Pharmaceuticals & Biotechnology

Source: Refinitiv

Market data	
EPIC/TKR	**STX**
Price (p)	**170**
12m High (p)	200
12m Low (p)	27
Shares (m)	117.0
Mkt Cap (£m)	199.1
EV (£m)	189.3
Free Float*	33%
Market	AIM

**As defined by AIM Rule 26*

Description

Shield Therapeutics is a commercial-stage pharmaceutical company delivering innovative specialty pharmaceuticals that address patients' unmet medical needs, with an initial focus on anaemia associated with renal and gastrointestinal disorders.

Company information

CEO	Carl Sterritt
CFO (Interim)	Tim Watts
Chairman	James Karis

+44 207 186 8500
www.shieldtherapeutics.com

Key shareholders

Directors	8.9%
W. Health	48.1%
MaRu AG	10.8%
R. Griffiths	7.8%
C. Schweiger	4.8%
USS	4.4%

Diary

7 Sep	Interim results
4Q'19	Accrufer partner
Apr'20	2019 Final results
Mid-2020	Accrufer launch

Analysts

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SHIELD THERAPEUTICS

FDA approval opens door to major US opportunity

Shield Therapeutics (STX) is a commercial-stage pharmaceutical company delivering specialty products that address patients' unmet medical needs, with an initial focus on treating iron deficiency (ID) with Feraccru®/Accrufer®. News that the FDA has approved this drug for a broad indication opens it up to a commercial market worth over $1bn. STX has been in discussions with a number of potential partners, but its hand has been strengthened by the regulatory de-risking of Accrufer. Its USP will be that oral Accrufer is as effective as intravenous iron. The market capitalisation equates to only 4.4x in-market sales.

- **Strategy:** STX's strategy is to out-license the commercial rights to its products to partners with marketing and distribution expertise in target markets. These deals allow STX to retain its intellectual property (IP) and to keep investing in its R&D pipeline, while benefiting from immediate and long-term value.

- **Accrufer approval:** A novel iron replacement therapy, Accrufer has been approved in the US for the broad indication of iron deficiency (ID) in adults. This paves the way for STX to conclude a commercial deal with one or more of the potential partners with whom STX has already been in discussion.

- **Valuation:** Removal of the regulatory risk for our risk-adjusted DCF model added £14m/12p per share to our group valuation to £208m/178p. The next valuation point will be when STX announces who its US commercial partner(s) is, and the terms of the licensing deal.

- **Risks:** All drug companies carry development risk. However, the risks with STX were limited because of Feraccru/Accrufer's simplicity and clinical profile. Given the FDA approval, the main risk is to sign up with the most appropriate commercial partner, and to execute on its global commercial strategy.

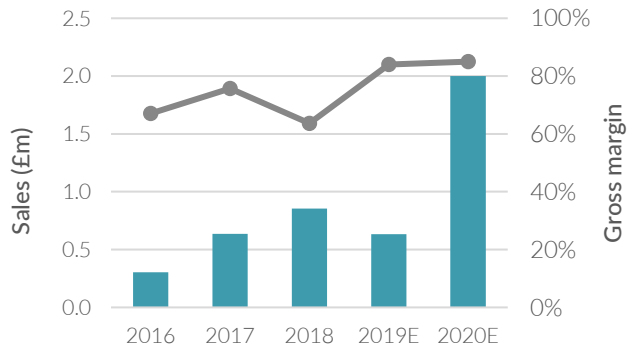
- **Investment summary:** The approval of Accrufer reinforces our view that STX is at an exciting juncture. It has delivered on all goals set at the time of its IPO in 2016. Feraccru/Accrufer has been validated by regulatory approval in both the EU and the US, and the commercial deal in Europe looks set to be repeated in the US. Announcement of its commercial partner, together with the terms of any deal, represent the next, short-term, valuation inflection point.

