EDISON

PDL BioPharma

2020 outlook

Returning value to shareholders

Pharma & biotech

PDL BioPharma has a portfolio of healthcare-related assets. These include the Assertio royalty stream, covering rights for extended release (XR) formulations of metformin, a 29% stake in Evofem, a women's health company on the brink of commercialization, and LENSAR, a femtosecond laser cataract surgery company. PDL recently announced a decision to cease additional strategic investments and monetize its assets, returning net proceeds to shareholders likely in the form of additional share repurchase programs and/or dividends.

Year end	Revenue ($m)	PBT* ($m)	EPS* ($)	DPS ($)	P/E (x)	Yield (%)
12/17	320.1	200.3	0.81	0.0	4.5	N/A
12/18	198.1	78.8	0.45	0.0	8.2	N/A
12/19e	102.6	(15.9)	(0.16)	0.0	N/A	N/A
12/20e	115.3	7.6	0.06	0.0	61.2	N/A

Note: *PBT and EPS are normalized, excluding amortization of acquired intangibles and exceptional items.

Move to maximize shareholder value

Following the completion of a strategic review process in Q419, PDL decided to cease additional strategic investments and monetize the company's assets, returning net proceeds to shareholders. It also initiated a $275m share and convertible note repurchase program. This two-pronged strategy is expected to unlock the value of PDL as the stock has typically traded at a discount to its book value ($5.58 per share in Q319).

Evofem: Hormone-free contraceptive option

Evofem, a clinical-stage biopharmaceutical company, is developing Amphora, a hormone-free contraceptive gel. It is a bioadhesive vaginal gel that works by maintaining acidity in the presence of semen, keeping the environment inhospitable to sperm motility. Evofem re-submitted its New Drug Application (NDA) for Amphora and a response from the FDA is expected by 25 May 2020.

LENSAR: Femtosecond laser technology

LENSAR is focused on next-generation femtosecond cataract laser technology for refractive cataract surgery. The LENSAR System was approved by the FDA for anterior capsulotomy, lens fragmentation and corneal and acute incisions and the company expects to have finished 2019 with 107,000 procedures performed using its technology, compared to around 80,000 procedures in 2018.

Valuation: $713m or $5.73 per share

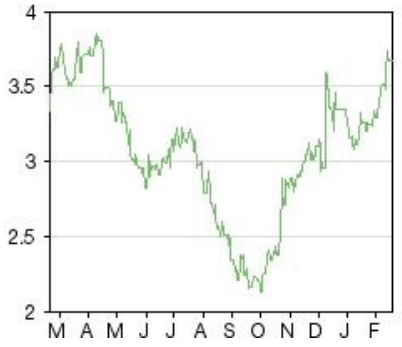
We have decreased our valuation of PDL to $713m or $5.73 per basic share from $767m or $6.17 per share. This is mainly due to adjustments to the value of the Assertio royalties following recent comments made by the CEO of Bausch Health on the expectations for the sales of Glumetza (a major component of the Assertio royalties).

18 February 2020

Price	**US$3.67**
Market cap	**US$457m**

Net cash ($m) at 30 September 2019	144.3
Shares in issue	124.4m
Free float	91.9%
Code	PDLI
Primary exchange	NASDAQ
Secondary exchange	N/A

Share price performance



%	1m	3m	12m
Abs	12.6	22.3	10.2
Rel (local)	13.5	13.6	(7.7)

52-week high/low	US$3.85	US$2.13

Business description

As of December 2019, PDL BioPharma has ceased to make additional strategic transactions and investments and is pursuing a formal process to unlock the value of its portfolio by monetizing its assets and ultimately distributing net proceeds to shareholders.

Next events

FDA approval of Amphora	May 2020

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Investment summary

Company description

PDL is a healthcare company with a broad portfolio of assets that it is seeking to monetize. PDL previously focused on investing in late clinical-stage or early commercial-stage pharmaceutical assets with operations structured into four segments: income-generating assets, medical devices, strategic positions and pharmaceutical. In addition to several other income-generating assets, PDL's highest-valued asset is the Assertio umbrella of products (related to extended release versions of metformin), which provides a meaningful royalty stream. The medical devices segment comprises the femtosecond laser technology company, LENSAR, which focuses specifically on refractive cataract surgery. The strategic positions segment encompasses PDL's 29% stake in Evofem, a clinical-stage biopharmaceutical company that awaits a response from the FDA regarding its NDA application for Amphora, a hormone-free contraceptive vaginal gel. The pharmaceutical segment comprises the Tekturna (Rasilez in Europe) brand of hypertension drugs, which saw a generic entry in the US market in March 2019.

Valuation: $713m or $5.73 per share

Our model sums the NPV's of PDL's different holdings and using that method we value PDL at $713m or $5.73 per basic share, down from $767m or $6.17 per share. This reduction was mainly attributable to adjusting the value of the Assertio royalty stream following recent comments made by the CEO of Bausch Health on the expectations for the sales of Glumetza, a major component of that royalty stream. We value the Assertio royalty stream, the equity stake in Evofem and PDL's wholly owned subsidiary LENSAR as its most valuable assets.

Financials: Share buybacks and equity stakes

PDL ended Q319 with $294.3m in cash and $150m in principal owed in the form of convertible debt. In December, the company initiated a $275m (upsized later that month from $200m) share and convertible note repurchase program to return value to shareholders. Using this program, the company repurchased $119.3m in debt in exchange for $98m in cash and 13.4m shares of common stock and now has $30.7m in debt outstanding ($19.2m in debt due in December 2021 and $11.5m in debt due December 2024).

