



MARKET INSIGHT PHARMACEUTICAL PACKAGING

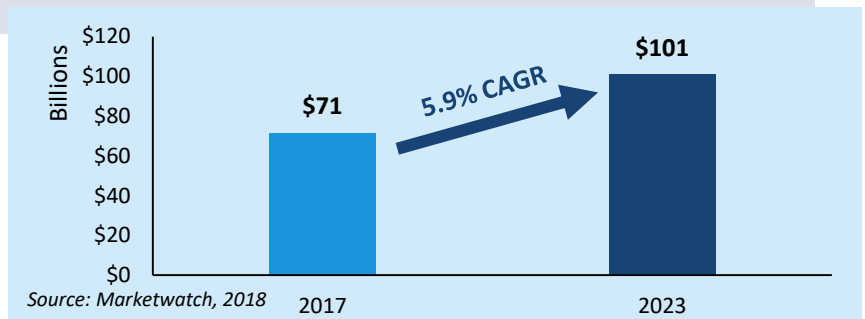
INDUSTRY TRENDS & GROWTH DRIVERS

So far in 2019, we have seen a number of market trends and developments that have had particular impact on the packaging space. The packaging industry is very sensitive to changes in the broader pharmaceutical market and must adapt to regulatory changes, new and innovative drug delivery systems, and shifting consumer demands and preferences. Based on market research and conversations with pharma executives, industry experts, and investors in the space, this report touches upon a handful of trends we see driving the industry.

Pharmaceutical Packaging Market Poised for Growth

The global pharmaceutical packaging market was valued at \$71.4 billion in 2017 and is projected to expand at a CAGR of 5.9% over the forecast period to reach \$100.8 billion by 2023. Drivers include increased number of ANDA and biosimilar approvals, growing demand for new drug delivery technology, and overall growth in the pharmaceutical industry.

Source: Marketwatch, 2018



Growing Biologics Market Creating Increasing Demand for Parenterals

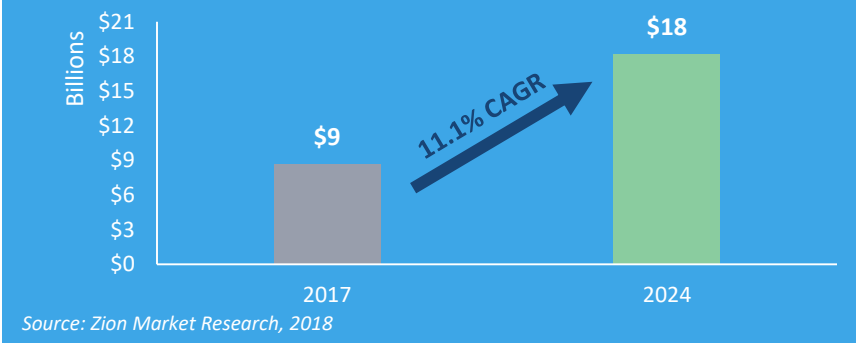
Biologics are mostly delivered by injection and therefore the rise of the biologics market has led to an increased demand for parenteral dosage forms. The global parenteral packaging market was valued at approximately \$8.7 billion in 2017 and is expected to generate revenue of around \$18.2 billion by the end of 2024, growing at a CAGR of around 11.1% between 2018 and 2024.

Source: Zion Market Research, 2018



Global Parenterals Packaging Market Driven by Biologics Demand

The biologics market is expected to reach \$144.0 in 2025, driving the rapid growth for parenterals packaging capabilities. (Frost and Sullivan, 2016)