Financial summary and valuation

Year-end Dec (£m)	2016	2017	2018E	2019E	2020E
Gross revenues	**0.34**	**0.64**	**11.88**	**2.83**	**2.00**
Sales	0.30	0.64	0.86	0.63	2.00
R&D	-2.03	-4.71	-4.30	-4.73	-2.51
Other income	0.04	0.00	11.03	2.20	0.00
EBITDA	-10.58	-18.48	-2.81	-7.31	-7.47
Underlying EBIT	-10.76	-18.90	-3.26	-7.76	-7.92
Reported EBIT	-12.46	-20.95	-5.17	-9.67	-9.82
Underlying PBT	-10.71	-18.91	-3.25	-7.75	-7.94
Statutory PBT	-15.60	-20.99	-5.15	-9.65	-9.85
Underlying EPS (p)	-10.01	-15.58	0.09	-5.48	-6.46
Statutory EPS (p)	-14.84	-17.43	-1.54	-7.86	-8.03
Net (debt)/cash	20.98	13.30	9.78	6.02	0.83

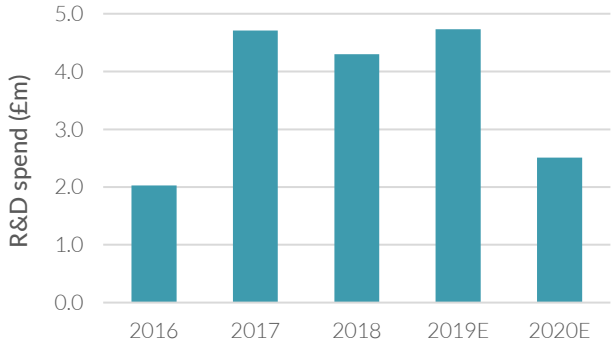
Source: Hardman & Co Life Sciences Research

Sales & gross margin



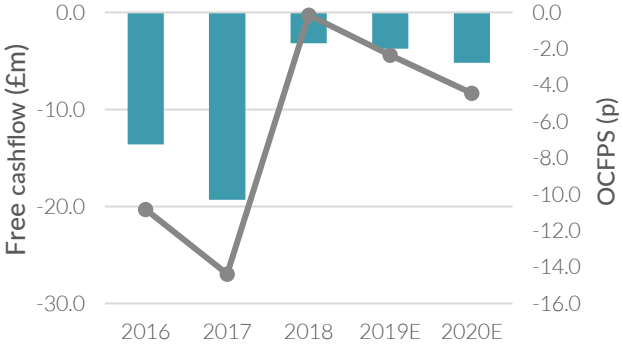
- Sales (the bars in the chart to the left) are expected to be driven entirely by Feraccru royalties from 2019
- Drop in 2019 sales reflects the transition from direct selling by STX to royalties from Norgine in 4Q'18
- Accelerated growth expected in 2020 due to launches in additional European countries and the US
- Gross margin (the line in the chart to the left) is stable in 2019/2020: COGS remain at ca.15%, but are likely to reduce once Accrufer is launched in the US

R&D investment



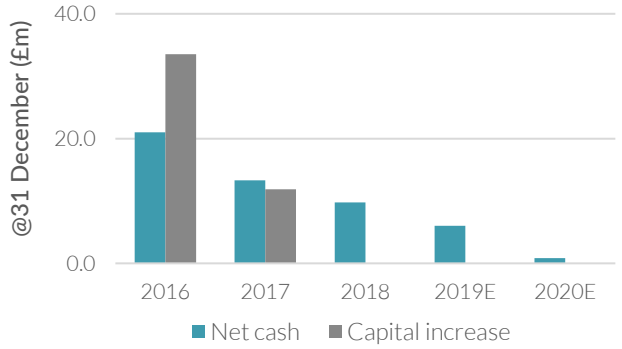
- R&D spend expected to increase in 2019 with the initiation of the large Feraccru Phase III paediatric study and to remain between £2m and £3m in 2020
- Spend in 2017 reflected investment in the AEGIS-CKD trial and in 2018 included AEGIS-H2H
- Future R&D investment timing is flexible on available resources, but could include progression of the phosphate assets or development towards a once-a-day dose of Feraccru

Free cashflow



- The company is forecast to remain cashflow negative until substantial royalties are received from Feraccru/Accrufer sales across Europe and the US
- 2018 was affected by the greater-than-anticipated expense of a re-analysis of the AEGIS-CKD trial in February and March

Net cash/(debt) & capital increases



- At IPO in 2016, STX raised £32.5m gross (£30.1m net); in fiscal 2017, cash resources were boosted by a Placing of new Ordinary shares to raise £12.5m gross (£11.9m net)
- The commercial deal with Norgine significantly boosted STX's cash position towards the end of fiscal 2018, with the £11.0m upfront payment leaving cash on 31 December 2018 at £9.8m
- Given the scheduled paediatric study, STX will require more funds in the future, which could come from one, or a combination, of equity, debt or licensing/distribution deals

Source: Company data; Hardman & Co Life Sciences Research

Opening the US market

Feraccru/Accrufer offers an alternative to current iron replacement therapies which are difficult to tolerate (oral) or inconvenient to use (I/V)

