BRINGING THE CUSTOMERS BACK INTO THE PLANT:  
THE STRATEGIC TRANSFORMATION OF PATHEON (A)

In September of 2011 the top 60 leaders across Patheon (now a business unit within parent company DPx Holdings) gathered in Toronto to meet their newly appointed leader, Jim Mullen. They entered the meeting with curiosity and nervousness as Mullen sat silently observing the team that would right the company. Many of the meeting participants were unaware of how bad the situation was and many had not even met each other prior to that meeting. Transparency of information and trust did not exist. A disconnect within the business prevailed and became even more evident during the meeting and in the coming months.

Having been in the pharmaceutical industry for over thirty years, Mullen was well aware of the challenges facing pharmaceutical contract development and manufacturing (CDMO) companies. The CDMO industry had fallen behind in meeting evolving customer needs, so when Mullen joined Patheon as CEO in 2011 he was not surprised to be confronted with an organization that was “flawlessly executing a going-out-of-business strategy”. Patheon was plagued with flat revenues, declining cash flow from operations and was operating at a net loss as shown in Exhibit 1 (slide shown to employees during September 2011 meeting in Toronto). Also see Exhibit 2 for a view of Patheon’s profitability position in comparison to its competitors within the industry.

Mullen spent his first few months with the company purposefully listening before taking strategic action. He knew Patheon had great potential, but the turnaround was going to require difficult choices. Where to start?

WHY ORGANIZATIONS FAIL AND WHY PATHEON WAS FAILING

According to a Bloomberg published report, there are five reasons why eight out of ten businesses fail:

1. Not really in touch with customers through deep dialogue
2. No real differentiation in the market place
3. Failure to communicate value proposition in clear, concise and compelling fashion
4. Leadership breakdown at the top
5. Inability to nail a profitable business model with proven revenue streams

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NC State Director of Executive Education Dan McGurrin, DPx Chief Human Resource Officer Rebecca Holland New and former Patheon employee Jennifer Almond prepared this case for the purposes of internal training and discussion. It was reviewed and approved by company designates. All quotations are from interviews with Patheon employees or consultants, unless otherwise cited. See Page 7 for background on interviewees.

1 In March 2014, Patheon merged with DSM Pharmaceutical Products (DPP) to form a privately held parent company, DPx Holdings B.V. For more information visit the company’s website at www.patheon.com.
Patheon’s Position in the Market

Patheon, in 2011, was a significant CDMO for the pharmaceutical industry offering contract manufacturing (CMO) and pharmaceutical development services (PDS)\(^3\); however, the company had uneven customer service performance and sites functioned in silos, sometimes even in competition, across their “disjointed” global network. Although Patheon held leading positions in CMO and PDS, the company lacked true distinction in the market place, especially as related to quality, reliability of supply and price. Customers sought partners who could manage complexity (small volumes), surge capacity and deliver competitive prices with high quality. The market for the commodity CMO offerings was stagnant in conservative forecasts and grew at a very slow pace – low single digits – in the best estimates. A low cost position was a must to remain competitive, but price was not the only factor driving customer decisions. High quality standards, a commitment to right first time (RFT) and on time delivery (OTD)\(^4\), exceptional customer relationship management and the ability to serve multiple needs of a client were all important and impacted each bid decision. The PDS market was expected to moderately grow faster than the CMO market – mid to high single digits; however, the question was still raised if both markets would grow sustainably fast enough to be successful. Most believed it was a market share game.

Financial Situation

To intensify the situation in 2011, the company financials also did not add up. The company had not been profitable in six years, it was not generating enough cash to reinvest in the business and the EBITDA margin was half of its best performing competitors. Focus continued to be on revenue growth while critical areas of the business continued to suffer (see Exhibit 3, Fiscal Years 2011 and 2010 Financial Results). To drive home this point further, Mullen shared a series of slides (as shown in Exhibit 4) during the Toronto 2011 meeting that got the attention of the attendees. The company lacked momentum along the top-line and was bleeding below the EBITDA line. This trend was not isolated to a few locations, but extended across the global network of sites.

Customer Requirements

Customers were not oblivious to these downward trends. Key customer metrics, such as RFT and OTD, may have appeared satisfactory as they were currently defined inside Patheon, but below the surface metrics were notoriously inconsistent and deviation rates were high, causing distrust and discord across clients. Furthermore, compared to the industry standard at the given time, the company’s quality was good, but with regulatory scrutiny of pharmaceutical manufacturing increasing it was not enough. In an internal company report, it was documented that most sites showed a 45 to 55 percent gap to top quartile efficiency, indicating that the company’s cost of quality was higher than their peers and productive improvement opportunities were substantial; top quartile being defined as the industry standard.

