion suggests that Aratana doesn't need all of its programs to succeed in order to support its current valuation or upside from here. Rather, one thing we find appealing about the story, is that the company simply needs consistent success from its pipeline.

FIGURE 1
Aratana Pipeline Overview

COMPOUND	SPECIES	INDICATION	DEVELOPMENT STATUS	EXPECTED NEXT STEP	BARCLAYS PEAK SALES ESTIMATE
AT-001	Dog	Pain & inflammation associated with osteoarthritis	Dose selected	Initiate pivotal field effectiveness study in first quarter of 2014; U.S. marketing approval planned for 2016	$162 million
	Cat	Pain & inflammation associated with osteoarthritis	Pilot studies	Dose confirmation study	
AT-002	Dog	Stimulation of appetite	Pivotal field effectiveness study	Submission for approval; approval expected in 2016	$126 million
	Cat	Stimulation of appetite	Pilot studies	Dose confirmation study	
AT-003 (Exparel)	Dog	Post-operative pain management	Proof of concept study	Dose confirmation study; initiate pivotal trial in 2Q14, approval expected in 2016	$69 million
	Cat	Post-operative pain management	Proof of concept study	Dose confirmation study	
AT-004	Dog	B-cell lymphoma	Submitted pivotal field effectiveness study	Currently sold by Novartis (Aratana receives attractive royalty rate); Full license expected in 2015	$84 million
AT-005	Dog	T-cell lymphoma	Completing pivotal field effectiveness study	Conditional license expected in 2014	$42 million
AT-006	Cat	Ocular herpes infection (Okapi)	Pivotal field study in Europe	File for EU review in 2014; Expect U.S. marketing approval in 2017or 2018	$60 million
AT-007	Cat	Feline immunodeficiency virus infection	Pilot study in Europe	Initiate field effectiveness study in 2015; expect U.S. marketing approval in 2017 or 2018	$40 million
AT-008	Dog	Lymphoma	Pivotal field effectiveness study	Pivotal field effectiveness in the EU in 2014	
AT-009	Dog	Mast cell tumor		Pilot studies	
AT-010	Dog	Atopic dermatitis		Pilot studies	
AT-011	Dog	Parvovirus infections	Lead selection	Proof of concept study	
AT-012	Cat	Calicivirus infections	Lead selection	Proof of concept study	

Source: Barclays Research, company reports

Aratana's lead product candidate, AT-001, is for the treatment of osteoarthritis in dogs. Osteoarthritis is an established $260 million market, led by Zoetis' product Rimadyl which generates over $200 million in annual sales. However, Rimadyl's safety profile limits use of the product and requires testing that can be burdensome. These safety concerns lead us to believe this is a market vulnerable to disruption by a product with a superior safety profile.

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AT-001 is a selective EP4 receptor antagonist. EP4 is one of four G-protein coupled PGE 2 receptors (EP1, EP2, EP3 and EP4) located on the membrane of various cells in the mammalian body. The EP4 receptor predominantly mediates PGE 2-elicited pain. The specific effects of the binding of PGE 2 to the EP4 receptor include vasodilation, increased permeability, angiogenesis and production of pro-inflammatory mediators. EP4 "knock out mice," genetically manipulated not to express the EP4 receptor, but to express the EP1, EP2 or EP3 receptors, have exhibited decreased inflammation and decreased incidence and severity of disease. A selective EP4 receptor antagonist does not interfere with EP1, EP2 or EP3 receptor-mediated signaling, and does not affect prostaglandin biosynthesis, which is important for the maintenance of the gastrointestinal, renal and platelet function. Unlike

Coxib NSAIDs, an EP4 receptor antagonist does not change prostanoid homeostasis. Treatment with Coxib-type drugs can result in PGI/TXA2 imbalance which is postulated as the cause of the cardiovascular side-effects of this drug class.