Iron is ubiquitous in the body and is particularly important in its role in the synthesis of haemoglobin (Hb), which transports oxygen in red blood cells. Iron deficiency (ID) is a significant global health problem, with a prevalence of 4%-12% in adults, representing a large opportunity that should not be underestimated. ID is treated through iron replacement therapy. In minor cases, relatively cheap oral products are used. However, in more severe cases, which require urgent elevation of circulating iron, it is administered intravenously (IV). However, this is inconvenient and expensive, and must be administered in a hospital/specialist clinic setting due to the risk of iron overload and the remote possibility of causing life-threatening allergic reactions. Feraccru/Accrufer sits conveniently between these two product groups, with oral administration offering the greater convenience, coupled with a salt formulation that has been shown in trials to be as effective as IV administration. It also has a better tolerability profile compared with all existing opal and IV products. Regulatory approval in the US has de-risked the drug in a market currently valued in excess of $1bn (see page 4).

Limitation of existing iron replacement therapies

Oral iron supplements	IV replacement therapy
Poor tolerability in the gut	Risk of iron overload
Less efficient absorption	Risk of allergic reaction
Slow efficacy	Hospital/specialist clinic administration
Poor compliance	Expensive

Source: Hardman & Co Life Sciences Research

NDA timetable

Known drug, routinely used and on the market in Europe suggested a positive FDA outcome…

…but it is always dangerous to second guess the FDA

Feraccru – now known as Accrufer in the US – was filed with the FDA for approval in September 2018, and was given a Prescription Drug User Fee Act (PDUFA) date of 27 July 2019, by which time the FDA was required to provide a response. Meanwhile, STX published positive outcomes from the AEGIS-H2H Phase III trial comparing Feraccru (ferric maltol) with the leading intravenous iron replacement therapy, Injectafer (ferric carboxymaltose, Daiichi Sankyo), where Feraccru was shown to be non-inferior to Injectafer. This all suggested that the outcome was likely to be positive, but it is always dangerous to second guess the FDA. The FDA came through with the formal approval on 25 July.

NDA timetable

Date	Event
27 Sep 2018	Submission of NDA for Accrufer to the FDA
1 Oct 2018	FDA acceptance of the Accrufer submission
13 Dec 2018	PDUFA date set to 27 July
4 Mar 2019	Positive results in AEGIS-H2H study
25 Jul 2019	FDA approval

Source: Hardman & Co Life Sciences Research

In its regular monthly update about upcoming PDUFA meetings in July, Washington Analysis Group stated:

> *We expect the FDA to approve Shield Therapeutics (LSE.STX) oral product Ferracru® for treatment of iron deficiency. In clinical trials, Ferracru has been shown to be non-inferior to Daiichi Sankyo's (4568.T) American Regent subsidiary's Injectafer®. The only possible hang up with smaller companies is the manufacturing end of things but the fact that it has been on the market in Europe probably diminishes that risk.*

Accrufer has been approved for the broad indication of ID in adults

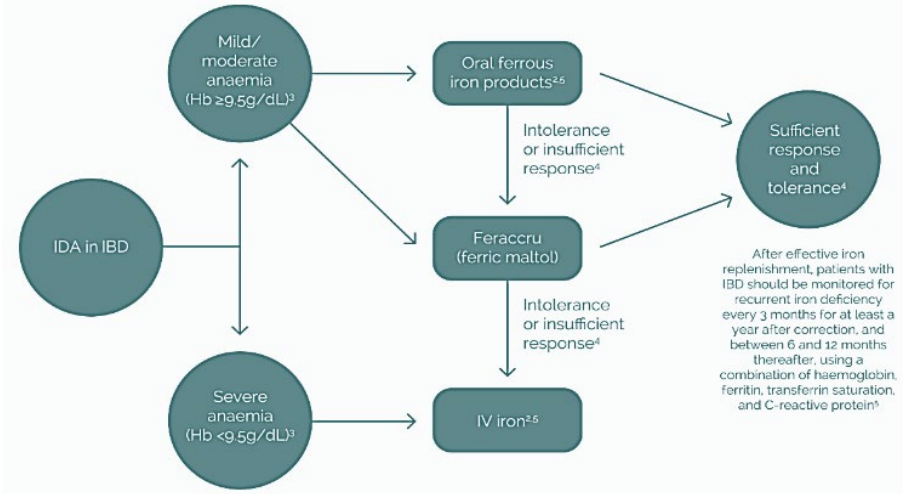
There was a possibility that the FDA might approve Accrufer for ID only associated with anaemia. However, Accrufer was actually approved for the broad indication of iron deficiency in adults.

