

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 December 31, 2017, the median 52-week share price return of the Monoclonal Antibodies industry was -32.3%. Between December 31, 2016 and December 31, 2018, the median EV/Revenue multiple increased from 3.5 to 6.7. 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 -5.5% and -48.9%, respectively

Public Company Key Statistics

Median 52-Week
Return

-32.3%

Median 3-Year CAGR
Return

-15.7%

Median EV/Revenue
Multiple

6.7x

Comparable Public Company Market Price Returns as of September 30, 2018

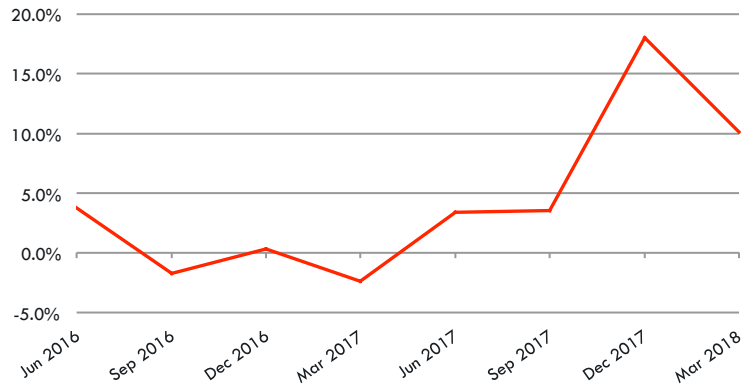
	YTD	3 Month	1 Year	2 Year	2017	2016	2015	2014
Alder Biopharmaceuticals, Inc.	45.4%	24.4%	-45.0%	-38.9%	-45.0%	-37.0%	13.5%	N/A
AVEO Pharmaceuticals, Inc.	18.6%	-22.1%	416.7%	73.7%	416.7%	-57.1%	50.0%	-54.1%
Celldex Therapeutics, Inc.	76.8%	34.2%	-19.8%	-47.9%	79.7%	-77.4%	-14.1%	-24.6%
Halozyme Therapeutics, Inc.	-10.3%	-78.4%	105.1%	13.7%	-19.8%	-43.0%	79.6%	-35.6%
Immunomedics, Inc.	28.9%	-13.9%	340.3%	185.1%	105.1%	19.5%	-36.0%	4.3%
Infinity Pharmaceuticals, Inc.	-41.9%	62.0%	50.4%	-60.3%	340.3%	-82.8%	-53.5%	22.3%
Omeros Corporation	-42.7%	-9.0%	95.9%	40.5%	50.4%	-36.9%	-36.5%	119.5%
OncoMed Pharmaceuticals, Inc.	-81.8%	62.4%	-46.8%	-47.8%	95.9%	-65.8%	3.6%	-26.3%
PDL BioPharma, Inc.	5.8%	-27.4%	29.2%	-17.9%	-46.8%	-40.1%	-54.1%	-8.6%
Peregrine Pharmaceuticals, Inc.	45.4%	-20.4%	N/A	-33.7%	29.2%	-73.6%	-15.8%	0.0%
Repligen Corporation	-36.8%	30.0%	17.7%	17.3%	17.7%	8.9%	42.9%	45.2%
Sorrento Therapeutics, Inc.	-64.5%	39.8%	-22.4%	-55.0%	-22.4%	-43.7%	-13.5%	24.3%
XOMA Corporation	29.4%	3.2%	743.6%	14.3%	743.6%	-84.1%	-63.0%	-46.7%
Median of Industry Public Companies	-32.3%	-3.3%	39.8%	-17.9%	50.4%	-43.7%	-14.1%	-4.3%

Multiple year periods are calculated as the average annual return.

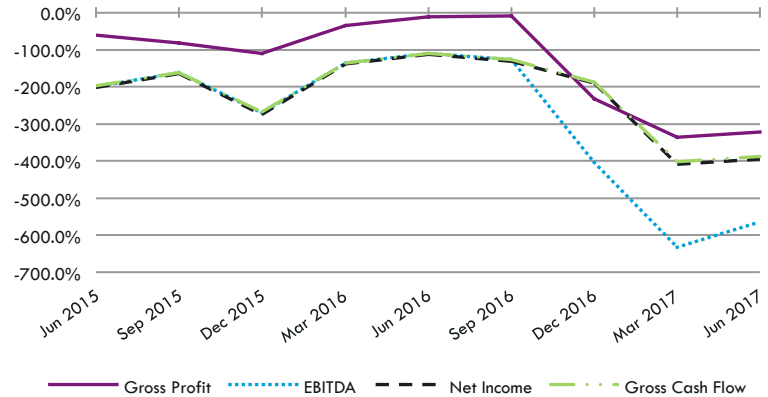
■ Highest Return
 ■ Lowest Return
 ■ Median Return