AT-001 binds selectively to the EP4 receptor with high affinity thus blocking it from PGE 2-mediated pain and inflammation. The human, rat, dog and cat EP4 receptor genes were cloned and showed similar binding affinity with AT-001. In receptor binding studies, the inhibitor constants, or Ki value, of AT-001 for human, rat and dog receptors were determined indicating that AT-001 binds to the receptor with high affinity. Ki value reflects the concentration of inhibitor that is required to decrease the maximal rate of the reaction to half of the uninhibited value.

AT-001 has achieved proof of concept in two Phase II clinical trials performed by RaQualia in humans with osteoarthritis knee pain. The trials included patients who received AT-001, Naproxen, which is an NSAID, or placebo. More than 500 human patients were dosed with our compound. The compound was well-tolerated and demonstrated statistically significant reduction in pain scores as compared to placebo. Based on the results generated with AT-001 in humans, we expect the selective antagonism of the EP4 receptor should have fewer drug side effects and similar efficacy as compared to Coxib NSAIDs in cats and dogs.

Aratana performed initial proof of concept studies in laboratory dogs with artificially-induced osteoarthritis. Those studies signaled that the compound is effective, though the variability and the small group sizes limited the power of the results. Consequently, Aratana completed another study to confirm efficacy and select a dose. This study was a multi-site, randomized, blinded field study in client- owned pets with osteoarthritis.

The study enrolled over 350 dogs across four treatment arms including three different AT-001 treatment regimens and a placebo. Effectiveness in the study was determined by using a validated pain scoring system referred to as the Canine Brief Pain Inventory, or CBPI. The CBPI consists of ten questions administered to dog owners to evaluate the severity of their dog's pain and how much the pain interferes with the normal behavior of the dog. For each question, scores can range from zero to ten, with ten being the most severe. The CVM reviewed the study protocol and concurred with the design. Aratana launched the study in February 2013 and the in-life phase was completed in late 2013. Aratana has selected a once-daily dose of AT-001 for further study. The clinical success rates at day 28 were 61.6% for the selected dose regimen vs. 42.2% for the placebo group, when compared in a two-group parallel design, which represents a statistically significant difference ($p<0.05$). Adverse reactions at the selected dose were comparable to the placebo. Aratana will now conduct a pivotal field effectiveness study at our selected dose, compared to placebo, using the same study design of the dose selection study.

AT-002

AT-002 (capromorelin) is a potent and selective ghrelin agonist, which causes appetite stimulation and growth hormone secretion. In many acute and chronic disease states, as well as with aging, lack of appetite is a problem and can degrade the pet's overall health. Malnutrition and decreased muscle mass can result from inadequate food intake regardless of the underlying condition. Inappetance is a common problem and one of great frustration for many pet owners who go to great lengths to restore appetite, especially since nutrition can sometimes be the only health problem. There is no approved medical therapeutics to treat inappetence in pets. Prolonged or severe inappetence may require hospitalization and ultimately the placement of a feeding tube. The inability to solve this problem often results in pets being euthanized.

Drug therapy to address inappetence has focused on human drugs affecting the central nervous system control of feeding such as benzodiazepines, cyproheptadine and

mirtazapine. However, these drugs are not approved for veterinary use, have limited effectiveness and are contraindicated for cats with hepatic lipodosis.

AT-002 is a potent and selective ghrelin agonist. Ghrelin is a 28-amino acid peptide hormone, also referred to as the hunger hormone, produced predominantly in the stomach. It is the endogenous ligand of the ghrelin receptor, also known as growth hormone secretagogue receptor, or GHS-R. By activation of the ghrelin receptor, ghrelin stimulates appetite and growth hormone secretion, and also exhibits a role in regulation of gastrointestinal motility and energy balance. Ghrelin binds to specific receptors and affects signaling in the hypothalamus, interacting with other hormones to cause the feeling of hunger and stimulate food intake. In addition to its effects on appetite, ghrelin stimulates growth hormone secretion by activation of GHS-Rs in the pituitary.