Positioning of Accrufer

Feraccru/Accrufer sits nicely between existing oral therapies and IV administration

The approval of Accrufer will give US clinicians a clear alternative for patients that are intolerant to oral treatments and in need of long-term treatment and for those that need an urgent acute boost of iron, but avoiding IV administration, which is inconvenient, unpleasant and needs to be administered in a specialist setting. The following graphic shows the typical treatment pathway and positioning of Accrufer.

Feraccru/Accrufer treatment pathway for ID



Source: Shield Therapeutics

Commercial execution

The corporate strategy is to out-license the commercial rights to its drugs to partners with marketing and distribution expertise in target markets, including the US. Such agreements allow STX to retain its intellectual property (IP) and to continue to invest in its R&D pipeline, while benefiting from immediate and long-term value.

STX prudently waited for Accrufer to be regulatory de-risked before signing a commercial partner…

…which should allow it to obtain better terms

Together with its advisors, STX has been in discussions with a number of potential commercial partners in the US. While it could have done a deal prior to the FDA announcement, it would likely have been on less good terms than can be achieved today, with the product de-risked by the regulator. STX holds the strong hand. It is also possible that STX will sign with more than one partner, depending on geographical coverage.

Perception of whether STX has signed with the 'right' partner(s) for the US market, when it is announced, will represent the next significant value inflection point, in our view.

Commercial opportunity

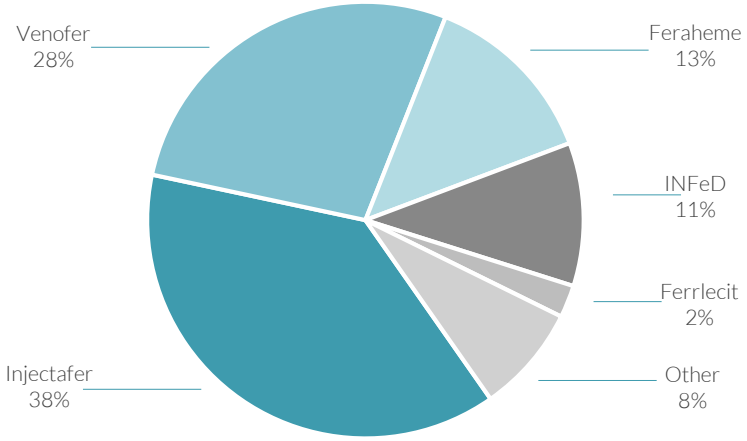
Harman & Co estimates the US IV iron replacement market at $1.02bn in 2018…

…and growth of 9%

A full assessment of the global commercial opportunity – $3.4bn gross/$1.5bn in 2018 – was provided in our initiation report on STX published on 13 May 2019[1]. Of this, about two-thirds is derived from the US. Our database of ex-factory sales from the leading players indicates that the US market for I/V iron replacement products was valued at $1.02bn in 2018, a figure supported by several corporate documents (AMAG Pharmaceuticals, Daiici-Sankyo, Vifor Pharmaceuticals), and growth of 9%. The benefits of Accrufer leave it well placed to take a substantial share of the US market over time.

[1] https://www.hardmanandco.com/wp-content/uploads/2019/05/Shield-Therapeutics-STX-Hardman-Initiation-note-13-May-19.pdf

US IV iron replacement market – 2018



Source: Hardman & Co Life Sciences Research

Next steps

Timing of US launch is dependent on signing the commercial partner…

…and the amount of partner livery that needs to be incorporated

There are a few steps that need to be completed before Accrufer is formally launched on to the US market. First, STX needs to conclude a licensing deal with a distribution partner(s). Although discussions have been underway for some time, STX preferred to wait until the product had been regulatory de-risked before closing the deal, enhancing the chances of obtaining improved terms. We believe that the company will try to obtain a similar deal to that signed with Norgine, whereby STX controls all the manufacturing and supply arrangements. Clearly, STX cannot complete manufacturing of the end product until this deal is signed, because the packaging will need to be in the partner's livery. This may also apply to the final product, with the capsule embossed with a company logo and/or 'Accrufer' for identification purposes. Therefore, we would expect launch to take place around the middle of 2020.

