

## Monoclonal Antibodies

### INDUSTRY SUMMARY

COGENT VALUATION identified **Monoclonal Antibodies** publicly traded companies, IPOs, and recent M&A transactions within the Monoclonal Antibodies industry, which provides a basis for market and transaction pricing that can be used by your firm in estimating market sentiment and its impact on your firm's value. Over the last year since March 31, 2017, the median 52-week share price return of the Monoclonal Antibodies industry was 2.8%. Between March 31, 2016 and March 31, 2018, the median EV/Revenue multiple increased from 1.8 to 5.3. This industry is not profitable and all other valuation multiples based on profitability metrics were not meaningful. The median revenue growth and EBITDA margins for the industry for the quarter were 10.1% and -50.1%, respectively.

### Public Company Key Statistics

Median 52-Week  
Return

2.8%

Median 3-Year CAGR  
Return

-23.9%

Median EV/Revenue  
Multiple

5.3x

## Comparable Public Company Market Price Returns as of March 31, 2018

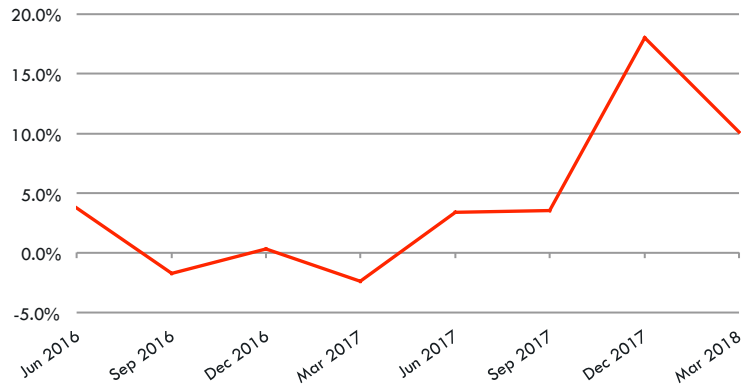
	YTD	3 Month	1 Year	2 Year	2017	2016	2015	2014
<b>Alder Biopharmaceuticals, Inc.</b>	10.9%	10.9%	-45.0%	-38.9%	-45.0%	-37.0%	13.5%	N/A
<b>AVEO Pharmaceuticals, Inc.</b>	3.9%	3.9%	416.7%	73.7%	416.7%	-57.1%	50.0%	-54.1%
<b>Celldex Therapeutics, Inc.</b>	-24.7%	-24.7%	-19.8%	-47.9%	79.7%	-77.4%	-14.1%	-24.6%
<b>Halozyme Therapeutics, Inc.</b>	-18.0%	-18.0%	105.1%	13.7%	-19.8%	-43.0%	79.6%	-35.6%
<b>Immunomedics, Inc.</b>	-3.3%	-3.3%	340.3%	185.1%	105.1%	19.5%	-36.0%	4.3%
<b>Infinity Pharmaceuticals, Inc.</b>	-9.6%	-9.6%	50.4%	-60.3%	340.3%	-82.8%	-53.5%	22.3%
<b>Omeros Corporation</b>	3.4%	3.4%	95.9%	40.5%	50.4%	-36.9%	-36.5%	119.5%
<b>OncoMed Pharmaceuticals, Inc.</b>	-42.5%	-42.5%	-46.8%	-47.8%	95.9%	-65.8%	3.6%	-26.3%
<b>PDL BioPharma, Inc.</b>	-22.4%	-22.4%	29.2%	-17.9%	-46.8%	-40.1%	-54.1%	-8.6%
<b>Peregrine Pharmaceuticals, Inc.</b>	7.3%	7.3%	N/A	-33.7%	29.2%	-73.6%	-15.8%	0.0%
<b>Repligen Corporation</b>	-0.3%	-0.3%	17.7%	17.3%	17.7%	8.9%	42.9%	45.2%
<b>Sorrento Therapeutics, Inc.</b>	35.5%	35.5%	-22.4%	-55.0%	-22.4%	-43.7%	-13.5%	24.3%
<b>XOMA Corporation</b>	-43.2%	-43.2%	743.6%	14.3%	743.6%	-84.1%	-63.0%	-46.7%
<b>Median of Industry Public Companies</b>	-3.3%	-3.3%	39.8%	-17.9%	50.4%	-43.7%	-14.1%	-4.3%

Multiple year periods are calculated as the average annual return.