For the CEO, in addition to the operational capabilities there were many organizational challenges in need of attention: corporate strategy, organizational structure, culture, leadership development, HR systems linking rewards and recognition, performance metrics, communication across units. All appeared critical to the change, which meant there were hard decisions to be made about where to invest resources and attention first.

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\(^3\) PDS includes early development services, analytical services, formulation expertise and life cycle management
\(^4\) As defined in a Patheon company presentation, RFT refers to the number of batches that have no deviations or defects. OTD refers to the actual number of batches released by Quality Assurance and shipped within the client’s agreed upon commit date.
THE CDMO INDUSTRY

Outsourcing has for many years been an essential component of the pharmaceutical industry as companies confront R&D productivity challenges, increased regulatory hurdles, global pricing pressures and the need to compete in rapidly growing, emerging markets. The cost of drug development has escalated while the pace of new product approvals, the primary driver of revenue growth, has not kept up. At the same time, the industry is in the midst of a ‘patent cliff,’ with innovator companies losing tens of billions of dollars in revenue to generics as patents expire. With this in mind, pharmaceutical and biotechnology companies seek to invest and focus on their core strengths while outsourcing manufacturing and other supply chain and R&D activities when necessary and financially beneficial.

Although their outsourcing rates vary, this is true for all four customer segments as shown in Exhibit 5:

- **Generic firms** are outsourcing more complex (i.e., poorly soluble, sterile injectable) products that they cannot produce within their existing infrastructure. Their outsourcing rate varies from 10 to 20 percent.
- **Emerging biotechnology companies** are moving to more virtual models that rely heavily on outsourcing through clinical proof-of-concept and licensing/acquisition to larger companies for late-stage clinical development and commercialization. As such, their outsourcing rate is high at about 75 percent.
- **Midsize and specialty pharmaceutical companies** are focused on sales and marketing and late-stage clinical development as opposed to manufacturing and R&D. They are outsourcing significant parts of the value chain due to lack of capacity and have a moderate outsourcing rate between 40 and 50 percent.
- **Large pharmaceutical companies** are closing their own manufacturing facilities to reduce their fixed asset base. Their outsourcing rate is low at 10 to 20 percent, but steadily growing.

For those pharmaceutical companies that operated their own manufacturing plants, particularly large pharmaceutical companies, the limited resources had historically been invested in revenue generating investments: first, sales and marketing, then investment in their near-term pipeline followed by R&D activities and finally, investment in their manufacturing network. This historic investment pattern left many companies with antiquated manufacturing sites. Plants that were originally built with one product in mind were not flexible or easily converted to support the “next big thing.” Capital expense investment had been focused on the necessities, such as roof replacement, as opposed to improving cost of operations, material flow and newer equipment with better capacity and flexibility. Although the majority of manufacturing sites invest in Lean Six Sigma training, the reality and unintended results reflect antiquated environments: old factories, poor containment due to lack of investment in infrastructure, weak quality and the end result of multiple citations by

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6 Regulatory scrutiny continues to increase and as such, higher standards for quality and GMP compliance are expected. Noncompliance with any applicable regulatory requirements can result in warning letters/citations and/or civil or criminal penalties and fines, suspension or withdrawal of regulatory approvals, product recalls, seizure of products, restrictions on the import and export of the products, operating restrictions, production stoppages or facility closure and criminal prosecution. All of which significantly impacts business operations, including manufacturing and supply of product to customers.
regulatory agencies. By no fault of a leader or intent of an organization, pharmaceutical and biotechnology companies are regularly faced with a dilemma – either invest in an area of the business (i.e., supply chain/manufacturing/R&D) where they do not have core expertise or pay for the someone else’s capabilities.

**CDMO Industry Expectations**

With this in mind, the CDMO market is experiencing unprecedented growth, representing a more than $20 billion industry with annual growth at 7 to 10 percent\(^7\) (see Exhibit 6, CDMO Industry Overview). CDMOs transform an active pharmaceutical ingredient (API) into a finished drug product; then manufacture it for clinical trials and commercial use. Historically, client requests were for production volume that was needed to meet excess market demand for a product or for pilot tests of a new drug; however, the role of CDMOs has been evolving. Leading players are now being positioned as strategic partners, moving from just capacity overflow to complex outsourcing of drug development and finished dose manufacturing. As the use of CDMO services increases, pharmaceutical and biotechnology clients are simplifying their supply chains and demanding a broader range of services and global capabilities from a small set of CDMO companies.

