

April 10, 2015

## Adamas Pharmaceuticals, Inc.

### Orphan Drug Designation Adds to IP Surrounding ADS-5102, First Phase III Results Expected by Year End

- Before the markets opened Friday, April 10, Adamas announced that the FDA has granted an orphan drug designation to ADS-5102 (also called Nurelin), a controlled-release version of amantadine for the treatment of levodopa-induced dyskinesia associated with patients with Parkinson's disease (PD-LID). We believe there was some risk to ADS-5102 receiving orphan drug designation since LID is caused by another medication, levodopa, which is the standard of care in Parkinson's disease. However, there are no FDA-approved therapies for PD-LID, and Friday's orphan drug designation conveys certain incentives for Adamas, including seven years of market exclusivity for the drug if it achieves FDA approval.
- A survey of 2,000 publications estimated that development of LID occurs in approximately 40% of PD patients treated with levodopa for four to six years (Ahlskog and Muenter, *Mov Disord* 2001). Further, another study estimated that PD patients treated with levodopa for less than five years have an 11% risk of developing dyskinesias, while those treated for six to nine years have a 32% risk, and patients treated for over 10 years have a risk of 89% (Fabbrini G et. al, *Mov Disord* 2007).
- The orphan drug designation follows the granting of U.S. patent No. 8,987,333 on March 31, which is titled "composition and method for treating neurological disease" with claims directed toward dosage forms that enable osmotic delivery of amantadine for therapeutic purposes. This brings the total issued patents surrounding ADS-5102 to 10 as the company continues to solidify the intellectual property surrounding its wholly owned product. Given the 505(b)2 pathway and the controlled-release nature of the compound, we believe investors had viewed the longevity of ADS-5102 as a risk; however, Friday's orphan designation in combination with the significant amount of IP being built around the product should reduce those concerns.
- Adamas is conducting its broad Phase III clinical program for ADS-5102 (see exhibit 1). The company plans for its comprehensive Phase III program to complete enrollment in 2015 with a planned NDA submission in the first half of 2016. The program consists of three ongoing trials for the treatment of PD-LID: EASE LID 3, a randomized, double-blind study that is expected to enroll 70 patients with PD-LID for treatment with 340 mg of ADS-5102 versus placebo, dosed once daily at bedtime for 13 weeks; EASE LID, a Phase III trial with about 130 patients that will assess the efficacy of 340 mg of ADS-5102 versus placebo once daily at bedtime for 26 weeks; and EASE LID 2, a Phase III open-label safety study of ADS-5102 in about 200 patients with PD-LID. The first trial expected to complete enrollment, EASE-LID in mid-2015, will report data after the 26-week treatment period and data lock, sometime at the end of 2015/early 2016. The primary endpoints of the studies are a reduction in dyskinesia as assessed by the Unified Dyskinesia Rating Scale (UDysRS), as well as "ON" time (periods without dyskinesia) and "OFF" time (periods when medication is not working well) and Unified Parkinson's Disease Rating Scale (MDS-UPDRS) as secondary endpoints, similar to the company's completed Phase II/III EASED study. We believe the study design of the trials suggests a high probability for success given Adamas's clinical experience with ADS-5102 to date in combination with the literature for immediate-release amantadine for the treatment of PD-LID.

Adamas Pharmaceuticals is a developer of specialty therapeutics for the treatment of disorders affecting the central nervous system. The company is based in Emeryville, California.

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Stock Rating: **Outperform**  
Company Profile: **Aggressive Growth**  
Price Target: **\$35.00**

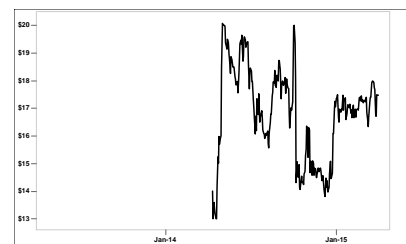
Symbol: ADMS (NASDAQ)  
Price: \$17.14 (52-Wk.: \$12-\$22)  
Market Value (mil.): \$303  
Fiscal Year End: December  
Long-Term EPS Growth Rate: NA  
Dividend/Yield: None

	2014A	2015E	2016E
<b>Estimates</b>			
EPS FY	\$0.53	\$-3.06	\$-2.40
CY		\$-3.06	\$-2.40
Sales (mil.)	56	0	4
<b>Valuation</b>			
FY P/E	32.3x	NM	NM
CY P/E		NM	NM