Sensitivities: Monetization risk

Following PDL's most recent strategy shift to cease all strategic investments and monetize assets, it will face a relatively lengthy process since its asset portfolio is not focused on one area within healthcare. PDL estimates this divestiture process will take two to three years or more and will be dependent on several factors including interested parties' valuation of assets versus book value and the team's overall ability to execute the transaction. The longer the monetization process takes, the more likely it is that factors such as patent expiration, changes in regulatory requirements, increased generic competition, or failure to successfully commercialize products could decrease the return shareholders receive. The cost of maintaining a public company longer than necessary may also affect that return. On the other hand, as some of the businesses develop, their value may increase, especially Evofem and LENSAR. For example, Evofem may receive FDA approval for Amphora in May and subsequently commercialize the product, both of which may increase the value of the company. With regards to LENSAR, continued progress in procedure growth and development of their next generation product may support a higher valuation for that asset.

Broad asset portfolio

PDL is a healthcare company with a broad portfolio of assets that it is now seeking to monetize. Historically, PDL focused on investing in late clinical-stage or early commercial-stage pharmaceutical assets with operations structured into four segments: income-generating assets, medical devices, strategic positions and pharmaceutical. The company was established in 1986 as a standard R&D-centered business and over the decades adjusted its strategic focus that encompassed a large royalty asset portfolio, providing alternative financing through a series of debt and royalty-backed deals and direct acquisitions of revenue-generating assets.

The medical devices segment is comprised of LENSAR, a company focused on delivering next-generation femtosecond cataract laser technology used for refractive cataract surgery. Its main asset, the LENSAR Laser System, has been approved by the FDA for anterior capsulotomy, lens fragmentation and corneal and acute incisions. The company is working on developing a state-of-the-art workstation combining a femtosecond laser and phacoemulsification (phaco) device into one platform. LENSAR is the fourth largest player in the femtosecond cataract laser market after Alcon, Johnson & Johnson and Ziemer.

The strategic positions segment was formed as a result of the securities purchase agreement with Evofem, a clinical-stage biopharmaceutical company committed to developing and commercializing innovative products to address the unmet needs in women's sexual and reproductive health. The deal consisted of a two-tranche structure totaling a $80m investment via a private placement of securities by PDL alongside two existing Evofem shareholders, who each invested $10m. The proceeds of the investment are expected to provide funding for Evofem's pre-commercial activities relating to Amphora, an investigational, non-hormonal, on-demand prescription contraceptive gel for women.

The pharmaceutical segment encompasses a subsidiary, Noden Pharma, used as a vehicle to acquire mature pharmaceutical products and in 2016 PDL purchased the Tekturna (Rasilez in Europe) brand of hypertension drugs (aliskiren and Tekturna HCT, a combination of aliskiren and hydrochlorothiazide) from Novartis. However, due to a patent settlement with Anchen Pharma, a generic form of aliskiren entered the US market in March 2019 and, in anticipation of this generic launch, PDL stopped promotional activities, leaving only residual value for this asset.

For the income-generating assets segment, the major component is the Assertio royalty asset, which consists of royalties and milestones related to XR formulations of the diabetes drug metformin, either alone or in combination with other diabetes drugs. Regarding other outstanding assets in this segment, there are three note receivables and five total royalty right agreements, including the Assertio royalty asset.

In September 2019, the company initiated a strategic and financial review to evaluate the business regarding capital allocation and how PDL should proceed. The options considered were whether PDL should return additional capital to shareholders, focus capital on existing investments, or concentrate on making additional investments. After completing the review, PDL decided in December 2019 to cease additional strategic investments and monetize its assets, returning net proceeds to shareholders likely in the form of additional stock repurchase programs and/or dividends.

LENSAR: Next-generation technology

LENSAR is a company focused on delivering next-generation femtosecond cataract laser technology used for refractive cataract surgery. Cataract surgery is a procedure to remove the lens of a patient's eye after it has developed a cataract (significant lens opacification) and, in most

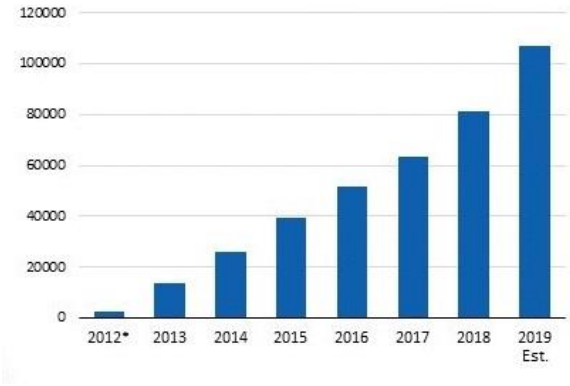
cases, replace it with an artificial lens. It is the most common procedure performed by ophthalmic surgeons with 30 million projected surgeries worldwide by 2020.[1] Moreover, cataracts are associated with old age and prevalence will only increase with the growing ageing population. Femtosecond cataract surgery uses advanced imaging and laser technology to customize planning and treatments aiming to decrease recovery time and improve outcomes, compared to conventional techniques such as extracapsular cataract extraction with standard phaco.

The LENSAR Laser System is a femtosecond cataract laser built specifically for refractive cataract surgery and was approved by the FDA for anterior capsulotomy, lens fragmentation and corneal and acute incisions. The cataract surgery space is very competitive where systems cost about $400,000 per machine and LENSAR estimates to have captured 13% of revenue market share relating to the femtosecond cataract laser (Exhibit 1). Importantly, procedure volume grew around 30% over the first nine months of last year and the company expects to have finished 2019 with 107,000 procedures performed using its technology (Exhibit 2).

Exhibit 1: Revenue market share in the femtosecond laser market

Source: PDL, Market Scope

Exhibit 2: LENSAR procedures per year



Source: PDL, Market Scope. Note: Product launch July 2012.

