EDISON

MetrioPharm

Initiation of coverage

Creating an ideal target product profile

Pharma & biotech

MetrioPharm is a private European clinical drug development company. Its first drug, the reactive oxygen species (ROS) scavenger MP1032, has anti-inflammatory activity and has completed a Phase II for psoriasis with potential in other diseases. Our risk-adjusted valuation of MetrioPharm across all indications is CHF253m based on MP1032.

Year end	Revenue (CHFm)	PBT* (CHFm)	EPS* (c)	DPS (c)	P/E (x)	Yield (%)
12/17	0.0	(5.17)	(52.0)	N/A	N/A	N/A
12/18	0.0	(6.88)	(57.6)	N/A	N/A	N/A
12/19e	0.0	(6.77)	(56.7)	N/A	N/A	N/A
12/20e	0.0	(6.43)	(53.9)	N/A	N/A	N/A

Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

MP1032 demonstrates dose response in Phase II

Data from the Phase II study (CT-04) testing MP1032 in patients with psoriasis (PASI scores between 10 and 20) have been announced. 155 patients were enrolled and randomised to two dose groups (150mg or 300mg twice a day) and a placebo arm. The trial demonstrated dose-dependent improvements in PASI 50, 70 and 75, although improvements were not statistically significant. In a pre-specified subgroup of patients with PASI 10–15, a statistically significant greater PASI improvement from baseline was observed for MP1032 (300 mg vs placebo) at 12 weeks. Impressively and somewhat unusually, patients experienced a decrease in adverse events at increasing doses of MP1032 with a statistically significant improvement in adverse events at 300mg (31.3% incidence of adverse events vs 60.0% in placebo group). Overall there were no drug-related adverse events. These results support the idea of MP1032 as a daily oral product for patients with early-stage psoriasis, but confirmatory studies are needed to substantiate its profile.

Psoriasis: A stalking horse for age-related diseases

There are bigger inflammatory indications than MP1032's first indication, psoriasis, but the moderate segment is large enough to be attractive to a potential partner. In psoriasis, a new molecule that demonstrates disease-modifying clinical efficacy can imply similar activity in other chronic inflammatory conditions. Positive safety data from the Phase II study give a promising base for the development of future indications. At this time, MetrioPharm remains open about which indications it will pursue and the strategic focus will likely crystallise as partnering/out-licensing discussions progress. Our pricing assumptions are based on its current profile, which we expect would give a potential partner enough information to make a partnering decision, initially for psoriasis and later for other indications.

Valuation: CHF253m or CHF2.06 per share

Our valuation is derived from a risk-adjusted net present value (rNPV) model based foremost on the most advanced indication: moderate psoriasis. We also include other indications that are at an earlier stage for which costs after Phase IIa would largely be met by a partner. Our rNPV valuation is CHF253m or CHF2.06 per share using conservative assumptions of 10% market share peak sales in psoriasis of $2.8bn and we have tested these further in a sensitivity analysis.

24 February 2020

Last round post-money valuation **CHF148m**

	CHF1.01/US$
Cash (CHFm) at 31 December 2018	7.6
Net debt (CHFm) at 31 December 2018	3.7
Amount raised since inception (CHFm)	63
Basic/diluted shares in issue	123m/138m
Free float	N/A

Business description

MetrioPharm is a mid-stage pharmaceutical development company focused on therapies for immune-mediated inflammatory diseases. The incidence of many of these diseases increases with age. MetrioPharm's lead drug, MP1032, has completed a Phase II in psoriasis.

Next events

Out-licence/partnership for MP1032	Ongoing

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MetrioPharm is a research client of Edison Investment Research Limited

Investment summary

Company description

MetrioPharm is a private Swiss pharmaceutical development company headquartered in Zurich, Switzerland, with R&D operations in Berlin, Germany. The company is developing ROS scavengers that have anti-inflammatory activity in autoimmune diseases that increase in incidence with age. MetrioPharm's lead drug is MP1032, which appears safe and has completed Phase II trials in psoriasis. Psoriasis is not the largest potential indication for MP1032 in the moderate anti-inflammatory segment but is still a major market opportunity. Data presented to date have provided an early indication of the compound's disease-modifying activity in psoriasis. Now that Phase II data have read out for MP1032, we expect partnering discussions to accelerate, enabling more clarity on next steps and target indications.

Valuation: Undemanding for mid-stage clinical biotech

Our valuation is derived from an rNPV model based largely on the most advanced indication – moderate psoriasis. We also include the indications of rheumatoid arthritis (RA), osteoarthritis (OA) and chronic obstructive pulmonary disease (COPD) that are at an earlier stage, whose risk is higher and where we expect the clinical and other costs after proof of principle to be met largely by a partner after the first transaction. Our rNPV valuation is CHF253m or CHF2.06 per share and is based on our conservative assumptions of pricing, uptake and patient segments, although we have flexed these assumptions in a series of sensitivity analyses. The December 2018 funding round has enabled the completion of the Phase II clinical trial in moderate psoriasis. It has also enabled preparations to begin for a proof-of-concept clinical study in OA and additional work in COPD. Now that the Phase II psoriasis study has read out, progress since the last funding round is expected to be recognised in future transactions. These transactions could be a regional or global licensing deal, a further private financing, an IPO, or any combination thereof.