<b>Trading Data (FactSet)</b>	
Shares Outstanding (mil.)	18
Float (mil.)	4
Average Daily Volume	112,473

<b>Financial Data (FactSet)</b>	
Long-Term Debt/Total Capital (MRQ)	0.0
Book Value Per Share (MRQ)	8.4
Return on Equity (TTM)	8.4

#### Two-Year Price Performance Chart



Sources: FactSet, William Blair & Company estimates

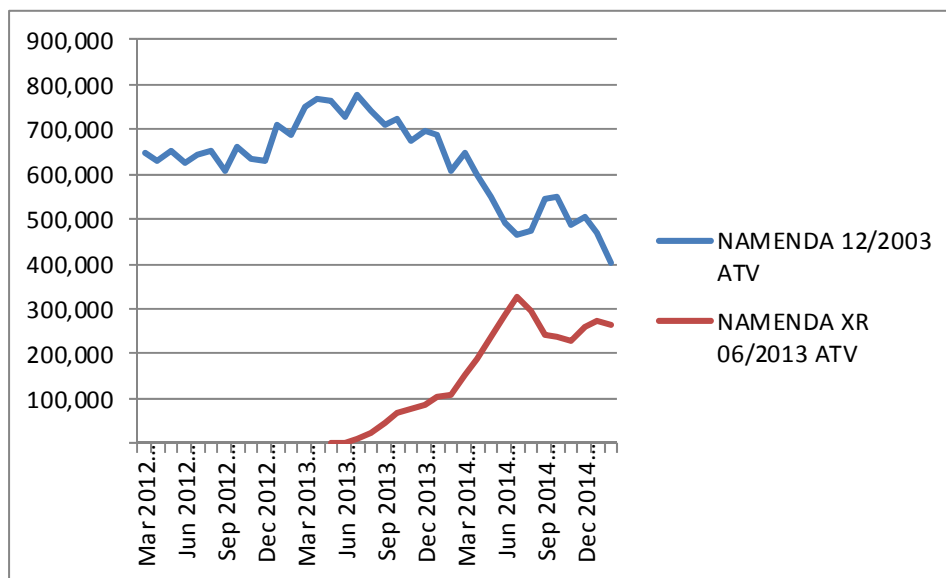
- Overall, the company has identified three specific areas for additional testing of ADS-5102, with up to two studies set to begin in 2015: hyperkinetic movement disorders similar to LID (i.e., chorea associated with Huntington's disease, tardive dyskinesia, and Tourette's syndrome), hypokinetic 2 movement disorders (i.e., walking and fatigue issues associated with multiple sclerosis), and neuropsychiatric disorders (i.e., depression and Alzheimer's disease). We view the broadening of the program as a positive since literature already suggests potential efficacy of immediate-release amantadine in several of these indications.
- Aside from ADS-5012, Adamas will receive royalties on Namenda XR and Namzaric (expected to launch in 2015) in 2018 and 2019, respectively, from Forest Laboratories, a subsidiary of Actavis (ACT \$292.88). In exhibit 2, we show monthly prescriptions of Namenda XR and the initial Namenda product. At present, Namenda XR prescriptions account for about 40% of total Namenda franchise prescriptions (Namenda prescriptions are 60%). During 2013, Forest management noted that it expected a "hard-switch" from Namenda to Namenda XR during 2014. However, the switch has not been as "hard" as initially anticipated. We had always viewed the Namenda/Namenda XR hard-switch as a likely a proxy for the launch of Namzaric. This switch has lagged our eventual double-switch estimate for Namzaric, which we had assumed would peak at 50% of market share for the franchise, including generics. However, this switch has likely been complicated by suits against Actavis and an injunction against the company pulling the immediate-release formulation from the market. We will continue to monitor the prescription trends and litigation surrounding the Namenda franchise.
- We reiterate our Outperform rating on shares as the company has built significant IP surrounding the company's main value driver, ADS-5102, which should only be bolstered by Friday's orphan designation. We also believe ADS-5102 is an effective compound that should produce a best-in-class ON/OFF time and reductions in dyskinesia in Parkinson's patients with LID. While data from the Phase II/III EASED study compared ADS-5102 to placebo, we believe the product provides clear benefits over immediate-release amantadine given our review of literature available in this setting. We ultimately believe the product will gain a significant penetration into the moderate and severe Parkinson's disease patient population and estimate peak-year sales to exceed \$500 million. In addition to LID, we believe ADS-5102 will likely have a role in additional indications such as the movement disorders and/or neurocognitive disorders such as Alzheimer's as well as receiving royalties related to Namenda XR and Namzaric from Actavis/Forest Laboratories.