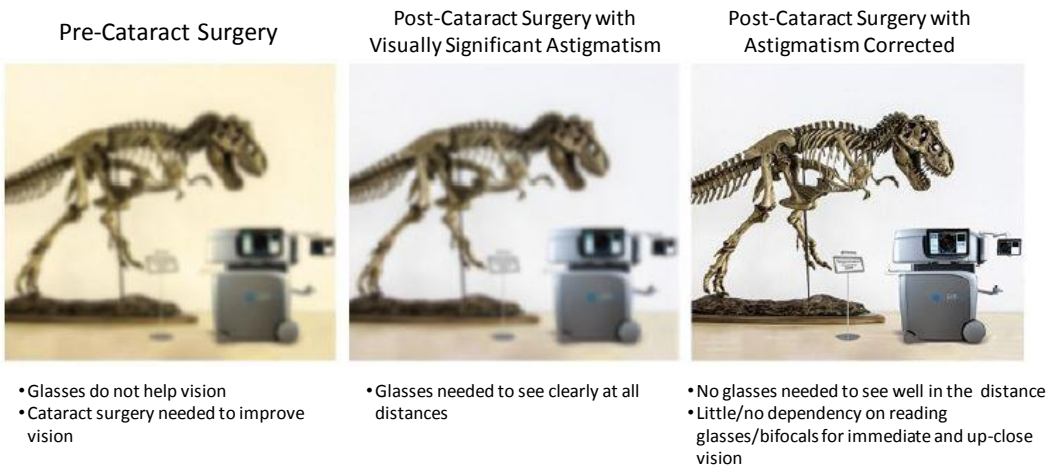
Streamline IV: Latest LENSAR machine

LENSAR's most recent femtosecond laser machine is the Streamline IV, which enables surgeons to treat cataracts and better manage astigmatism as a high percentage of patients with cataracts also have this condition. A study conducted by Ferrer-Blasco et al. found that of the 4,540 eyes of 2,415 patients assessed, 34.8% had a corneal astigmatism equal to or higher than 1.00 diopter (D).[2] For reference, eyes with an astigmatism of less than 0.6D are considered normal, 0.7D to 2.0D is considered a small degree of astigmatism, 2.1D to 4D is a moderate astigmatism and above 4.1D is significant. Simply treating a cataract may improve a patient's vision, however, if an underlying astigmatism could be simultaneously treated during cataract surgery, resultant vision could be meaningfully clearer (Exhibit 3).

[1] Uy HS, Edwards K and Curtis N (2012) Femtosecond phacoemulsification: The business and the medicine. *Curr Opin Ophthalmol* 23, 33–39

[2] Ferrer-Blasco T, Montés-Micó R, Peixoto-de-Matos SC, González-Méijome JM and Cerviño A. (2009) Prevalence of corneal astigmatism before cataract surgery. *J Cataract Refractive Surg* 35(1), 70–75.

Exhibit 3: Comparison of post-cataract surgery vision with and without astigmatism



Source: LENSAR investor presentation

LENSAR claims the use of Streamline IV provides a higher degree of precision, reproducibility and relatively quick adjustments for cyclorotation. Cyclorotation is the rotational movement of the eye caused as patients go from sitting up to lying flat for the surgery where some measurements taken pre-operatively, as a patient is sitting up, could become misaligned. Additionally, the Streamline IV can seamlessly import data from various topographers used in the pre-operative appointment and will automatically adjust measurements to overcome parallax, where a lens appears to be aligned from one angle of view but not another making it difficult for the surgeon to discern if an intraocular lens is positioned correctly. As patients become better educated about the degree of vision correction they could achieve following femtosecond laser assisted cataract surgery where the astigmatism was also treated (potentially in a more precise fashion), doctors may move toward these types of treatment options that allow for such customization.

GEN2 workstation: Best of both worlds

LENSAR is developing its second-generation (GEN2) system that will combine both a femtosecond laser and phaco machine into a single platform. The workstation would be an all-in-one device capable of handling most cataract cases (both conventional phaco only and femtosecond laser cataract procedures that still require the use of some phaco), allowing the surgeon to seamlessly switch between the two capabilities without disruption to the procedure flow. GEN2 will also be designed to have a small footprint so it can easily fit into any operating room because reimbursement pressure is pushing surgeons to cut costs by moving to in-office surgical suites or alternative outpatient facilities versus a conventional hospital setting. LENSAR also aims to make GEN2 accessible and economical for surgeons at all stages of their practice development by offering multiple business models, such as an outright purchase with a per-procedure fee or lease with a per-procedure fee.

LENSAR completed its first GEN2 laser engine breadboard (a base for prototyping electronics) in July 2019 and is exploring options to reduce potential manufacturing costs. The second optics breadboard was completed in October 2019 and the company cited testing was satisfactory and still ongoing. The software and hardware prototypes are expected to be completed in Q220, with a targeted 510(k) submission at the end of 2021 and commercial launch in 2022.

LENSAR reported product revenue of $8.1m in Q319, up 22% compared to Q318 and up 9% sequentially, with most of the growth attributed to the Asian market. Gross margin for LENSAR increased from 34% to 41% (from Q219 to Q319), although the Q319 quarterly loss for LENSAR was $3.3m, which is higher than the quarterly loss of $1.7m in Q219 and the $0.9m loss in Q318.