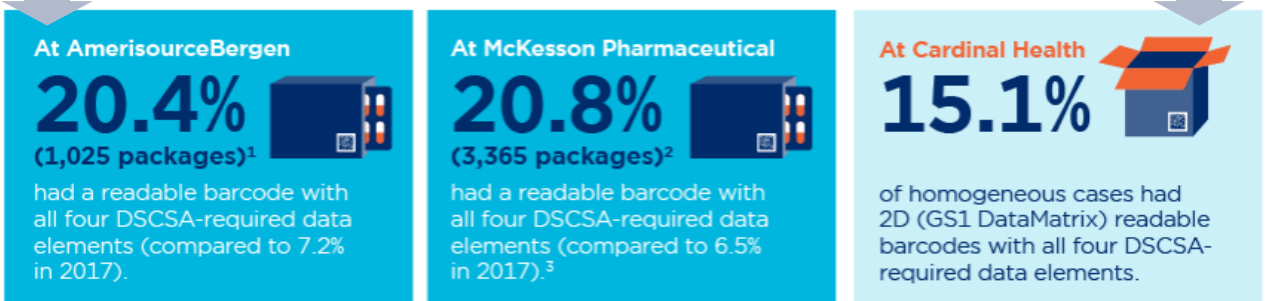
Navigating the US Drug Supply Chain Security Act (“DSCSA”)

Passed in 2013, the US DSCSA’s purpose is “to help protect consumers from exposure to drugs that may be counterfeit, stolen, contaminated, or otherwise harmful.” The DSCSA required that by 11/27/2018 drugs being shipped by repackagers contain the following: 1) Serial number; 2) National Drug Code (“NDC”) as a GTIN-14; 3) Lot number; 4) Expiration date

Source: FDA, 2019

May 2018 Assessment of Implementation of DSCSA Requirements

AmerisourceBergen, McKesson, and Cardinal Health, in collaboration with GS1 Healthcare, conducted a study to assess adherence to the DSCSA standards. The compliance results were alarming.



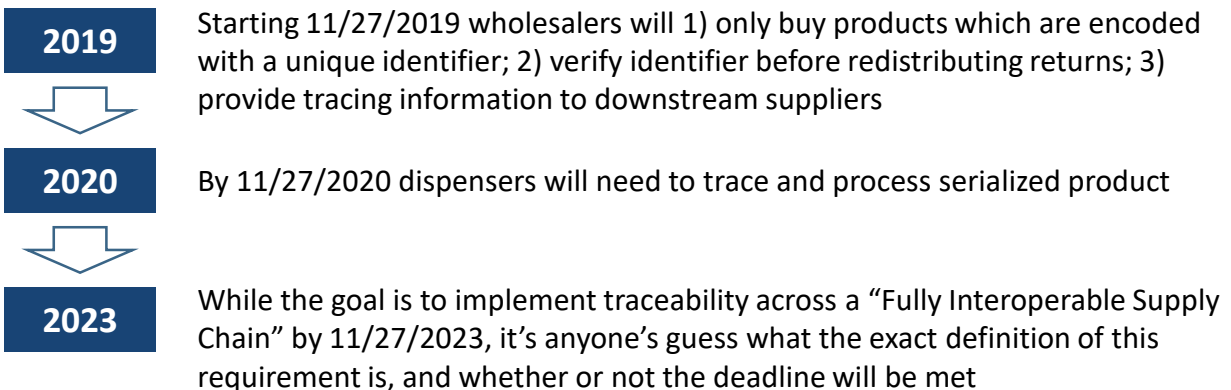
1) AmerisourceBergen assessed specialty medications 2) McKesson assessed prescription pharmaceuticals 3) Results from the GS1 US-scanned sample at McKesson were similar at 19.8%.

Source: GS1, 2018 Update: Implementation of DSCSA Serialization Requirements report

“ As the serialization process reaches further down the supply chain to the hospitals and dispensers, it’s becoming clear that most actors at this level, despite the DSCSA being signed into law on 11/27/2013 (over 5 years ago) have not yet considered what to do. This can only result in one of two things, further acts of leniency by the FDA or chaos. The person suffering most from chaos - the patient. ”

– Ian Parsonage, Senior Director, Xyntek Inc./Crest Solutions

Future of DSCSA: How will the FDA enforce compliance as requirements become more complex?



Source: Clarkston Consulting, 2018

Benefits and Challenges of Serialization Beyond Compliance

When implementing serialization technology, packagers need to consider the business benefits and costs that beyond DSCSA requirements.