Several laboratory studies in healthy dogs with various daily oral doses of AT-002 for four to ten days were completed prior to our licensing AT-002. These studies demonstrated increased food intake and weight gain. The company conducted a seven-day, placebo controlled, blinded dosing study in dogs to confirm these results, and confirmed that treated dogs showed a sustained increase in appetite and body weight over the treatment period, with the placebo- treated dogs losing weight, likely due to intensive handling and blood sampling.

Aratana evaluated the effectiveness of AT-002 compared to placebo for the treatment of inappetence in a pilot placebo-controlled, blinded, multi- veterinary clinic field study in client-owned patients. The study was designed to evaluate the effectiveness of the drug in client-owned dogs, as opposed to laboratory animals, to test the acceptance of the formulation, ease of dosing and appetite assessments by owners, and to define the patient population. Effectiveness parameters include owner assessment of appetite and body weight gain compared to baseline and compared to the dog's best lifetime condition. Dogs were treated once daily for seven days. The results of 30 evaluable cases are shown in the table below. Compared to the placebo control animals, the appetite score and body weight of the AT-002 treated patients were statistically significantly increased on day 6 after 7 daily treatments. The results compared to best lifetime condition showed a positive trend towards the AT-002 treatment, but were not statistically significant. Based on these proof-of-concept studies Aratana has discussed and agreed with the CVM on a study design for the pivotal field effectiveness study. This randomized, placebo-controlled, multi-center study was initiated in December 2013 to enroll approximately 150 client-owned dogs.

FIGURE 2
AT-002 Proof-of-Concept Results

	Appetite Score After Day 6		Body Weight on Day 6	
	% Mean		% Mean	
	Mean/Sem	p-value	Mean/Sem	p-value
AT-002 (n=17)	79/19	<0.05	3.2/1.3	<0.05
Placebo (n=13)	23/12		-0.2/0.9	

Source: Barclays Research, company reports

AT-003

AT-003 is a bupivacaine liposome injectable suspension that Aratana in-licensed from Pacira. The product was approved for use in humans as a local, post-operative analgesic by the FDA in October 2011 and is marketed by Pacira under the name Exparel for use in controlling post- operative surgical wound pain following various types of surgical procedures. Exparel achieved $30 million in sales in 4Q13.

Veterinarians perform approximately 19 million dog surgeries and 14 million cat surgeries each year. These procedures are a range of spays and neuters, while other common surgeries include cancer surgery, declaw, cruciate repairs and fracture repairs. There are no established protocols for pain management. Veterinarians have made advances in treating pain in pets in response to pet-owner requests.

The most widely used drugs approved for treatment of post-operative pain are Coxib NSAIDs and fentanyl in dogs and Coxib NSAIDs and butorphanol in cats. In surgeries associated with the most severe post-operative pain, fentanyl is commonly used. Fentanyl is a controlled narcotic drug, and pets are often kept in the hospital while receiving fentanyl, most frequently through the use of transdermal systems.

AT-003 is a 1.3% bupivacaine liposome injectable suspension. It consists of microscopic, spherical multivesicular liposomes, which is Pacira's proprietary DepoFoam drug delivery system. Bupivacaine is released from the DepoFoam particles by mechanisms involving reorganization of the barrier lipid membranes and subsequent diffusion of the drug occurs over an extended period of time. The formulation has been shown to extend the duration of human post-operative analgesia from approximately six to eight hours, to as long as 72 hours in some instances, which can eliminate the need for follow-on post-operative administration of other pain drugs. Additionally, the slower uptake of the bupivacaine into the systemic circulation helps avoid high plasma concentration and presumably lowers the risk of systemic toxicity. We believe Exparel's effectiveness has been validated through its extensive clinical trial work as well as market experience. Exparel has been used in over 250,000 surgical procedures since its FDA approval and its use continues to grow rapidly, giving us confidence that Aratana will have success with this product in this market.

Aratana has conducted a dose ranging study in a surgical pain model in laboratory dogs. Five groups of 8 dogs each were treated with saline (placebo), bupivacaine HCL at 2 mg/kg, or AT-003 at three different dosages (low, mid and high). Pain assessments were made using three different pain measuring scores and evaluation of ground reaction forces by means of a pressure mat. The company selected the "mid-dose" for pivotal studies.