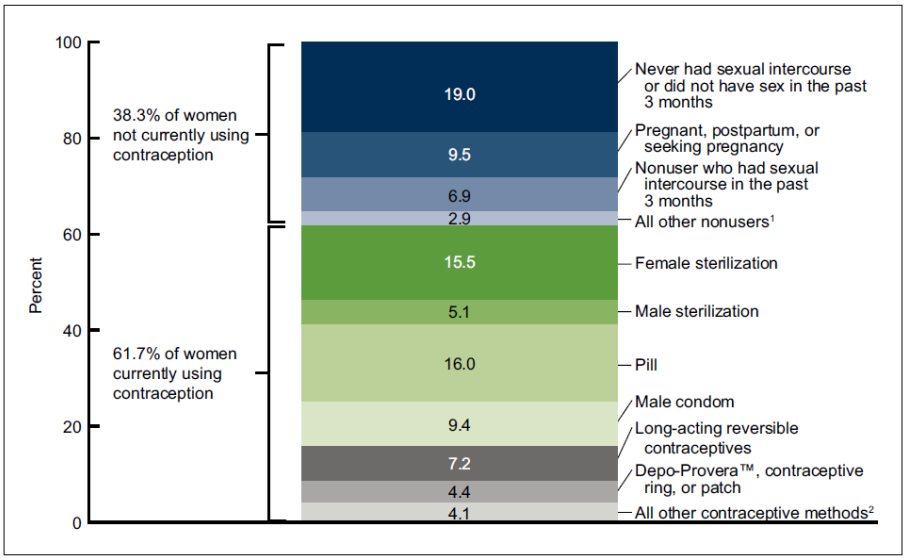
The loss was due to a one-time cash payment of $3.5m for intellectual property to a third party, which was booked as R&D. This was related to the development of a GEN2 LENSAR system that would integrate the laser system with a phaco system, which would lead to a device that would be able to perform all aspects of cataract surgery.

Evofem: Strategic positioning for PDL

Evofem is a clinical-stage biopharmaceutical company committed to developing and commercializing innovative products to address the unmet needs in women's sexual and reproductive health. In June 2019, PDL completed a two-tranche securities agreement with Evofem for an aggregate $80m strategic financing alongside two existing Evofem investors, in which PDL invested $60m and existing shareholders invested $20m collectively. As of September 2019, PDL owns 29% of Evofem.

According to the Centers for Disease Control and Prevention (CDC), in the United States 61.7% of the 60.9 million women aged 15–44 use contraception and almost half of those either use short- or long-acting hormonal oral contraceptive pills or devices, such as a ring or patch (Exhibit 4). EvaluatePharma reported hormonal contraceptive sales of $6.5bn in 2018 and, importantly, many of the products still have meaningful sales despite having been on the market for two to three decades in addition to being off patent (Exhibit 5). Importantly, while generics exist, brand power is important in this market.

Exhibit 4: Contraception method share in women aged 15–44



Source: CDC, National Center for Health Statistics, Data Brief number 173, December 2014

Despite the popularity of hormonal contraceptives, they are associated with some potential severe side effects. The risk of venous thromboembolism, the formation of a blood clot in a deep vein, increases three to six times and the risk of a heart attack or stroke goes up two to three times.[3] Also, certain women are contraindicated from receiving hormonal therapy, such as smokers over the age of 35 and women with a history of breast or pelvic cancers. Hence, a safe and effective hormonal alternative is expected to attract a market of women who will switch from hormone-based therapies and those not using any contraception.

3 Gorenoi et al. Benefits and risks of hormonal contraception in women. *German Medical Science Health Technology Assessment* 2007, Vol. 3

Exhibit 5: Select marketed hormonal contraceptive products

Product	Generic name	Company	Launch year	Patent expiry	2018 sales ($m)
Mirena	Levonorgestrel	Bayer	1990	Dec 2015	1,350
Nexplanon	Etonogestrel	Merck & Co	1998	Sep 2009	703
Lo Loestrin FE	Ethinyl estradiol; ferrous fumarate; norethindrone acetate	Allergan	2011	Feb 2029	528
Yasmin	Drospirenone; ethinyl estradiol	Bayer	2000	May 2008	755
NuvaRing (vaginal ring)	Ethinyl estradiol; etonogestrel	Merck & Co	2002	Apr 2018	902

Source: EvaluatePharma

Amphora: A hormone-free contraceptive alternative

Evofem is developing its first product candidate, Amphora, from their proprietary Multipurpose Vaginal pH Regulator platform. Amphora is a bioadhesive vaginal gel that is a mix of L-lactic acid, citric acid, and potassium bitartrate that are all compounds generally regarded as safe by the FDA and frequently found in food. A normal vaginal pH is acidic at 3.5–4.5 and the gel works by maintaining acidity in the presence of semen, keeping the environment inhospitable to sperm motility. Unlike much of the competition, Amphora is non-hormonal and accordingly does not appear to have the same long-term safety concerns compared to hormone-based contraceptives.

In 2014, two large Phase III trials demonstrated Amphora's efficacy in which the company reported that the 3,389 patient AMP001 trial met the primary endpoint of non-inferiority to Conceptrol, a spermicidal gel. In the modified 'intent to treat' analysis, the cumulative pregnancy percentage was 10.5% in the Amphora arm and 10.0% in the Conceptrol arm. For the 'perfect use' population, defined as those who used their assigned product for every sexual episode, the pregnancy percentage was 4.1% in the Amphora arm compared to 4.2% with Conceptrol. Importantly, Amphora demonstrated a benign safety profile with fewer than 2% of women withdrawing due to an adverse event, a slightly lower rate than with Conceptrol.

The FDA had issues with some of the data pertaining to 20% of study participants in Russia, which the agency viewed as 'not generalizable' to the US population and requested a confirmatory trial. In response to the request, Evofem initiated the confirmatory AMPOWER trial to be conducted exclusively in the US with a pre-specified hurdle of a seven-cycle cumulative pregnancy probability of 14% with the upper limit of the confidence interval at 21%. In December 2018, Evofem announced the results of the Phase III AMPOWER clinical trial, which met the pre-specified primary endpoint. The trial assessed the efficacy, safety and subject satisfaction of approximately 1,400 healthy women aged 18–35 years at 112 centers in the US. Top-line data demonstrated the cumulative probability of pregnancy over seven cycles was 13.7% with the upper limit of the confidence interval at 17.4%.