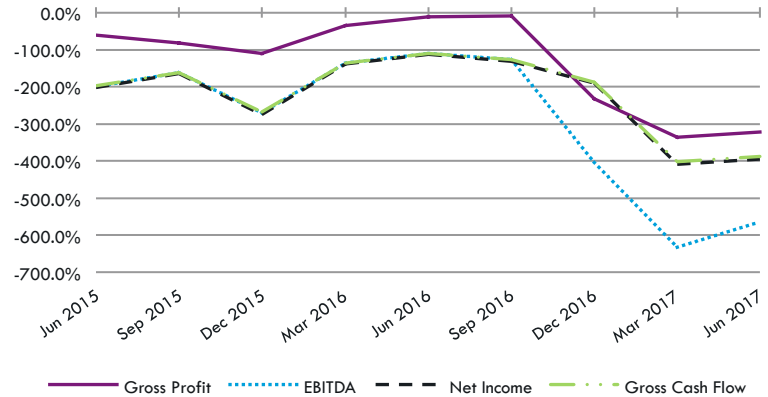
■ Highest Return    
 ■ Lowest Return    
 ■ Median Return

## Industry Revenue Growth and Profit Margins for the Past Two Years

**Median Quarterly Revenue Growth of All Monoclonal Antibodies Companies**



**Median Gross Profit, EBITDA, Net Income, and Gross Cash Flow Margins**



## Industry Initial Public Offerings—Industry: Monoclonal Antibodies (dollars in millions, except share prices)

Offer Date	Company Name	Offer Price	Shares Offered	Amount Raised	Total Assets	Debt	LTM Revenues	LTM EBITDA	LTM Net Income	LTM Cash Flows
1/25/18	<b>ARMO BioSciences, Inc.</b>	\$17.00	0.0	\$8.8	\$24.8	\$0.0	<b>\$0.0</b>	(\$45.2)	(\$48.9)	(\$43.0)
12/17/17	<b>Fusion Antibodies Plc</b>	\$1.09	4.0	\$40.0	\$44.4	\$12.5	\$2.4	(\$6.4)	(\$6.6)	(\$6.4)
11/15/17	<b>Arsanis, Inc.</b>	\$10.00	6.7	\$100.0	\$98.5	\$67.9	<b>\$0.0</b>	(\$13.6)	(\$31.3)	(\$13.5)
11/8/17	<b>InflaRx N.V.</b>	\$15.00	29.2	\$86.9	\$116.8	\$0.0	<b>\$0.0</b>	(\$55.2)	(\$57.1)	(\$53.7)
10/11/17	<b>BioArctic AB (publ)</b>	\$2.98	24.6	\$902.6	N/A	\$61.7	\$22.6	\$1,390.9	\$1,158.0	\$1,391.1
7/25/17	<b>Celltrion Healthcare Co., Ltd.</b>	\$36.69	5.8	\$35.0	\$344.4	\$14.7	<b>\$801.8</b>	(\$22.6)	(\$35.7)	(\$18.1)
	<b>Median of all IPOs</b>	<b>nm</b>	<b>nm</b>	<b>\$63.4</b>	<b>\$98.5</b>	<b>\$13.6</b>	<b>\$1.2</b>	<b>(\$18.1)</b>	<b>(\$33.5)</b>	<b>(\$15.8)</b>


Multiple year periods are calculated as the average annual return.

■ Highest Return    
 ■ Lowest Return    
 ■ Median Return


## Recent Merger and Acquisition Transactions for a Majority Stake (dollars in millions)

Transaction Date	Target	Acquirer	Transaction Size	% Bought
1/22/18	Hunan ProMab Biotechnologies	NanHua Bio-medicine Co.	\$7.7	100%
8/23/17	U-Protein Express B.V.	ImmunoPrecise Antibodies	\$8.2	100%
12/20/16	Ganymed Pharma	Astellas Pharma Inc.	\$1,401.6	100%
6/30/16	EPIRUS Biopharmaceuticals	Polpharma SA Pharmaceutical	\$3.5	100%
5/31/16	Effimune SA	OSE Pharma SA	\$34.4	100%
1/22/16	Biotie Therapies Corp.	Acorda Therapeutics, Inc.	\$341.6	100%
9/23/17	Dyax Corp.	Shire Pharmaceuticals	\$5,907.0	100%
10/30/15	BioNovion B.V.	Ligand Pharmaceuticals	\$178.0	100%
9/11/15	PacificGMP, Inc.	Abzena Inc.	\$45.2	100%
6/1/15	X-BODY, Inc.	Juno Therapeutics, Inc.	\$42.8	100%