Vet Therapeutics acquisition

In October, Aratana acquired Vet Therapeutics Inc. for 1) $30,000 in cash, 2) 625,000 shares of Aratana's common stock, and 3) a promissory note in the principal amount of $3,000 with a maturity date of December 31, 2014. Aratana also agreed to pay up to $5,000 in contingent cash consideration in connection with the achievement of certain regulatory and manufacturing milestones for Vet Therapeutics' B-cell lymphoma product.

The Vet Therapeutics acquisition gave Aratana its platform for the development of monoclonal antibodies, initially for the treatment of B-cell and T-cell lymphoma but potentially for other conditions such as atopic dermatitis. The lead product, AT-004, is a caninized monoclonal antibody intended for the treatment of B-cell lymphoma in dogs. AT-004 provides a targeted immunotherapy that specifically recognizes with high affinity the target, canine CD20, at the surface of cells involved in the proliferation of lymphoma in dogs. AT-004, upon binding to the target, depletes B-lymphoma cells. AT-004 is partnered by Novartis Animal Health and Aratana receives royalty ranging from mid-teens to mid-twenties on sales.

AT-004 was granted a conditional license in November 2012 for manufacture and distribution of the product as an aid for the treatment of B-cell lymphoma in dogs. The conditional license was issued following acceptance of data supporting that AT-004 has demonstrated a reasonable expectation of efficacy, is safe under normal conditions of use in the field and has acceptable purity. This is the first biologic product approved for use as a therapeutic for canine B-cell lymphoma. This conditional license allows for limited

commercialization but Aratana will need full approval, expected in 2015, for AT-004 to reach its full potential.

Importantly, antibodies for veterinarian use do not need to meet cGMP standards, which along with the much smaller doses needed for treatment, means that Aratana can produce AT-004 and other antibody drug candidates at cost-levels which will allow them to price appropriately for broad adoption in the end market. We believe the superior outcomes will make this ultimately the standard of care and meaningfully expand the market size as more dogs will undergo treatment with the much improved prognosis.

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Pharmacokinetics studies performed in dogs presenting with B-cell lymphoma with the recommended dose of AT-004 showed that its elimination half-life ranges between 3 and 4 days after a single dose. In addition, high plasma levels of AT-004 were achieved in all animals after the first and second dose and persisted at significant levels during the treatment intervals with elimination half-life of longer than one week after multiple doses. Studies with AT-004 in client-owned dogs of various breeds, ages and gender presenting with B-cell lymphoma were performed and compared to historical non-treated groups. Treatment with 2 doses of 5.0 mg/kg each on the first week followed by 1 dose of 5.0 ± 1.0 mg/kg per week for 7 weeks resulted in significant increase survival compared to the non-treated historical group alone. Effectiveness parameters included owner assessment of clinical response, overall survival, and quality of life. Treatment with AT-004 post-abbreviated chemotherapy increased the probability of achieving sustained improvement and increased overall survival when compared to control groups.

AT-005 is Aratana's a caninized monoclonal antibody intended for the treatment of T-cell lymphoma in dogs. AT-005 provides a targeted immunotherapy that specifically recognizes with high affinity the target, canine CD52, at the surface of cells involved in the proliferation of lymphoma in dogs. AT-005, upon binding to the target, depletes T-lymphoma cells. AT-005 received conditional approval at the end of January. If approved, we expect AT-005 will be the first biologic product used as a therapeutic for canine T-cell lymphoma.

Pharmacokinetics studies performed in dogs presenting with T-cell lymphoma with the recommended dose of AT-005 showed that AT-005 levels in plasma were reflective of dosing and were detectable after the first administration, and peaked after the second dose. Levels remained detectable throughout the study. The volume of distribution approximated the plasma volume, indicating that AT-005 mostly remained in plasma. The half-life ranged between 3 and 7 days after the first injection. Studies with AT-005 in client-owned dogs of various breeds, ages and gender, presenting with T-cell lymphoma were performed and compared to historical non-treated groups. The AT-005 treated group experienced a significant increase survival compared to the non-treated historical group.