The company also released additional data from the trial indicating Amphora appeared to improve sexual satisfaction for almost 50% of participants (see Exhibit 6). At baseline, only around 17% of participants had indicated any improvement in sexual satisfaction relating to their most recent contraceptive method, which presents an opportunity for Amphora to provide a potential benefit. Although these data are exploratory and from an uncontrolled trial, the satisfaction factor may help provide a marketing edge in a large, competitive market.

Exhibit 6: Exploratory Amphora sexual satisfaction endpoint data

	Visit 3 (%)	Visit 4 (%)	Visit 5 (%)
A lot better than before	16.1	19.9	22.2
A little better than before	28.4	27.4	25
No different	51	47.9	46.4
A little worse than before	4.4	4.3	5.3
A lot worse than before	0.2	0.6	1.1

Source: Evofem; Note: Responses were to the question 'what impact did the study contraception have on your sex life since the last study visit?'.

Next steps for Amphora

Following completion of the confirmatory trial and positive top-line data, Evofem resubmitted its NDA in November 2019, which includes full results from the Phase 3 AMPOWER study. The FDA acknowledged receipt of the NDA and assigned a PDUFA date of 25 May 2020, by which time it is expected a decision will be made.

Evofem is also looking to expand the Amphora label to include the prevention of infection of Chlamydia trachomatis (chlamydia) and Neisseria gonorrhea (gonorrhea) in women. In December 2019, the company reported positive and statistically significant data from its AMPREVENCE study. The Phase IIb trial assessed 860 patients over a four-month period and found that the use of Amphora led to a 50% relative risk reduction in chlamydia infection and a 78% reduction in gonorrhea (see Exhibit 7). Evofem will discuss the data with the FDA at an end-of-Phase II meeting and expects to initiate the Phase III program in Q121 with approval in 2022.

Exhibit 7: AMPREVENCE Phase IIb efficacy data

Infection type	Number infected – Amphora arm	Number infected – Placebo arm	P value
Chlamydia	14 out of 288 patients (4.9%)	28 out of 287 patients (9.8%)	p=0.024
Gonorrhea	2 out of 280 patients (0.7%)	9 out of 277 patients (3.2%)	p=0.03

Source: Evofem

According to the CDC, there were 1.8m new cases of chlamydia in 2018, up 19% over 2014, and over 583,000 new cases of gonorrhea in that same year, up 63% over 2014. While the addressable market is quite large and both infections can lead to serious complications if left untreated, we believe Amphora will most likely be used to prevent both pregnancy and infection versus infection alone. As such, our forecasts factor in that infection prevention will make Amphora incrementally more attractive as a contraceptive since neither hormonal contraceptives, spermicides and intrauterine devices have been shown to decrease infection rates.

Noden Pharma: Increased generic competition

In July 2016, PDL formed Noden Pharma, a wholly-owned subsidiary to be used as a vehicle to acquire mature pharmaceutical products. Concurrent with the formation of the subsidiary, the company acquired the Tekturna (Rasilez in Europe) brand of hypertension drugs (aliskiren and Tekturna HCT, a combination of aliskiren and hydrochlorothiazide) from Novartis, which are collectively referred to as the Noden Products. The assets were acquired for up to $294m ($110m upfront, $89m on the first anniversary and $95m in milestones) and PDL has invested an additional $40m in working capital in Noden Pharma.

Tekturna was approved in 2007 for the treatment of hypertension and is unlike other marketed hypertensives because it is an inhibitor of renin. Renin is the enzyme responsible for generating angiotensin I and therefore has a critical role in regulating blood volume and vasoconstriction. Tekturna HCT is a co-formulation of the active drug in Tekturna with hydrochlorothiazide, a diuretic commonly prescribed for hypertension. Both Tekturna and Tekturna HCT demonstrated significant reduction in systolic blood pressure; however, despite the formulations' efficacy, a clinical trial later showed a high number of kidney problems and strokes among diabetic patients, which triggered associated legal challenges and declining sales.

In June 2017, Anchen Pharmaceuticals submitted an abbreviated NDA to the FDA seeking authorization to manufacture and market a generic version of Tekturna in the US. A year later, a settlement was reached where Anchen was granted a nonexclusive, royalty-free license to manufacture and commercialize a generic version of aliskiren and, in return, Anchen agreed not to commercialize the product before 1 March 2019. In an effort to bolster profitability in anticipation of generic competition, Noden discontinued its direct sales force and later launched its own authorized

generic of Tekturna in the US in March 2019, which was carried out by Prasco Laboratories. Due to the complexity in manufacturing Tekturna, PDL does not expect additional generic competitors beyond Anchen. In Q319, Noden product revenue was $12.3m compared to $17.8m in Q318 with geographic revenue split evenly between the US and rest of the world. To note, Tekturna is licensed in China but due to limited information those sales are not accounted for in our model.

Income-generating products

The income-generating assets segment consists of three notes receivables and five royalty agreements (see Exhibit 8) with the Assertio royalties the largest component of these.