Source: GS1, 2018

Benefits

- ✓ Better able to monitor patient compliance and improve efficiency
- ✓ Reduces volume of counterfeit drugs in the market
- ✓ Cuts costs, upgrades line technology, and increases control
- ✓ Reduces product recalls and minimizes chargebacks

Challenges

- ✗ Potential for “Post Serialization Depression” and lost productivity on production lines
- ✗ New processes and data management require major human and capital investment
- ✗ Operational weaknesses are amplified if serialization is not implemented correctly
- ✗ Mismanaging tracking of returned products can result in inventory issues and losses (returned product alone equates to \$4bn of saleable products per annum)

Source: Contract Pharma, 2018: Serialization Implementation

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It has been more than 16 months since the DSCSA for manufacturers came into effect and even with the additional year’s grace period given by the FDA, many companies are still either suffering with Post Serialization Depression or, amazingly, have still not completed in their efforts. Unfortunately, ‘PSD’ does not refer to the state of the internal project team; it all too often means that a production line has seen 5%, 10%, and even 30% loss of productivity due to the introduction of serialization.

”

– Ian Parsonage, Senior Director, Xyntek Inc./Crest Solutions

Bourne Partners worked with Xyntek Inc. and Crest Solutions to provide the latest insights on DSCSA and serialization in the US



There are three organizations who have consistently assisted their customers to make the most out of their serialization investment. **Xyntek Inc.** (serving the Americas), **Crest Solutions** (serving UK & Ireland), and **Vistalink** (serving Northern Europe) are positioned to help multi-national companies leverage their investments or take their existing systems and processes to another level. All three companies share the same pool of offerings and work together in a trans-atlantic partnership that can deliver seamlessly across markets. They leverage the AntaresVision serialization solutions which, with more than 1,600 packaging lines installed so far, outnumbers any other player in the market.

BOURNE PARTNERS

Case Study: Q&A with Tanner Pharma

Bourne Partners sat down with Tanner Pharma's Global Director of Quality & Regulatory, John Coyle. John has 30+ years of experience in Q&R and is an industry thought leader. Tanner Pharma Group is a global service provider in healthcare. Each of its four service divisions is built on a foundation of a robust distribution network with industry-leading quality standards.

How has the increase in demand for complex drugs with higher regulatory and quality standards such as biologics affected the ability to deliver product to patient?

It all comes down to cost. With drug products becoming ever more complex with biologics and small molecules, the costs to deliver these products; from development, to approval, to increasing complex manufacturing processes has skyrocketed. Drug regimens that cost several thousand dollars a month are not unusual any longer. The patient and the insurer have taken the brunt of these expenses. Even things that were almost an afterthought in drug development have gotten extremely complex. The regulators have added to the complexity and cost requiring compliance packs and abuse control packaging. Putting your product in a Boston Round bottle is no longer the norm.

In the next few years the DSCSA is going to require significant changes to be made for manufacturers, distributors, and third-party logistics. How is Tanner Pharma going to be affected by the serialization demands enforced by the DSCSA?

Tanner Pharma is embracing the DSCSA as a competitive edge and a tool to insure we only provide legitimate products to our clients and patients. Fully implemented serialization will help us with lean inventory management, increasing the number of inventory turns, more effective recall management and zero errors in shipments. We are turning a regulatory requirement into a process improvement tool with our DSCSA application partner.

In what ways does Tanner Pharma implement serialization?

We now require all of our manufactures and suppliers to have the ability to furnish a 3T report upon request. Within the next few months, Tanner will be able to determine the pedigree of any product that we control to further insure the security of the supply chain to our patients.

Can you touch on general new packaging and distribution trends that will affect Tanner's business units? (i.e. new labelling requirements, cold-chain tech, digitalization of packaging, increased regulation, etc.)