Mullen explained, “Within the CDMO industry, the (in)ability to engage and effectively respond to client needs may reflect a lack of leaders who have spent time on the customer side and understand what problems are being faced. While forced to address cost pressures in the current healthcare market, CDMO clients do not want to talk primarily about pricing. Their primary concerns relate to quality, reliability of supply, GMP compliance, timeliness and regulatory history.” Customers are not willing to risk using a low price vendor that has not demonstrated its ability to meet highly stringent standards of regulators and customers.

The CDMO industry remains highly fragmented with over 200 players. Pharmaceutical companies desire to simplify supply chains which require fewer but larger players. This sets the stage, as noted by industry experts, for further industry consolidation similar to that of the contract research organizations (CRO) industry seen over the past decade.\(^8\) Growing customer demand favors one-stop-shop shopping; CDMO companies with streamlined end-to-end offerings. As a result, leading players within the CDMO industry have the opportunity for (and threat of) acquisitions to expand capabilities and meet client needs for integrated global solutions, increased efficiencies, improved quality and regulatory experience, and reduced costs.

**PATHEON HISTORY**\(^9\)

*From 1974 - 2011*

Patheon dates back to 1974 when Custom Pharmaceuticals Ltd., a contract manufacturing business located in Fort Erie, Canada was established. Custom Pharmaceuticals grew through the acquisition of existing manufacturing sites and businesses from a variety of pharmaceutical companies across the globe; in 1993 Custom Pharmaceuticals became a publically traded company on the Toronto Stock Exchange (stock symbol:

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\(^7\) According to consensus analyst estimates.

\(^8\) The CRO segment, which provides outsourced preclinical and clinical trial services to the pharmaceutical industry, has undergone a significant consolidation in recent years in response to demands for more “one stop shopping” and need for service differentiation.

PTI). Shortly thereafter the company changed its name to Patheon Inc. The company added capacity through a series of acquisitions over a 30 year period. In addition, the company built its PDS offerings in the early 1990s and quickly became the number one outsource provider of CDMO services.

Several poor site acquisition decisions significantly strained the company’s cash flow prior to Mullen’s arrival. Each manufacturing site operated in a silo and competed against one another for business. There was not a unified approach to business operations or customer interface, nor was there a sharing of best practices. The company lacked a focused value proposition – often making any type of product (i.e., topical ointment and creams) to cover overhead/fill up capacity or competing for business where the company did not have core scale to compete (i.e., clinical packaging). Capital expense was allocated and “spread thin like peanut-butter.” Decisions were not data-driven, nor did sites have data on profitability of products or margins being generated. Most notably, the sites operated the same way as they had for years with most having previously been owned by Big Pharma companies. As such, sites were used to making their own products and customer service was a concept that they did not think about, let alone measure.

In 2006 and 2007, Patheon leadership conducted a review of strategic and financial alternatives; the result of which was acceptance of a major investment by JLL Partners Inc., a NY private equity firm. Though JLL acquired majority ownership of the company, they were not able to take complete control, which left Patheon publically traded and restricted by both Canadian and U.S. filing requirements.

In 2011, JLL appointed Mullen as CEO of Patheon. Mullen, less than one year removed from his role as CEO of Biogen Idec, was charged with the task of turning around Patheon’s business as several years of poor performance now reflected a company with declining financials and increasingly poor customer satisfaction. Not seeking to simply return the company to profitability, Mullen set out to transform the company into an industry leader within the CDMO space.

TAKING ACTION

Mullen had hard decisions to make. Patheon had a long way to go to transform the business and there were numerous paths he could take and areas he could focus on to add value back into the company:

Operational

- Enhance capacity and equipment utilization across the company’s network
- Implement cost controls and stringent cash management
- Build Quality and continuous improvement back into the sites, including operational equipment efficiency

Organizational

- Start fresh and recruit new manufacturing leadership talent to lead the change
- Focus on the customer and revamp the client experience, possibly rebranding of the sites to achieve consistency
Strategic

- Invest strategically in current sites and businesses
- Enter logical adjacencies that are complementary to current service offerings
- Bring in more customers and increase volume at the sites
- Divide and conquer through network rationalization of all sites; keep only those sites that are profitable

STUDY QUESTIONS

Which of the five reasons as to why businesses fail (listed on Page 1) do you believe was the most critical to address for Mullen in driving the Patheon transformation?