Exhibit 8: Active and outstanding investments

Investment	Investment type
Assertio Therapeutics	Royalty
The Regents of the University of Michigan (U-M)	Royalty
AcelRx Pharmaceuticals	Royalty
Viscogliosi Brothers (VB)	Royalty
KYBELLA	Royalty
CareView Communications	Note (impaired)
Wellstat Diagnostics	Note (impaired)
Hyperion	Note (impaired)

Source: PDL

The Assertio assets

In October 2013, PDL acquired the royalty rights to five type 2 diabetes products licensed by Assertio (formerly Depomed) and in August 2018, PDL purchased all Assertio's remaining interests in royalty and milestone payments payable on sales of the type 2 diabetes product portfolio. The portfolio encompassed royalty rights for XR formulations of the diabetes drug metformin, either alone or in combination with other diabetes drugs (see Exhibit 9).

Exhibit 9: Components of Assertio royalty assets

Product	Company	Royalty rate
Glumetza (extended release metformin)	Santarus/Salix/Valeant/Bausch Health	Gross margin split (50%)
Invokamet XR (Invokana + extended release metformin)	Jannsen	Unknown
Jentadueto XR (Tradjenta + extended release metformin)	Boehringer Ingelheim/Eli Lilly	Unknown
Synjardy XR (Jardiance + extended release metformin)	Boehringer Ingelheim/Eli Lilly	Unknown
Extended release metformin in Korea and Canada	LG Life Sciences and Valeant/Baucsh Health	Unknown

Source: PDL, Bloomberg

The largest revenue stream was Glumetza, an XR metformin marketed by Valeant, with a royalty on net sales of 32% in 2013 and 2014 and 34.5% in 2015. The drug went off patent in February 2016, which triggered a provision to adjust the royalty rate to 50% of gross profits (estimated at an effective royalty rate of 45%), compared to 32–34.5% of sales previously. Consensus estimates for 2019 sales of Glumetza amount to around $141m, according to EvaluatePharma. However, at the Evercore conference in December 2019 the CEO of Bausch Health, the company that markets Glumetza, indicated Glumetza sales would be about half of the quarterly level of the first three quarters (which had been around $40m) and would continue to trail down although 'not markedly'. The reasons for this are unclear but likely in part due to price competition as well as increased discounting in the channel.

The royalties also included a series of other metformin-containing medicines that produced royalty streams on a smaller scale than Glumetza (generally estimated at low single digits), but provided some income supplementation once Glumetza went off patent, although with far less visibility due to the level of reporting from the partnered companies.

Other outstanding transactions

PDL initially entered into a hybrid royalty/debt transaction for $44m in November 2012, which comprised of the right to receive quarterly interest payments of 5% per year from the Wohlstadter family (equity owners of Wellstat Diagnostics) and a low double-digit royalty on commercialization of Wellstat's products. This structure replaced two earlier debt facilities, which were repaid with the proceeds of the larger transaction. In 2013, Wellstat breached the loan agreement, which triggered several legal actions between PDL and the Wohlstadters. As a result, the loan has been determined as impaired and has not accrued interest since April 2014. In September 2019, a summary judgment decision was made in favor of PDL and the court ordered a damages inquest to assess the amount owed by Wellstat. PDL expects to recover the full amount due including principal, accumulated interest, further advances and fees.

PDL executed a royalty transaction in June 2014 with Viscogliosi Brothers (VB), a venture capital/private equity and merchant banking firm, and acquired all royalties payable for sales on Coflex, an interlaminar stabilization device for patients with spinal stenosis. The product received pre-market approval from the FDA in June 2018, making it the first approved disposable instrument set for a Class III spinal device. The product was commercialized by Paradigm Spine, which was later acquired by RTI Surgical Holdings in March 2019.

In November 2014, PDL acquired the royalty interest from the Regents of the University of Michigan (U-M) for Cerdelga (eliglustat), an oral therapy for adult patients with Gaucher disease type 1. Under the agreement, PDL is entitled to 75% of all royalty payments of U-M's worldwide royalty interest (low single digit) in Cerdelga due under the license agreement with Genzyme Corporation. The FDA approved Cerdelga in 2014 as the only first-line oral therapy for Gaucher disease type 1 because the standard treatment is an enzyme replacement therapy which patients receive via intravenous infusions for life. In Q319, Sanofi reported Cerdelga quarterly sales increased 26.8% to €53m ($59m) with total sales of €147m ($164m) for the first nine months citing increased product penetration in Europe and the US.

PDL entered into a royalty rights transaction in September 2015 for Zalviso, an approved drug/device combination product that dispenses a sublingual formulation of sufentanil used to treat moderate to severe post-operative pain in a hospital setting for up to 72 hours. The product is meant to be used instead of intravenous patient-controlled analgesia. In the agreement, PDL was to receive 75% of all royalty payments (double digit) and 80% of the first four commercial milestone payments due under AcelRx's license agreement with Grünenthal, the commercial partner in the EU, Switzerland and Australia. In Q219, PDL noted a discrepancy between the company's forecasted versus reported results for Zalviso as royalties were not tracking in line for that quarter, so a third party was enlisted to re-assess the market and expectations. The analysis revealed several factors that contributed to slower than expected adoption of the product including a smaller target market than was initially forecast, a higher price which limited switching from alternative therapies and restricted product use in patients with shorter recovery time due to a three-day pre-filled cassette (much of the product would be unused and wasted in these patients). As a result, PDL decided to take a $60m write down on the product in Q219.

In October 2015, PDL provided CareView, an information technology provider to the healthcare industry, with loans comprised of two tranches of $20m each contingent on CareView attaining certain milestones. One tranche of $20m was funded with a five-year maturity and quarterly interest payments of 13.5% in arrears; however, the second tranche was not funded since CareView failed to achieve the related funding milestones.

PDL entered into a royalty transaction in July 2016 and acquired the rights to receive certain royalties on sales of Kybella, which is marketed by Allergan. Also, on reaching certain product sales targets, PDL could potentially receive payments of up to $1m. Kybella was approved by the FDA for the treatment of adults with moderate-to-severe deposits of fat below the chin. In Q319, Allergan reported Kybella total quarterly sales of $5.6m and for the nine months ended 30 September 2019 total sales were $23.6m.