With the rapid increase of biologics and small molecules, cold chain technology will be at the center of our concerns for the next five years at least. These products have very narrow windows of temperature that they can be shipped at to maintain stability. Too hot they degrade, too cold and they fall out of solution. We now utilize packaging that guarantees maintaining a constant temperature for 120 hours, but shipping to the extremes in latitude will always have its challenges.

Pharmaceutical Packaging Technology – What Does the Future Hold?

- 1) **Blockchain Technology** – Provides standardization, traceability, and recordability across the supply chain
- 2) **Digitalization of Packaging** – Packaging that communicates directly to the consumer to ensure medical monitoring and improve patient outcomes
- 3) **New Innovative Packaging** – Technological improvements to various packaging types such as blister packages, prefilled syringes, and child-resistant packaging
- 4) **Sustainable ‘Green’ Packaging** – Continued trend to produce packaging that is eco-friendly and sustainable

Source: GlobalVision



TraceLink leverages blockchain, designed to help the pharma industry securely exchange information and satisfy DSCSA requirements.

Source: ContractPharma, 2019



Schreiner MediPharm launched an NFC-Label in combination with a smartphone app for digital authentication of autoinjectors.

Source: ContractPharma, 2018



PhaseChange Energy Solutions creates thermal tech solutions that make storing temperature-sensitive pharma products more efficient.

Source: PhaseChange Energy Solutions



TemperPack provides insulated, thermal technologies that are made of plant-based, recyclable material.

Source: TemperPack

Responding to the Opioid Crisis: Pharma manufacturers and distributors are looking to packaging to help remove the negative halo surrounding opioid abuse and improve patient safety.



Z-Pack: Limits medication supply



Locking Caps: Controls bottle access



Blister Packs: Limits dosage and pill theft



Tech-enhanced: Monitors consumer use



Safe Disposal: Distributed with packages

INDUSTRY TRADING & TRANSACTION COMPS

Bourne Partners covers a broad network of pharma packaging companies. Highlighted below are 11 leading publicly-traded players in the specialty packaging segment that have a significant footprint in healthcare and pharmaceuticals. Packaging comps are trading at median multiples of 1.8x sales and 9.7x EBITDA...

Specialty Packaging Trading Comps

USD in millions

Company	Ticker	Enterprise Value	LTM			Margin Analysis			Enterprise Value/				
			Sales	EBITDA	EBIT	Gross Profit	EBITDA	EBIT	Sales	EBITDA	EBIT	NTM Sales	NTM EBITDA
Ancor Limited	ASX:AMC	\$16,401.0	\$9,368.7	\$1,253.1	\$921.2	19.3%	13.4%	9.8%	1.8x	13.1x	17.8x	1.7x	10.8x
AptarGroup, Inc.	NYSE:ATR	7,430.1	2,764.8	543.5	371.7	34.9%	19.7%	13.4%	2.7x	13.7x	20.0x	2.5x	12.0x
Berry Global Group, Inc.	NYSE:BERY	12,293.8	8,065.0	1,361.0	814.0	18.0%	16.9%	10.1%	1.5x	9.0x	15.1x	1.5x	8.2x
CCL Industries Inc.	TSX:CCL.B	8,617.4	3,782.6	723.5	519.7	29.1%	19.1%	13.7%	2.3x	11.9x	16.6x	2.1x	10.7x
Gerresheimer AG	DB:GXI	3,403.3	1,548.6	316.8	164.8	29.3%	20.5%	10.6%	2.2x	10.7x	20.6x	2.1x	10.1x
Mondi plc	LSE:MNDI	13,660.8	8,565.4	2,010.5	1,502.2	45.7%	23.5%	17.5%	1.6x	6.8x	9.1x	1.6x	6.8x
RPC Group Plc	LSE:RPC	5,826.7	5,048.3	762.0	473.6	48.9%	15.1%	9.4%	1.2x	7.6x	12.3x	1.1x	7.1x
Sonoco Products Company	NYSE:SON	7,042.7	5,390.9	728.3	492.1	19.3%	13.5%	9.1%	1.3x	9.7x	14.3x	1.3x	9.1x
West Pharmaceutical Services, Inc.	NYSE:WST	7,629.7	1,717.4	355.3	250.9	31.8%	20.7%	14.6%	4.4x	21.5x	30.4x	4.2x	19.8x
WestRock Company	NYSE:WRK	19,997.9	16,718.5	2,862.8	1,616.1	20.4%	17.1%	9.7%	1.2x	7.0x	12.4x	1.0x	5.8x
Wipak Ltd.	TSX:WPK	1,772.0	889.6	192.9	151.7	30.4%	21.7%	17.1%	2.0x	9.2x	11.7x	2.0x	8.9x