Why would a globally respected, successful CEO be interested in leading Patheon? What information would you want to see when evaluating the opportunity at Patheon?

What do the Patheon financial and operational statements (Exhibit 3) tell us about the company’s condition prior to the turnaround?

How did changes within the industry (i.e., customer needs) demand new services and new performance metrics from contract manufacturing organizations?

Given the various directions Mullen could have gone to rectify the business, which approach would you have taken? Where would you have focused your initial efforts to make the most impact? Why?

Why do you believe Patheon is now a part of DPx Holdings: acquired or acquirer?
Background on Interviewees

Nick Buschur, Patheon, Executive Director and General Manager, Cincinnati

Buschur joined Patheon in 2009 as Materials Management Director at the company’s Cincinnati site and later transitioned to the position of Production Director. Most recently, Buschur was promoted to his current role as Executive Director and General Manager in 2014, overseeing all site activities in Cincinnati. Prior to Patheon, Buschur worked primarily in the automotive industry, gaining experience in production planning, as well as manufacturing and supply chain management.

Harry Gill, DPx Holdings, Senior Vice President, Quality and Continuous Improvement

Gill joined Patheon in 2010 as North America Vice President of Business Management and was later promoted to Global Vice President of Operational Excellence; he currently serves as Senior Vice President, Quality and Continuous Improvement at DPx Holdings. He brings over 25 years of experience in Quality, plant operations, technical services and operational excellence. Gill has held various positions at Wyeth (now known as Pfizer Pharmaceuticals) and Baxter Healthcare Corporation.

Stuart Grant, DPx Holdings, Chief Financial Officer and Executive Vice President of Finance and IT

Grant joined Patheon in 2012 as Executive Vice President and Chief Financial Officer, and was later promoted to Chief Financial Officer and Executive Vice President of Finance and IT at DPx Holdings. Prior to joining Patheon, Grant served as Group CFO at Serono SA, Europe’s largest biotechnology company, and later moved to BioCryst Pharmaceuticals where he was Senior Vice President and CFO. Grant has an extensive financial background having served in various senior operating and financial roles, including Finance Director for Swiss Manufacturing Operations and then General Manager of the company’s manufacturing laboratories.

Ray Guidotti, Patheon, Vice President, Global Engineering and Capacity Planning

Guidotti joined Patheon in 2009, bringing over 25 years of experience in engineering, facilities and project management. Prior to joining Patheon, Guidotti started his pharmaceutical career with Bristol-Myers Squibb, holding progressively senior technical leadership positions within the industry.

Rebecca Holland New, DPx Holdings, Chief Human Resources Officer and Senior Vice President, Corporate Communications

Holland New joined Patheon in 2011 as CHRO and Senior Vice President, Corporate Communications. Prior to joining Patheon, Holland New was Global Vice President of HR at Bausch & Lomb, having previously held various global HR leadership positions at the company’s business operations, talent, corporate and pharmaceutical business units. Furthermore, prior to joining Bausch & Lomb, Holland New held HR leadership positions at Novo Nordisk and Bristol-Myers Squibb. She currently serves on the Board of Trustees for the American Health Policy Institute and is an active member with the HR Public Policy Association.

Mike Lehmann, DPx Holdings, President, Global PDS and Interim Executive Vice President, Global Sales & Marketing
Lehmann joined Patheon in 2012 as President of Global PDS and was also later appointed the role of interim Executive Vice President, Global Sales and Marketing. Before joining Patheon, Lehmann held senior positions at Covance, one of the world’s largest drug development service companies, where he oversaw global early development and P&L management. Furthermore, prior to joining Covance, Lehmann worked 17 years for GE Healthcare in key operational and management roles.

**Michael Lytton, DPx Holdings, General Counsel and Executive Vice President of Corporate Development and Strategy**

Lytton joined Patheon in 2011 overseeing the company’s strategy and corporate development activities, as well as its global legal team. Prior to joining Patheon, Lytton served as Executive Vice President, Corporate and Business Development at Biogen Idec. Furthermore, from 2001 to 2008 Lytton was General Partner with Oxford Bioscience Partners, a venture capital firm investing in therapeutic, diagnostic and life science tool companies. He practiced law from 1984 to 2000 and specialized in representing biomedical companies.