Lymphoma is currently predominantly treated off-label with human chemotherapy agents. These agents are not approved these purposes and appropriate dosing regimens have not been established. In the United States there are approximately 300,000 dogs diagnosed annually with lymphoma, of which approximately 76%, or 228,000, is B-cell lymphoma, and 24%, or 72,000, is T-cell lymphoma.

The current lymphoma market is difficult to estimate as the majority of the treatments consist of generic human-labeled chemotherapeutic agents. The average treatment costs for chemotherapy are approximately $4,000-5,000 per patient, though it can be as low as $2,000 but as high as $12,000 depending on type of cancer, size of the dog, and location of treatment. Aratana expects it will be able to price AT-004 and AT-005 appropriately relative to the current cost of treatment.

Chemotherapy is the most commonly recommended treatment, and combinations of drugs offer the greatest chance of remission, although this often proves ephemeral. More than

75% of dogs with lymphoma can be expected to achieve a complete remission with chemotherapy. Median remission times have been reported from 6 months to 20 months, depending on lymphoma stage and treatment protocol. The second remission is more difficult to achieve, with approximately 40% of dogs with lymphoma achieving a complete remission with the second course of chemotherapy. Less than 20% of dogs with lymphoma will achieve a third complete remission. Approximately 40-45% of dogs with lymphoma live one year with treatment. Less than 20% of dogs with lymphoma live two years, with treatment. Without treatment, the average survival time of dogs is one month from the time of diagnosis, which is often surprising to pet owners because their dogs can appear generally healthy.

Current options to treat B-cell and T-cell lymphoma in dogs are limited to mostly chemotherapy. Additionally, both B-cell and T-cell lymphomas are almost always treated in the same way, not appreciating the specificity of the two distinct diseases. The most common multi-agent chemotherapy commonly known as CHOP is a 19 week combination chemotherapy protocol. Treatment consists of a combination of several drugs including prednisone, L-asparaginase, vincristine, doxorubicin and vincristine. Multiple versions of this protocol have been published. Modifications of this protocol incorporating drugs such as methotrexate or mitoxantrone have also been reported. Reported survival times for patients with B cell lymphoma, substage "a", is 12-15 months. Reported median survival times for patients with T cell lymphoma treated with this protocol is 6-9 months.

Typically, improvement is only achieved with the chemotherapeutic treatments during the treatment period and, with every cycle, their effectiveness decreases over time, while their toxicity increases. Although many dogs achieve initial remission with standard chemotherapy, most will eventually relapse. Cancer cells become increasingly resistant to chemotherapeutic agents during the course of treatment.

Okapi acquisition

On January 6, 2014, Aratana acquired Okapi Sciences N.V., a Belgium-based company with a proprietary pet therapeutics antiviral platform and five clinical/development stage product candidates. The most advanced Okapi pipeline opportunities are its feline herpes (now AT-006) and feline immunodeficiency virus products (now AT-007). If approved, AT-006 could become the first antiviral small molecule therapeutic developed specifically for veterinary use. AT-006, if approved, will be commercialized by Novartis Animal Health pursuant to an existing development and commercialization agreement. The Okapi product pipeline also includes additional antiviral and oncology products for both cats and dogs. The acquisition of Okapi further enhances Aratana's leadership position in pet therapeutics by providing the company with a European base of operations, including novel small molecule discovery capabilities and enables better coordination of clinical and regulatory activities, enhances the company's business development and in-licensing capabilities and provides flexibility with respect to European commercialization. Beyond AT-006 and AT-007, the acquisition gave the company early stage leads for the treatment of parvovirus, which is a common condition affecting dogs.

Aratana agreed to pay Okapi equity holders approximately €10.3 million (equivalent to $13.9 million) in cash and issued a promissory note for €11.0 million ($14.9 million). Aratana also agreed to pay up to an additional $16.3 million in cash in the event of an equity financing, which the company completed in January.