Median	29.3%	19.1%	10.6%	1.8x	9.7x	15.1x	1.7x	9.1x
Mean	29.7%	18.3%	12.3%	2.0x	10.9x	16.4x	1.9x	9.9x

... Highlighted below are 10 of the most recent M&A deals in the specialty packaging space that include companies with pharma packaging capabilities. M&A transaction comps for specialty packagers are trading at median multiples of 1.6x revenue and 9.8x EBITDA...

Specialty Packaging Transaction Comps

USD in millions

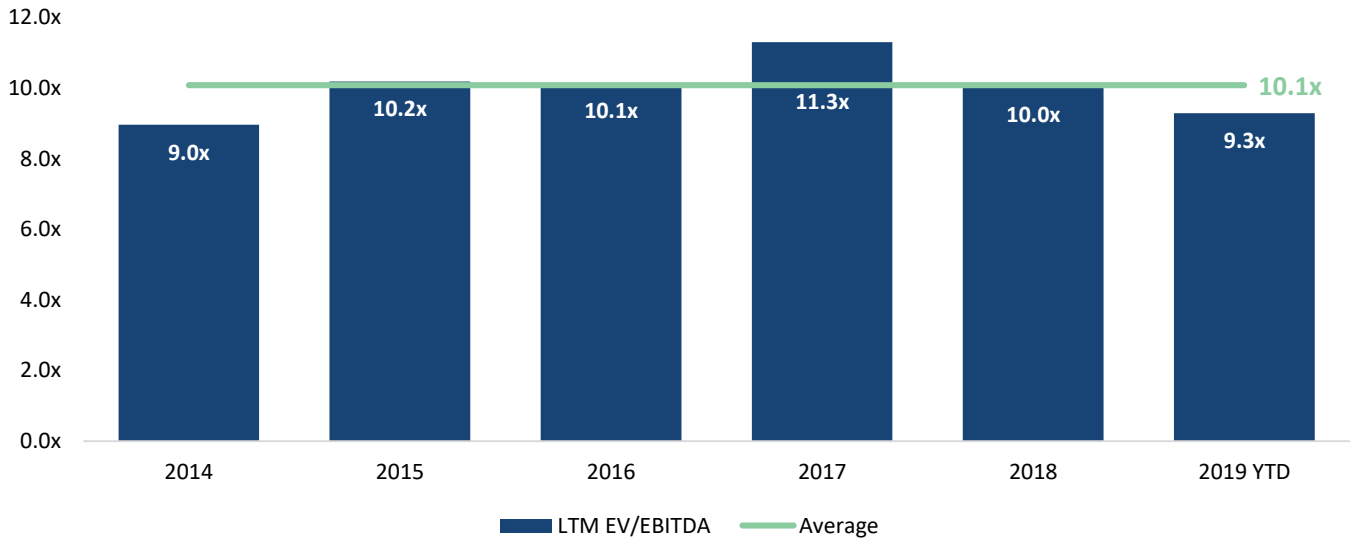
Announced Date	Target	Buyer	Geographic Location	Enterprise Value	LTM Revenue	LTM EBITDA	EV / LTM Revenue	EV / LTM EBITDA
Jan-19	RPC Group (LSE:RPC)	Apollo Management	United Kingdom	\$5,728.2	\$5,056.4	\$764.0	1.1x	7.5x
Dec-18	Caraustar Industries	Greif Packaging	USA	1,800.0	1,376.0	174.0	1.3x	10.3x
Aug-18	Bemis Company	Ancor (ASX:AMC)	USA	6,824.0	4,099.4	573.0	1.7x	11.9x
Jul-18	CSP Technologies	AptarGroup (NYSE:ATR)	USA	558.5	140.0	43.0	4.0x	13.0x
Jul-18	Expera Specialty Solutions	Ahlstrom Munksjo Oyj	USA	615.0	721.0	66.0	0.9x	9.3x
Jun-18	Papeles y Cartones de Europa	DS Smith (BME:SMDS)	Spain	2,100.6	1,049.5	203.6	2.0x	10.3x
Mar-18	Highland Packaging Solutions	Sonoco Plastics	USA	150.0	90.0	13.8	1.7x	6.5x
Feb-18	Synbra Holding	BEWi Group AB	Netherlands	145.8	289.0	30.5	0.5x	4.8x
Jan-18	KapStone Paper and Packaging	WestRock Company	USA	5,035.9	3,315.7	404.1	1.5x	12.5x
Jan-18	Foam Fabricators	Compass (NYSE:CODI)	USA	247.5	126.0	30.0	2.0x	8.3x