Accrufer – next steps

Date	Event
25 Jul 2019	FDA approval
4Q'19	Conclude deal with US distribution partner(s)
1Q'20	Complete manufacturing in partner's livery
Mid-2020	Formal US launch

Source: Hardman & Co Life Sciences Research

Valuation

Regulatory de-risking in the US added £14m to our valuation, or 12p per share…

…the next valuation inflection point will be signing the commercial partner

A detailed assessment of valuation was provided in our initiation report[1], which generated a risk-adjusted value for STX of £194m, or 166p per share. Removal of the US regulatory risk-adjustment has added £14m, or 12p per share to this valuation, bringing it to 178p per share. This is taking a conservative view about the launch in the US and does not allow for any up-front payments on signing up with the US distribution partner(s), which could be substantial for a de-risked product.

Summary valuation

Shield Therapeutics	£m
Feraccru royalty stream – risk adjusted	197.8
PT20 royalty stream – risk adjusted	0.1
Net cash/(debt)	9.8
Market capitalisation	207.7
Shares in issue (m)	117.0
Valuation/share (p)	178

Source: Hardman & Co Life Sciences Research

Financial summary

- There have not been any changes to forecasts since publication of the latest complete financial statements[1].
- Given our conservative approach to the timing of the US launch of Accrufer, there is scope to increase forecasts when the distribution partner is announced, together with the terms of any deal.

Financial summary					
Year-end Dec (£m)	2016	2017	2018	2019E	2020E
GBP:EUR	1.18	1.14	1.14	1.14	1.14
GBP:USD	1.35	1.29	1.31	1.31	1.31
Profit & Loss					
Gross revenues	0.34	0.64	11.88	2.83	2.00
Product sales	0.30	0.64	0.86	0.63	2.00
COGS	-0.10	-0.16	-0.31	-0.40	-1.20
Gross profit	0.20	0.48	0.55	0.23	0.80
Gross margin	67.1%	75.7%	63.7%	84.0%	85.0%
SG&A (underlying)	-8.69	-14.12	-9.52	-4.44	-5.20
Share-based payments	-0.29	-0.56	-1.01	-1.01	-1.01
R&D	-2.03	-4.71	-4.30	-4.73	-2.51
Other income	0.04	0.00	11.03	2.20	0.00
EBITDA	-10.58	-18.48	-2.81	-7.31	-7.47
Underlying EBIT	**-10.76**	**-18.90**	**-3.26**	**-7.76**	**-7.92**
Net interest	0.04	0.00	0.02	0.02	-0.03
Underlying PBT	-10.71	-18.91	-3.25	-7.75	-7.94
Tax payable/credit	0.59	1.41	3.36	0.45	0.45
Underlying net income	-10.13	-17.50	0.11	-6.42	-7.57
Weighted av. shares (m)	101.16	112.36	116.43	117.09	117.09
Underlying EPS (p)	**-10.01**	**-15.58**	**0.09**	**-5.48**	**-6.46**
Fully diluted EPS (p)	-10.01	-15.58	0.09	-5.48	-6.45
Balance sheet (@31 Dec)					
Share capital	1.62	1.75	1.75	1.76	1.76
Reserves	46.77	39.46	38.68	29.47	20.08
Provisions	0.00	0.26	0.00	0.00	0.00
Debt	0.00	0.00	0.00	0.00	0.00
less: Cash	20.98	13.30	9.78	6.02	0.83
Invested capital	**27.42**	**28.17**	**30.65**	**25.21**	**21.00**
Net cash/debt	20.98	13.30	9.78	6.02	0.83
Cashflow					
Underlying EBIT	-10.76	-18.90	-3.26	-7.76	-7.92
Non-cash items	0.47	0.43	1.46	1.46	1.46
Change in working capital	-0.95	-0.29	-0.40	0.03	-0.18
Tax & interest	0.00	1.99	1.87	3.37	1.30
Operational cashflow	**-10.95**	**-18.14**	**-2.05**	**-6.13**	**-6.49**
Capital expenditure	-0.01	0.00	0.00	0.00	0.00
Free cashflow	-13.60	-19.33	-3.17	-3.76	-5.19
Acquisitions	-0.53	-0.24	-0.35	0.00	0.00
Capital increase	33.51	11.88	0.00	0.00	0.00
Change in net debt	**20.26**	**-7.68**	**-3.52**	**-3.76**	**-5.19**
OCFPS (p)	-10.82	-14.38	-0.15	-2.35	-4.43

Source: Hardman & Co Life Sciences Research

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