Depth of management is a key asset

We believe Aratana possesses a very strong management team with relevant experience in both commercialization of companion animal therapeutics as well as development. We think this is particularly important for this company given the number of products currently

in development and the scope of the commercialization effort upon approval. Additionally, we believe this depth gives Aratana an advantage in evaluating potential drug candidates for licensing.

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Steven St. Peter, Chief Executive Officer: Before joining Aratana on a full-time basis, Dr. St. Peter was previously a Managing Director at MPM Capital where he led the investment in and served as Chairman of Aratana Therapeutics. While at MPM, his investment scope included both venture and buyout transactions across the pharmaceutical and medical technology industries. His investment experience includes positions at Apax Partners and The Carlyle Group. Previously, Dr. St. Peter was Assistant Clinical Professor of Medicine at Columbia University. He received a Doctor of Medicine degree from Washington University and completed his residency and fellowship at the Hospital of the University of Pennsylvania.

Craig Tooman, Chief Financial Officer: Previously, Mr. Tooman held executive positions at large pharmaceutical companies, including Pharmacia and Upjohn, and served as the CFO of Enzon Pharmaceuticals, Ikaria and ILEX Oncology. While at ILEX Oncology, Mr. Tooman was a member of the executive team and was instrumental in transitioning the company from a CRO into a proprietary business responsible for developing successful oncology products. This strategic transformation ultimately led to ILEX being sold to Genzyme Corporation for $1.1 billion.

Julia Stephanus, Chief Commercial Officer: Prior to joining Aratana, Ms. Stephanus was Director of the Companion Animal Global Franchise for Ceva Animal Health, a role she assumed following the acquisition of Summit VetPharm by Ceva in 2010. At Ceva, she oversaw the commercial development of new products as well as global marketing for strategic companion animal products. She previously worked at Pfizer where she launched Rimadyl, one of the most valuable product franchises.

Linda Rhodes, Chief Scientific Officer: Prior to joining Aratana Therapeutics, Dr. Rhodes co-founded AlcheraBio LLC, a consulting and contract research organization focused on the discovery and development of new technologies for animal health in the biotechnology and pharmaceutical industries. In 2008, AlcheraBio was acquired by Argenta. Previously, Dr. Rhodes conducted research on human health drug targets at Merck Research Laboratories.

Investment risks

Uncertainty for product development and approval: While Aratana believes the preclinical work on its pipeline assets mitigates risk, pivotal clinical trials are still needed and establishing efficacy could prove difficult.

Competition from larger, animal health companies: While other animal health companies are largely focused on livestock for the time being, they could focus on companion animal health in the future. Additionally, as animal health assets are realigned or spun out of their current owners, we could see a change in focus. These companies have greater scale and resources and could pressure Aratana competitively, especially in the prices for product opportunities.

Regulatory changes: The economic viability of Aratana's mAB therapy depends on lower regulatory standards in manufacturing. If those revise to be more similar to cGMP, we believe this would severely pressure margins and could require prices that aren't viable from a marketing standpoint.

Intellectual property: Aratana generally relies on licenses to intellectual property for its lead pipeline assets. The company may be forced to enforce its patents or licensors patents, which could prove both expensive and unsuccessful.

Valuation Comps

Given Aratana's size and where it is in its lifecycle, we don't believe Zoetis is a relevant trading comp (though it certainly attracts interest to the broader animal health sector). We believe more appropriate comparisons are to other emerging spec pharma companies, including Kindred which is also focused on companion animal health.