Sensitivities

Following PDL's most recent strategy shift to cease all strategic investments and monetize assets, the company will be faced with a relatively lengthy process since its asset portfolio is not focused on any one area within healthcare. PDL estimates this divestiture process will take two to three years or longer and will be dependent on several factors including interested parties' valuation of assets versus book value and the team's overall ability to execute the transaction. The longer the monetization process takes, the more likely it is that factors such as patent expiration, changes in regulatory requirements, increased generic competition, or failure to successfully commercialize products could decrease the return shareholders receive. The cost of maintaining a public company longer than necessary may also affect that return.

Evofem resubmitted its NDA for its Amphora product and awaits the FDA's response, which is expected in Q220. Assuming approval is granted, there remains a risk that the Evofem team will not execute the commercialization strategy, which will be critical since the contraceptive market is highly competitive and largely controlled by multi-billion dollar companies with highly liquid balance sheets. There is also the chance that Evofem may need additional financing in the future and PDL will need to assess whether providing part of this financing will be in its shareholders' best interests. However, if Evofem receives approval from the FDA and successfully commercializes its Amphora product, the value of the company may increase dramatically.

While LENSAR does have a product on the market, widespread adoption of femtosecond ophthalmic lasers is still a work in progress. The company is also developing a prototype for its GEN2 workstation, which can present its own engineering hurdles in addition to still needing to submit a 510(k)-application, pending FDA clearance. However, LENSAR is the fourth largest player in the market and it continues to develop its next-generation femtosecond cataract lasers.

Valuation: $713m or $5.73 per share

Using an NPV model that values each revenue stream, we value PDL at $713m or $5.73 per basic share, down from $767m or $6.17 per share. This reduction was mainly attributable to adjusting the value of the Assertio royalty stream following recent comments made by the CEO of Bausch Health on the expectations for the sales of Glumetza, a major component of that royalty stream. We value the Assertio royalty stream, the equity stake in Evofem and PDL's wholly owned subsidiary LENSAR as its most valuable assets. We have not made any changes based on the announced shift in company strategy but will do so as asset sales occur.

Exhibit 10: PDL valuation table

Royalty/note	Type	Expiration year	PDL balance sheet carrying value ($m)	NPV ($m)
Assertio (formerly Depomed)	Royalty on Glumetza and other products	2024	265.0	216.7
VB	Royalty on spine implant	Undisclosed	14.5	14.7
University of Michigan	Royalty on Cerdelga	2022	21.2	12.8
Wellstat	Note (impaired)	Unknown	50.2	50.2
Hyperion	Note (impaired)	Unknown	1.2	1.2
LENSAR	Equity		N/A	65.2
AcelRx	Royalty on Zalviso	2027	12.7	10.8
CareView	Note (impaired)	2022	11.5	11.5
Noden	Equity	N/A	34.8	14.4
Kybella	Royalty	Unknown	0.6	0.7
Evofem	Equity	N/A	67.2	153.2
Total				551
Net cash (Q319 + debt transaction and stock buyback) ($m)				161.3
Total firm value ($m)				713
Total basic shares (m)				124.4
Value per basic share ($)				5.73
Total options (m)				0.0
Total number of shares (m)				124.4
Diluted value per share ($)				5.73

Source: Edison Investment Research

Financials

PDL ended Q319 with $294.3m in cash and $150m in principal owed in the form of convertible debt. In December, the company initiated a $275m (upsized from $200m) share and convertible note repurchase program to return value to shareholders. Subsequent to that announcement, the company repurchased $119.3m in debt in exchange for $98m in cash and 13.4m share of common stock and now has $30.7m in debt outstanding ($19.2m in debt due in December 2021 and $11.5m in debt due December 2024).

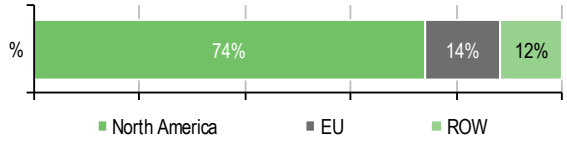
Following the changes in expectation for Glumetza, as communicated by Bausch Health, we have lowered our 2020 revenue estimate from $124.8m to $115.3m. Note that we are not factoring in any additional write-down of the Assertio asset and if that occurs, our estimates would need to be reduced further (on a non-cash basis).

We continue to believe PDL has enough capital to execute on the remainder of the repurchase program and will be able to initiate additional repurchase programs (or dividends) once assets are monetized successfully.