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—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
12/21/18	Shanghai Junshi Biosciences Co., Ltd.	\$13.00	0.0	\$8.8	\$24.8	\$0.0	\$0.0	(\$45.2)	(\$48.9)	(\$43.0)
11/16/18	PharmAbcine, Inc.	\$4.00	4.0	\$40.0	\$44.4	\$12.5	N/A	(\$6.4)	(\$6.6)	(\$6.4)
10/11/18	Equillum, Inc.	\$16.00	6.7	\$100.0	\$98.5	\$67.9	\$0.0	(\$13.6)	(\$31.3)	(\$13.5)
10/10/18	Allogene Therapeutics, Inc.	\$18.00	29.2	\$86.9	\$116.8	\$0.0	N/A	(\$55.2)	(\$57.1)	(\$53.7)
8/13/18	Aridis Pharmaceuticals, Inc.	\$17.00	24.6	\$902.6	N/A	\$61.7	\$1.2	\$1,390.9	\$1,158.0	\$1,391.1
7/19/18	Provention Bio, Inc.	\$1.09	5.8	\$35.0	\$344.4	\$14.7	\$0.0	(\$22.6)	(\$35.7)	(\$18.1)
	Median of all IPOs	nm	nm	\$63.4	\$98.5	\$13.6	\$1.2	(\$18.1)	(\$33.5)	(\$15.8)

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
8/31/18	Visterra, Inc.	Otsuka America, Inc.	\$430.0	100%
1/22/18	Hunan ProMab Biotechnologies	NanHua Bio-medicine Co.	\$7.7	100%
8/22/17	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%
4/18/16	Biotie Therapies Corp.	Acorda Therapeutics, Inc.	\$341.6	100%
10/30/15	Dyax Corp.	Shire Pharmaceuticals	\$5,907.0	100%
9/11/15	PacificGMP, Inc.	Ligand Pharmaceuticals	\$178.0	100%
6/1/15	X-BODY, Inc.	Juno Therapeutics, Inc.	\$42.8	100%

■ USA
 ■ International
 ■ Highest
 ■ Lowest
 ■ Median

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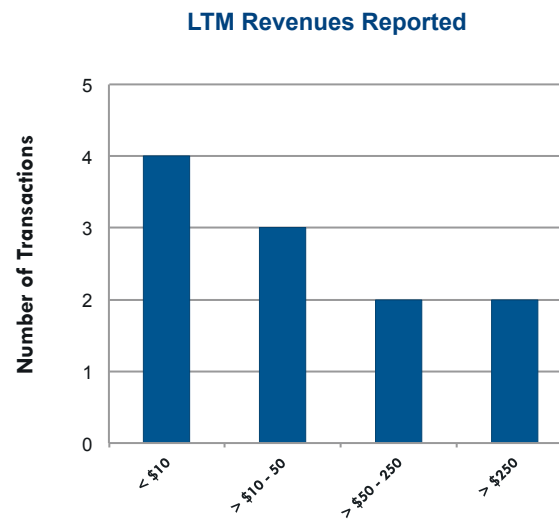
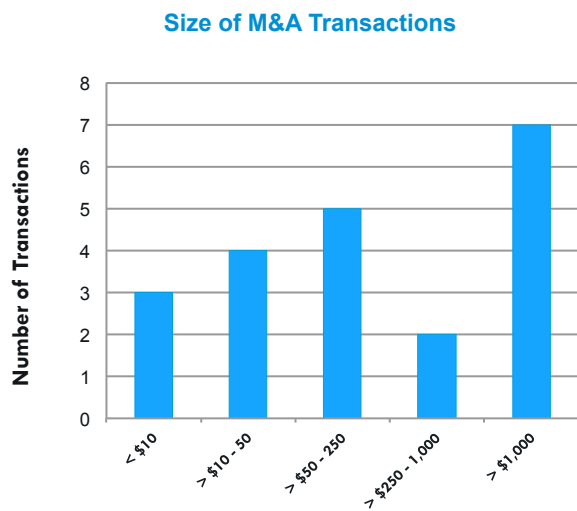
Recent Merger and Acquisition Transactions for a Majority Stake (dollars in millions)

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

USA
 International
 Highest
 Lowest
 Median

Recent Merger and Acquisition Transactions for a Majority Stake (dollars in millions) as of September 30, 2018



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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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