FIGURE 3
Valuation Comps

	Price	Market Cap	Enterprise Value	EV/Sales		PE		
		($ in millions)	($ in millions)	2014	2015	2014	2015	Therapeutic Area
PCRX	$64.25	$2,155	$2,201	15x	9x	NA	42x	Post-surgical pain
AERI	$18.96	$440	$445	NA	NA	NA	NA	Glaucoma
HZNP	$9.89	$651	$647	3x	2x	105x	16x	Arthritis
ZGNX	$4.33	$604	$614	8x	5x	NA	NA	Pain/CNS
KIN	$17.26	$276	$259	NA	54x	NA	NA	Companion animal health
PETX	$22.62	$667	$577	NA	96x	NA	NA	Companion animal health

Note: PCRX = Pacira Pharmaceuticals; AERI = Aeri Pharmaceuticals; HZNP = Horizon Pharma; ZGNX = Zogenix Inc; KIN = Kindred Biosciences.
Prices as of the market close on Feb 7, 2014.
We rate PETX and PCRX as Overweight. Our industry view for the US Specialty Pharmaceuticals industry is Neutral.
For full disclosures on each covered company, including details of our company-specific valuation methodology and risks, please refer to:
http://publicresearch.barcap.com
Source: Company reports, Thomson One for non-covered companies, Barclays Research estimates for covered companies

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Primary Stocks (Ticker, Date, Price)

Aratana Therapeutics Inc. (PETX, 05-Feb-2014, USD 21.17), Overweight/Neutral, A/C/D/J/L

Other Material Conflicts

One of the analysts who co-authored this report (but who does not cover Pfizer) has a household member who is employed by and owns restricted stock units and stock options in Pfizer.

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U.S. Specialty Pharmaceuticals		
Actavis, Inc. (ACT)	Allergan Inc. (AGN)	Aratana Therapeutics Inc. (PETX)
Charles River Laboratories (CRL)	Covance Inc. (CVD)	Forest Laboratories Inc. (FRX)
ICON plc (ICLR)	Jazz Pharmaceuticals PLC (JAZZ)	Mallinckrodt (MNK)
Mylan Inc. (MYL)	Pacira Pharmaceuticals Inc. (PCRX)	PAREXEL International (PRXL)
Quintiles Transnational (Q)	Teva Pharmaceutical Industries (TEVA)	Zoetis Inc. (ZTS)

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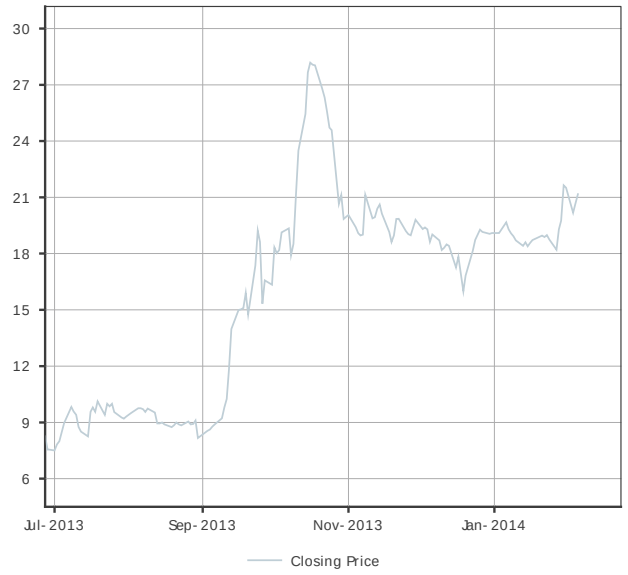
Aratana Therapeutics Inc. (PETX)

	Stock Rating	Industry View
USD 21.17 (05-Feb-2014)	**OVERWEIGHT**	**NEUTRAL**

Rating and Price Target Chart - USD (as of 05-Feb-2014) **Currency=USD**



Date	Closing Price	Rating	Adjusted Price Target

Source: IDC, Barclays Research

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Valuation Methodology: We base our $30 price target on 5x our FY20 sales estimate of $325 million discounted back to the present (8% discount rate).

Risks which May Impede the Achievement of the Barclays Research Price Target: Inability to get pipeline candidates approved by the FDA or USDA; lack of demand by consumers since pet therapeutics remains an emerging market; inability to manufacture products at a cost level which allows PETX to price products in a competitive manner.

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