 USA

 International

 Highest

 Lowest

 Median

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## Recent Merger and Acquisition Transactions for a Majority Stake (dollars in millions)

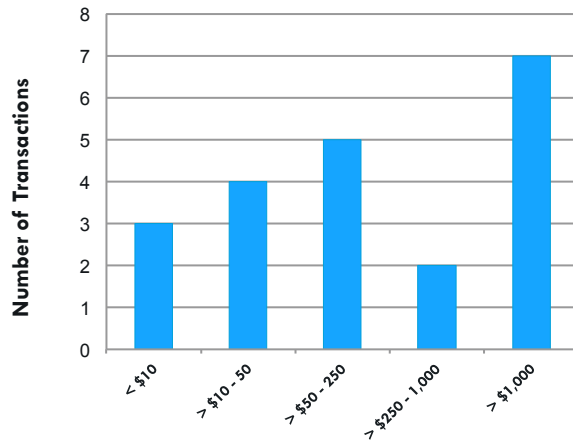
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Transaction Date	Target	Acquirer	Transaction Size	% Bought
3/12/15	<b>KBI Biopharma Inc.</b>	<b>JSR Corporation</b>	\$100.0	100%
3/3/15	<b>SuppreMol GmbH</b>	<b>Baxter International Inc.</b>	\$223.9	100%
9/23/14	<b>CFR Pharmaceuticals</b>	<b>Abbott Investments</b>	\$2,659.3	73%
4/30/14	<b>Shanghai PrimeGene</b>	<b>R&amp;D Systems China</b>	\$18.8	100%
12/31/13	<b>Santarus, Inc.</b>	<b>Salix Pharmaceuticals</b>	\$2,154.4	100%
8/2/12	<b>Human Genome Sciences Inc.</b>	<b>GlaxoSmithKline plc</b>	\$3,682.2	100%
4/18/12	<b>Epitomics, Inc.</b>	<b>Abcam Plc</b>	\$153.9	100%
3/5/12	<b>Micromet, Inc.</b>	<b>Amgen Inc.</b>	\$1,016.4	100%
<b>Median of the 18 M&amp;A Transaction Targets</b>			<b>\$166.0</b>	<b>100%</b>

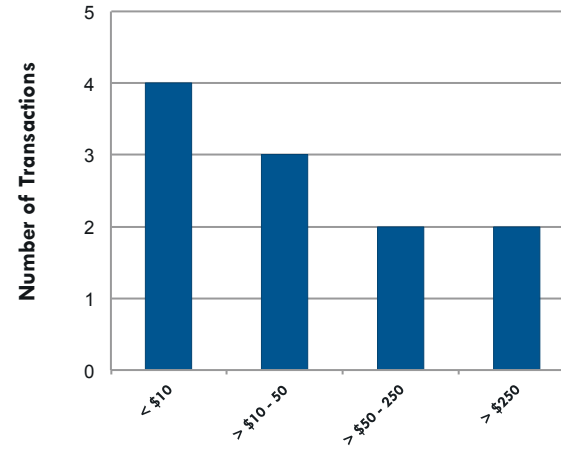
USA
  International
  Highest
  Lowest
  Median

## Recent Merger and Acquisition Transactions for a Majority Stake (dollars in millions) as of March 31, 2018

**Size of M&A Transactions**



**LTM Revenues Reported**



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**Definitions of Financial Terms Used in this Quarterly Industry Update:**

**Enterprise Value (EV):** Market Value of Equity + Market Value of Debt —Cash

**Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA):** Profitability metric sometimes also referred to as operating profit or operating earnings.

**Gross Cash Flows:** Net Income + Depreciation and Amortization Expense

**Latest Twelve Months (LTM):** Financial information is as of the latest twelve months through the date of this Quarterly Industry Update.

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