Median	\$1,207.5	\$885.2	\$120.0	1.6x	9.8x
Mean	2,320.5	1,626.3	230.2	1.7x	9.4x

INDUSTRY TRADING & TRANSACTION COMPS

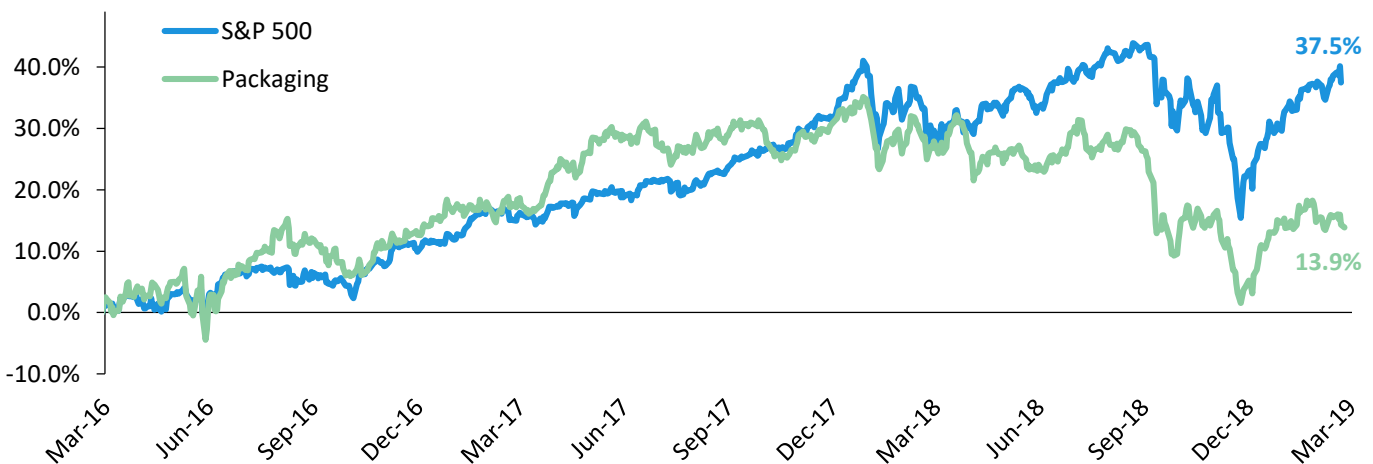
Pharmaceutical packaging is considered one of the more attractive sectors in the packaging industry. Given the strict regulatory requirements and complex supply chain in the healthcare industry, successful pharma packagers experience sticky customer relationships and steady revenue. Those that focus in specialized, higher margin products such as med devices and biologics tend to have higher valuations.