**Exhibit 1**  
**Adamas Pharmaceuticals, Inc.**  
**Clinical Program for ADS-5102 in PD-LID**

Trial	Phase	N	Length	Dose/Regimen	Initiated	Completed Enrollment	Data
EASED	II/III	83	8 week	Three doses (260 mg, 340 mg, 420 mg) administered once at bedtime v Placebo	July 2011	N/A	Primary Completion Date (Final data collection date for primary outcome measure): May 2013; Study Completion Date: Oct 2013
EASE LID 2	III	~200	12 months (up to 52 weeks)	Open-label safety study	July 2014	expected in 2015	Primary Completion Date (Final data collection date for primary outcome measure): August 2017
EASE LID	III	~130	26 weeks	340 mg dose of ADS-5102 administered once at bedtime v Placebo	June 9, 2014	expected in mid-2015	YE15
EASE LID 3	III	~70	13 weeks	340 mg dose of ADS-5102 administered once at bedtime v Placebo	October 28, 2014	expected in 2H2015	January 2016
<b>NDA submission still guided for 1H16</b>							

Source: Company reports

**Exhibit 2**  
**Namenda/Namenda XR Monthly Prescriptions**



Source: IMS Health

### Valuation

We derive our \$35 price target from a risk-adjusted net present value (NPV) for the company's royalty stream from both Namenda XR and Namzaric. Adamas's royalty stream for both products will not begin until five years after launch for either product. For our valuation of ADS-5102, we assume the product will launch in 2017, following the company's second Phase III study in 2016 and subsequent filing that year. Given the strength of data to date and the known efficacy of amantadine in Parkinson's disease, we are risk-adjusting the probability of success by 75%. We assume peak-year sales six years after launch, which we believe is conservative given the familiarity of physicians treating with amantadine. We continue to assign an Outperform rating to shares of Adamas.

### Risks

An investment in shares of Adamas involves clinical, regulatory, and financial risks that are typical for developmental-stage biopharmaceutical companies. The company might incur losses beginning in 2016 as preparations for the launch of ADS-5102 begin. In addition to the risks associated with ADS-5102 development, there are intellectual property, manufacturing, and competition risks to consider.

Our earnings model is shown on the following page.