**Jim Mullen, DPx Holdings, Chief Executive Officer**

Mullen joined Patheon in 2011 as CEO, leading the company through its acquisition of Banner Pharmacaps in 2012 as well as its $2.65 billion merger with DSM Pharmaceutical Products in 2013. He currently serves as CEO of the newly formed company, DPx Holdings. Prior to joining Patheon, Mullen served as CEO and President of Biogen Idec from 2003 to 2010 and was responsible for the merger of Biogen and Idec Pharmaceuticals. Mullen possesses over 30 years of industry experience, ranging from biotechnology, pharmaceuticals to specialty chemicals, as well as extensive expertise in pharmaceutical and biotech manufacturing, engineering, sales, marketing, mergers and acquisitions.

**Franco Negron, Patheon, Senior Vice President, North America Commercial Operations and Global Integration**

Negron joined Patheon in 2009 as Vice President and General Manager of the company’s operations in Puerto Rico. He has since then been promoted to Senior Vice President, North America Commercial Operations and Global Integration within the global CMO business unit. Negron possesses over 20 years experience in the pharmaceutical industry having held various senior positions at Novartis, Valeant Pharmaceuticals and McNeil Consumer Healthcare.

**Gary Shope, DPx Holdings, Chief of Staff**

Shope joined Patheon in 2011 as Chief of Staff. Previously, he worked as an internal business adviser for the Riyadh Technology Valley in Saudi Arabia. Shope has also served as Vice President and Officer for the Research Triangle Park Founder, as well as owner and operator of the internationally recognized Research Triangle Park in North Carolina.
Exhibit 1

Slide shown to employees during September 2011 meeting in Toronto

Poor historical performance highlights the need for improvement across our business

Source: Patheon presentation, reprinted with permission.
Exhibit 2

Slide shown to employees during September 2011 meeting in Toronto

We are not performing where we need to be today

Source: Patheon presentation, reprinted with permission.
## Exhibit 3

### Fiscal 2011 and Fiscal 2010 Financial Results

*(in millions of USD, except per share information)*

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
<th>$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues</strong></td>
<td>$700.0</td>
<td>$671.2</td>
<td>$28.8</td>
<td>4.3</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>$568.2</td>
<td>$536.8</td>
<td>$31.4</td>
<td>5.8</td>
</tr>
<tr>
<td><strong>Gross profit</strong></td>
<td>$131.8</td>
<td>$134.4</td>
<td>$(2.6)</td>
<td>(1.9)</td>
</tr>
<tr>
<td>Selling, general and administrative expenses</td>
<td>$120.2</td>
<td>$110.6</td>
<td>$9.6</td>
<td>8.7</td>
</tr>
<tr>
<td>Repositioning expenses</td>
<td>$7.0</td>
<td>$6.8</td>
<td>$0.2</td>
<td>2.9</td>
</tr>
<tr>
<td>Impairment charge</td>
<td>--</td>
<td>$3.6</td>
<td>$(3.6)</td>
<td>--</td>
</tr>
<tr>
<td>Loss on sale of capital assets</td>
<td>$0.2</td>
<td>$0.2</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Operating income</strong></td>
<td>$4.4</td>
<td>$13.2</td>
<td>$(8.8)</td>
<td>(66.7)</td>
</tr>
<tr>
<td>Interest expense, net</td>
<td>$25.6</td>
<td>$19.6</td>
<td>$6.0</td>
<td>30.6</td>
</tr>
<tr>
<td>Foreign exchange gain</td>
<td>$(1.6)</td>
<td>$(1.5)</td>
<td>$(0.1)</td>
<td>6.7</td>
</tr>
<tr>
<td>Refinancing expenses</td>
<td>--</td>
<td>$12.2</td>
<td>$(12.2)</td>
<td>--</td>
</tr>
<tr>
<td>Other income, net</td>
<td>$(4.9)</td>
<td>$(0.4)</td>
<td>$(4.5)</td>
<td>1,125.0</td>
</tr>
<tr>
<td><strong>Loss from continuing operations before income taxes</strong></td>
<td>$(14.7)</td>
<td>$(16.7)</td>
<td>$2.0</td>
<td>(12.0)</td>
</tr>
<tr>
<td>Current</td>
<td>$1.6</td>
<td>$6.7</td>
<td>$(5.1)</td>
<td>(76.1)</td>
</tr>
<tr>
<td>Deferred</td>
<td>$(0.5)</td>
<td>$(20.5)</td>
<td>$20.0</td>
<td>(97.6)</td>
</tr>
<tr>
<td>Provision for (benefit from) income taxes</td>
<td>$1.1</td>
<td>$(13.8)</td>
<td>$14.9</td>
<td>(108.0)</td>
</tr>
<tr>
<td><strong>Loss before discontinued operations</strong></td>
<td>$(15.8)</td>
<td>$(2.9)</td>
<td>$(12.9)</td>
<td>444.8</td>
</tr>
<tr>
<td>Loss from discontinued operations</td>
<td>$(0.6)</td>
<td>$(1.7)</td>
<td>$1.1</td>
<td>(64.7)</td>
</tr>
<tr>
<td><strong>Net loss for the period</strong></td>
<td>$(16.4)</td>
<td>$(4.6)</td>
<td>$(11.8)</td>
<td>256.5</td>
</tr>
<tr>
<td><strong>Net loss attributable to restricted voting shareholders</strong></td>
<td>$(16.4)</td>
<td>$(4.6)</td>
<td>$(11.8)</td>
<td>256.5</td>
</tr>
<tr>
<td><strong>Basic and diluted loss per share</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From continuing operations</td>
<td>$(0.122)</td>
<td>$(0.023)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From discontinued operations</td>
<td>$(0.005)</td>
<td>$(0.013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weighted-average number of shares outstanding during period – basic and diluted (in thousands)</strong></td>
<td>129,168</td>
<td>129,168</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adjusted EBITDA</strong></td>
<td>$66.4</td>
<td>$80.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exhibit 4