Exhibit 11: Financial summary

$000s	2017	2018	2019e	2020e
Year end 31 December	US GAAP	US GAAP	US GAAP	US GAAP
PROFIT & LOSS				
Revenue	320,060	198,110	102,641	115,251
Cost of Sales	(30,537)	(48,460)	(52,540)	(53,106)
Gross Profit	289,523	149,650	50,102	62,146
General & Administrative	(63,324)	(62,559)	(53,494)	(55,634)
EBITDA	218,818	84,136	(10,343)	2,985
Operating Profit (before amort. and except.)	218,818	84,136	(10,343)	2,985
Intangible Amortisation	(24,689)	(15,831)	(6,320)	(6,320)
Other	0	0	0	0
Exceptionals	(349)	(118,899)	0	0
Operating Profit	193,780	(50,594)	(16,663)	(3,335)
Net Interest	(18,562)	(5,328)	(5,517)	4,636
Other	9,309	0	17,685	0
Profit Before Tax (norm)	200,256	78,808	(15,860)	7,621
Profit Before Tax (FRS 3)	184,527	(55,922)	(4,495)	1,301
Tax	(73,826)	(12,937)	(3,117)	(273)
Deferred tax	(0)	(0)	(0)	(0)
Profit After Tax (norm)	126,430	65,871	(18,977)	7,348
Profit After Tax (FRS 3)	110,701	(68,859)	(7,612)	1,028
Minority interest	(47)	0	0	0
Profit After Tax less Minority Interest (FRS 3)	110,654	(68,859)	(7,612)	1,028
Average Number of Shares Outstanding (m)	155.4	145.7	118.8	124.4
EPS - normalised ($)	0.81	0.45	(0.16)	0.06
EPS - FRS 3 ($)	0.71	(0.47)	(0.06)	0.01
Dividend per share (c)	0.00	0.00	0.00	0.00
Gross Margin (%)	90.5	75.5	48.8	53.9
EBITDA Margin (%)	68.4	42.5	-10.1	2.6
Operating Margin (before GW and except.) (%)	68.4	42.5	-10.1	2.6
BALANCE SHEET				
Fixed Assets	602,680	446,519	427,203	383,912
Intangible Assets	215,823	51,319	47,349	47,349
Tangible Assets	7,222	7,387	6,917	8,070
Royalty rights	349,223	376,510	282,549	238,106
Other	30,412	11,303	90,388	90,388
Current Assets	640,443	517,217	320,695	380,905
Stocks	0	0	0	0
Debtors	31,183	21,648	12,581	12,581
Cash	527,266	394,590	208,076	268,286
Other	81,994	100,979	100,038	100,038
Current Liabilities	(193,109)	(52,470)	(44,139)	(44,122)
Creditors	(19,785)	(13,142)	(13,255)	(13,255)
Short term borrowings	(126,066)	0	0	0
Other	(47,258)	(39,328)	(30,884)	(30,867)
Long Term Liabilities	(204,124)	(181,487)	(85,001)	(85,001)
Long term borrowings	(117,415)	(124,644)	(30,700)	(30,700)
Other long term liabilities	(86,709)	(56,843)	(54,301)	(54,301)
Net Assets	845,890	729,779	618,758	635,695
Minority Interests	0	0	0	0
Shareholder equity	845,890	729,779	618,758	635,695
CASH FLOW				
Operating Cash Flow	40,624	(13,425)	(22,696)	(8,425)
Net Interest	0	0	0	0
Tax	0	0	0	0
Capex	(1,297)	(4,523)	(2,545)	(1,153)
Acquisitions/disposals	128,415	57,969	84,110	69,788
Financing	0	0	0	0
Dividends	(222)	(48)	0	0
Other	212,592	(46,202)	(139,932)	0
Net Cash Flow	380,112	(6,229)	(81,063)	60,210
Opening net debt/(cash)	85,289	(283,785)	(269,946)	(177,376)
HP finance leases initiated	0	0	0	0
Exchange rate movements	0	0	0	0
Other	(11,038)	(7,610)	(11,507)	(0)
Closing net debt/(cash)	(283,785)	(269,946)	(177,376)	(237,586)

Source: company reports, Edison Investment Research

Contact details	Revenue by geography
PDL BioPharma, Inc. 932 Southwood Blvd. Incline Village, NV 89451 United States +1 (775) 832 - 8500 www.pdl.com	

Management team

President and CEO: Dominique Monnet

Dominique Monnet joined PDL in September 2017 and assumed his current position in December 2018. Before joining PDL, Mr Monnet served as senior vice president and chief marketing officer of Alexion Pharmaceuticals and held various senior positions at Amgen including VP/general manager for the Inflammation Business Unit and VP/head of global marketing commercial development. Prior to Amgen, Mr Monnet spent 19 years at Schering-Plough where he held positions in line commercial management and global marketing. Mr Monnet earned a business degree from EDHEC Business School and an MBA from INSEAD.

Vice president, business development: Jill Jene, PhD

Jill Jene joined PDL in May 2018 and brings more than 20 years of biopharmaceutical business development experience, which includes more than $3bn in licensing and M&A transactions. Prior to PDL, Ms Jene served as senior VP, business development at twoXAR. Before that, she was VP, business development at Depomed where she was instrumental in closing over 20 transactions, including the acquisition of four commercial franchises. Earlier in her career, Ms Jene held positions in business development at Cell Genesys, 3M Company and Baxter International. She holds a PhD and MS in chemistry from Northwestern University and an MBA from DePaul University.

Vice president and general counsel: Christopher Stone

Chris Stone joined PDL in February 2009. He brings more than 25 years' legal experience to the role. Before joining PDL, Mr Stone served as VP of legal affairs and corporate secretary at LS9, an advanced biofuels development company, where his work included a focus on intellectual property protection and licensing. Previously, he was VP of US intellectual assets at Danisco, a global producer of food ingredients, enzymes and bio-based solutions. Mr Stone received a JD from George Washington University and a BS in biochemistry from the University of Massachusetts.

Vice president and acting CFO: Ed Imbrogno, CPA

Ed Imbrogno joined PDL in October 2018 and brings more than 30 years of accounting and financial reporting experience. Prior to joining PDL, Mr Imbrogno was Senior Director and Corporate Controller for BioDelivery Sciences International, a Nasdaq-listed specialty pharmaceutical company. Before that, he was VP, financial reporting for AerCap Holdings, a NYSE-listed company and director, accounting for Amgen. Mr Imbrogno began his career as an audit manager with Ernst & Young. He holds an MBA from Wake Forest University and is a licensed certified public accountant.

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BlackRock Inc	9.71
Dimensional Fund Advisors	8.94
Renaissance Technologies	8.2
The Vanguard Group	5.47
Engine Capital Management	5.28

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