**William Blair**  
**Adamas Pharmaceuticals**  
**Earnings Model**  
3/3/15  
(\$ in millions except EPS data)

**Rating: Outperform**  
**Company Profile: Aggressive Growth**  
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	2014(A)	Q1(E)	Q2(E)	Q3(E)	Q4(E)	2015(E)	2016(E)	2017(E)	2018(E)
Product Revenue	-	-	-	-	-	-	-	-	-
ADS-5102	-	-	-	-	-	-	-	17,228	105,570
Royalty/Milestone Revenue	55,846	100	100	100	100	400	4,000	4,000	4,818
<b>Total Revenue</b>	55,846	100	100	100	100	400	4,000	21,227.8	110,388.0
yr/yr growth	NM	-43.2%	-99.6%	-53.5%	-99.7%	-99.3%	900.0%	NM	420.0%
q/q growth		-99.7%	0.0%	-99.8%	0.0%				
incremental rev q/q									
<b>Cost of Goods Sold</b>	-	-	-	-	-	-	-	1,723	10,557
Gross Profit	55,846	100	100	100	100	400	4,000	19,505	99,831
<b>SG&amp;A</b>	15,472	5,226	5,357	5,491	5,628	21,703	29,500	35,400	38,940
Growth	132%					40%	40%	20%	10%
<b>R&amp;D</b>	21,860	8,411	8,663	8,923	9,191	35,188	20,000	23,000	25,300
Growth	195%					61%	-43%	15%	10%
<b>Total Operating Expenses</b>	37,332	13,637	14,020	14,414	14,819	56,891	49,500	58,400	64,240
growth	165%	132%	66%	48%	12%	52%	-13%	18%	10%
Total Operating Expenses (-stock based comp)	18,030.0	10,637.5	11,020.4	11,414.3	11,819.2	44,891.4	37,500.0	46,400.0	60,640.0
Operating Income	18,514	(13,537)	(13,920)	(14,314)	(14,719)	(56,491)	(45,500)	(38,895.0)	35,591.0
EBIT Margin	NM					NM	NM	NM	32%
growth y/y (%)	NM	138%	-183%	50%	-186%	NM	NM	NM	NM
Interest and other income (expense)	(917)	500	500.0	500.0	500.0	2,000	1,500	1,500	8,000
Interest expense									
Income Before Taxes	17,597	(13,037)	(13,420)	(13,814)	(14,219)	(54,491)	(44,000)	(37,395)	43,591
Income Tax Provision	7,374	(250)	(250)	(250)	(250)	(1,000)	(1,000)	(1,000)	11,334
Effective Tax Rate	NM	1.9%	1.9%	1.8%	1.8%	NA	NA	3%	26%
Net Income	\$ 10,223.1	(12,787)	(13,170)	(13,564)	(13,969)	(53,491)	(43,000)	(36,395)	32,257
Net income to preferred	\$ 1,255.0								
Net income to common (basic)	\$ 8,968.1	(12,787)	(13,170)	(13,564)	(13,969)	(53,491)	(43,000)	(36,395)	32,257
Net income to common (diluted)	\$ 9,069.0	(12,787)	(13,170)	(13,564)	(13,969)	(53,491)	(43,000)	(36,395)	32,257
Net income to common per share (basic)	0.60	(0.74)	(0.76)	(0.77)	(0.79)	(3.06)	(2.40)	(1.99)	1.67
Net income to common per share (diluted)	0.53	(0.74)	(0.76)	(0.77)	(0.79)	(3.06)	(2.40)	(1.99)	1.52
Basic avg. number of shares used in computing net income	14,837	17,337	17,437	17,537	17,637	17,487	17,887	18,287	19,287
Diluted avg. number of shares used in computing net income	17,107	17,337	17,437	17,537	17,637	17,487	17,887	18,287	21,287
<b>Key Ratios (GAAP unless noted)</b>									
Gross Margin	NM	NM	NM	NM	NM	NM	NM	90.0%	90.0%
R&D (% Total Rev.)	NM	NM	NM	NM	NM	NM	NM	108.3%	22.9%
SG&A (% Total Rev.)	NM	NM	NM	NM	NM	NM	NM	166.8%	35.3%
Operating Margin	NM	NM	NM	NM	NM	NM	NM	-183.2%	32.2%
Net Income Margin	NM	NM	NM	NM	NM	NM	NM	-171.4%	29.2%
<b>Revenue Growth</b>									
Growth Yr/Yr	NM	NM	NM	NM	NM	NM	NM	431%	420%
Growth Q/Q		NM	NM	NM	NM				
<b>SG&amp;A Growth</b>									
Growth Yr/Yr	132%	90%	64%	26%	10%	40%	36%	20%	10%
Growth Q/Q		2%	2%	2%	2%				
<b>R&amp;D Growth</b>									
Growth Yr/Yr	195%	171%	67%	65%	13%	61%	-43%	15%	10%
Growth Q/Q		3%	3%	3%	3%				

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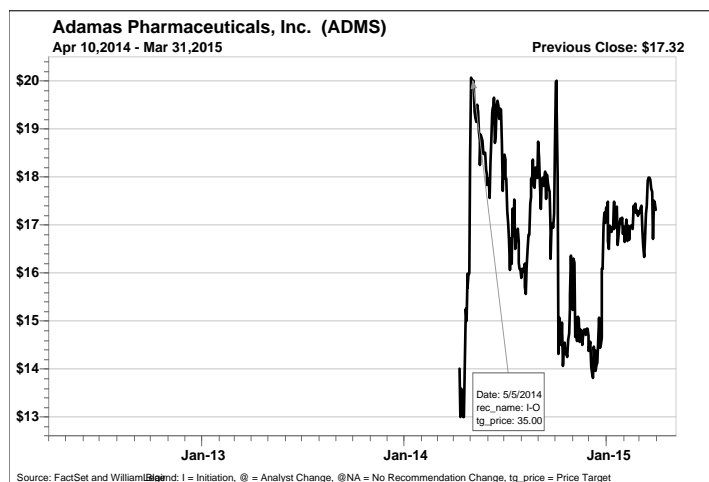
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DOW JONES: 17,958.73

S&P 500: 2,091.18

NASDAQ: 4,974.57



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Coverage Universe	Percent	Inv. Banking Relationships*	Percent
Outperform (Buy)	65	Outperform (Buy)	16
Market Perform (Hold)	33	Market Perform (Hold)	3
Underperform (Sell)	2	Underperform (Sell)	0

\*Percentage of companies in each rating category that are investment banking clients, defined as companies for which William Blair has received compensation for investment banking services within the past 12 months.

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