Slides shown to employees during September 2011 meeting in Toronto

Gross Margin Erosion Across the Business

<table>
<thead>
<tr>
<th>USD millions</th>
<th>PDS</th>
<th>Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin decline - 35% to 28%</td>
<td>Margin decline - 16% to 8%</td>
<td></td>
</tr>
</tbody>
</table>

Note: eliminates J&J and investment tax credit impact

Source: Patheon presentation, reprinted with permission.


Exhibit 4 (Continued)

Slides shown to employees during September 2011 meeting in Toronto

Toronto GLM Sept. 2011

Gross Margin No Longer Covering SG&A

Total Company (USD millions)

Both trends need to radically change direction to correct this company-threatening situation

Note: eliminates J&J and investment tax credit impact

Few Sites are Immune from this Trend

PDS

Commercial

Site gross margin trends in local currencies

Note: eliminates J&J and investment tax credit impact

Source: Patheon presentation, reprinted with permission.
**Exhibit 5**

**Serving each of the four major customer segments**

<table>
<thead>
<tr>
<th>Pharma / Biotech Market Segments (1)</th>
<th>Total Drug Sales ($Bn) (2)</th>
<th>Number of Companies</th>
<th>Profile Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Pharma / Biotech &gt; $8Bn in Sales</td>
<td>501</td>
<td>22 Total</td>
<td>Outsourcing rate is low 10-20% and growing</td>
</tr>
<tr>
<td>Mid-size/Specialty $500M to $8Bn in Sales</td>
<td>200</td>
<td>117 Total</td>
<td>Outsourcing rate is moderate 40-50%</td>
</tr>
<tr>
<td>Emerging Pharma &lt; $500M in Sales</td>
<td>30</td>
<td>1000+ Total</td>
<td>Outsourcing rate is high ~75%</td>
</tr>
<tr>
<td>Generics (3)</td>
<td>171</td>
<td>80 Total</td>
<td>Outsourcing rate varies (10-20%)</td>
</tr>
</tbody>
</table>

Source: Market Intelligence and Portfolio Strategy analysis (raw data EvaluatePharma®, Pharmaprojects)

(1) Only those companies that publicly disclose sales are included in this analysis
(2) Sales are prescription drug sales
(3) The Generics market segment is not mutually exclusive. Generic companies are also included in Large, Mid-Size, and Emerging Segments.

Source: Patheon presentation, reprinted with permission.
Exhibit 6
CDMO Industry Overview

CDMO industry overview

**Overview**
- $20+ billion industry
- 7-10% annual growth rate
- 200+ players in the industry
- Major segments
  - Active pharmaceutical ingredient (API)
  - Product development services (PDS)
  - Contract manufacturing (CMO)

**Dynamics**
- Highly fragmented
- Limited outsourcing penetration
- Quality issues plaguing many players
- Few players have integrated offering

Source: Patheon presentation, reprinted with permission.