Specialty Packaging LTM EV/EBITDA Multiples



While the spec packaging index has underperformed the S&P 500 index over the last 3 years, there is continued demand for quality pharma packaging services among other pharma services sectors. Expect further consolidation as strategic buyers look to roll up niche capabilities and capacity and as private equity looks for cash flow reliable packagers from which to build a platform.

Specialty Packaging Equity Value Performance – Last 3 Years



Specialty Packaging Constituents: Amcor Limited (ASX:AMC); AptarGroup, Inc. (NYSE:ATR); Berry Global Group, Inc. (NYSE:BERY); CCL Industries Inc. (TSX:CCL.B); Gerresheimer AG (DB:GX1); Mondi plc (LSE:MNDI); RPC Group Plc (LSE:RPC); Sonoco Products Company (NYSE:SON); West Pharmaceutical Services (NYSE:WST); WestRock Company (NYSE:WRK); Wipac Ltd. (TSX:WPK)

Bourne Partners is a healthcare-focused investment banking and private equity firm focused exclusively in the healthcare space, covering pharma, pharma services, and consumer health. We help companies execute both sell-side and buy-side M&A in addition to facilitating capital raises to finance growth or a recapitalization, with some examples below.

2019
\$252,000,000



Bourne Partners served as the exclusive financial advisor to Avista Pharma Solutions in its sale to Cambrex Corporation

BOURNE PARTNERS



Objective: Avista, a CDMO that offers differentiated services ranging from API and drug product development to analytical testing, engaged Bourne Partners to serve as its exclusive advisor in the sale of the company.

Result: Avista was acquired by Cambrex at a value of \$252 million.

2018
\$32,000,000



Bourne Partners served as the exclusive financial advisor to Accelovance, Inc. in the sale of its clinical CRO business to Linical

BOURNE PARTNERS



Objective: Accelovance engaged Bourne Partners to identify an acquirer for the remaining clinical CRO business after the successful carve-out of Accelovance's SMO segment, Optimal Research, in late 2017.

Result: With the advice of Bourne Partners, Accelovance signed a merger agreement with the Japanese CRO, Linical, to sell all remaining assets. The combined companies will now boast a strong international CRO presence reaching through North America, Europe, and Asia Pacific.

2017
\$1,620,000,000



Bourne Partners served as the exclusive buy-side advisor to The Carlyle Group in its acquisition of Albany Molecular Research, Inc.

BOURNE PARTNERS



Objective: Bourne Partners worked in partnership with and invested alongside The Carlyle Group on the 2017 AMRI acquisition.

Result: Bourne Partners co-invested alongside The Carlyle Group and GTCR who successfully acquired AMRI at a value of \$1.62 billion.

OTHER RELATED EXPERIENCE

2018
Undisclosed



Bourne Partners facilitated and sourced a consortium of buyers, lead by Federal Equipment Company, in the sale of Endo's Huntsville, AL pharma manufacturing and packing facility

BOURNE PARTNERS

2018
Undisclosed



Bourne Partners served as the exclusive financial advisor to Endo in the sale of several ANDAs to Lannett

BOURNE PARTNERS

2017
Undisclosed



Bourne Partners served as the exclusive financial advisor to Optimal Research in its sale to Synexus Limited

BOURNE PARTNERS

2017
\$50,000,000



Bourne Partners served as the exclusive financial advisor to Prophase Labs, Inc. in the sale of the Cold-EEZE brand to Mylan N.V.

BOURNE PARTNERS

2015
\$3,500,000,000



Bourne Partners served as financial advisor to AMCo and Civien in the sale of AMCo to Concordia Healthcare

BOURNE PARTNERS

Since 2001, Bourne Partners has been a thought leader in the healthcare investment banking space. Our team is a trusted resource for clients and our track record of success includes raising over \$2 billion in equity and debt capital and executing more than \$5 billion in M&A transactions.



Tucker Ammons,
Analyst

Pharma Services Coverage
 Direct: 704-714-8357
 tammons@bourne-partners.com

Bourne Partners
 550 S Caldwell St, Suite 900
 Charlotte, NC 28282

704-552-8407
 www.bourne-partners.com

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