Financials: Not virtual, but efficient

MetrioPharm is a mid-stage biotechnology company and, for now, losses from product development are to be expected before revenue generation. That said, while not a virtual company, costs are contained by keeping only the commercially sensitive tasks in-house. In December 2018, MetrioPharm completed its CHF20m series D financing round, which we estimate gives it a cash runway through 2020, before which we expect the value generated since the last financing round to have been recognised in a licensing transaction or additional institutional financing. Operational expenses comprised mainly R&D and administration expenses in FY18, and resulted in a net loss of CHF6.9m. This had increased from CHF5.2m in FY17 due to initiating and carrying out the Phase II study in psoriasis and other safety studies.

Sensitivities: Tending to concentrate on MP1032

MetrioPharm has a platform of ROS scavenger molecules as anti-inflammatory drugs and, while other molecules from the MP1000 series exist, their development is not included in our assessment. The clinical success of MP1032 will have a dramatic effect on the fortunes of MetrioPharm. As with most biotech companies, MetrioPharm is susceptible to clinical development delays or failures, regulatory risks, competitor successes, partnering setbacks, and financing and commercial risks. The key short-term sensitivities for the company relate to crystallising the value from its early-stage pipeline, notably MP1032. Additionally, its ability to secure additional capital through either partnerships/out-licensing or a capital raise (through equity or debt) will be critical to

its future prospects. MetrioPharm has not paid a dividend or generated significant product revenues to date.

Developing drugs for age-related inflammation

MetrioPharm is a private Swiss pharmaceutical development company that was established in 2007. It has discovered, patented and developed MP1032 and other molecules in the MP1000 series. Its headquarters are in Switzerland and R&D operations in Berlin, and it has raised CHF63m to date. It has a small footprint of staff in both locations, but should not be considered a virtual company because it retains sensitive and valuable tasks rather than outsourcing them.

From 2007 MetrioPharm was listed on the First Quotation Board of the Open Market of the Frankfurt Stock Exchange until the market for early-stage German, Austrian or Swiss tech and biotech companies was closed in 2012 by the Frankfurt Stock Exchange. Subsequently, MetrioPharm had to delist in 2012.

The incidence of many inflammatory diseases is age-related. MetrioPharm was founded to develop drugs that treat inflammatory diseases where ROS is a causative component. MetrioPharm's drug candidates are being developed to be used as daily therapies for patients with chronic but early-stage inflammatory conditions. The company believes its lead candidate, MP1032, could have use beyond psoriasis, in indications such as RA, OA and multiple sclerosis (MS), and aims to build a portfolio of 'conditions of ageing'. However, this age-related inflammation incidence in chronic indications associated with older patients does not preclude the use of ROS scavengers in younger patients or indications where inflammation is involved in the disease, such as psoriasis and MS.

The MP1000 ROS scavengers

MetrioPharm's first compound series is the MP1000 set of compounds, of which MP1032 is the lead. The MP1000 series removes ROS produced by the host's immune system that are a result of local oxidative stress in a raised pH environment (and thus inflammation). While inflammatory cells are generally and initially acidic, MetrioPharm notes that clusters of ROS are located within the cellular cytoplasm as transient pockets of increased pH (7.6–7.8). It is the pH shift within these areas in inflammatory sites that activates MP1032. According to the company, this shift is sufficient to activate MP1032's anti-oxidative biological effect. MetrioPharm has demonstrated this effect using localised chemiluminescence in inflamed tissues where the pH shift caused by intracellular ROS that aggregates during oxidative stress is sufficient to activate MP1032 in inflamed cells and tissues. The company believes that when ROS returns to physiological levels, the pH returns from elevated levels to neutral, and MP1032 returns to an inert status that does not interfere with ROS involved in physiological cell signalling.

In many inflammatory and autoimmune diseases, either the original cause of the inflammation is resolved without the inflammation being resolved, or the inflammatory process overreacts to the original stimulus; both scenarios can lead to excessive production and the release of ROS. The upstream effect of ROS results in a cascade of cytokines and chemokines, which drives the inflammation to a higher tissue-destructive level. Tissue damage can result in further release of ROS and in some cases the aetiology of the inflammatory process is unknown. The principal of ROS scavenging has been partially validated by an existing drug class, flavonoids, polyphenolic compounds that scavenge ROS and, as a result, have anti-inflammatory activity.[1] An existing flavonoid drug Radicava (edaravone injection) is a systemic ROS scavenger that has been approved in the US and Japan for the treatment of amyotrophic lateral sclerosis.

[1] www.ncbi.nlm.nih.gov/pmc/articles/PMC3621636/

MP1032 has a number of characteristics that are advantageous in a drug candidate for early and chronic dosing. Its profile appears to be:

- small, orally bioavailable with once- or twice-daily dosing;
- safe and well tolerated with no significant difference in adverse effects between MP1032 and placebo at doses up to 600mg, with a potentially decreased incidence of adverse effects in patients receiving MP1032 (at 300mg based on Phase II data);
- stable and bioavailable in anhydrous crystalline sodium salt forms; and
- activated only in the presence of inflammation (high pH environment).

Unappreciated patent strength and other positive events

MP1032 is one of three anhydrous crystalline forms of sodium salt of the widely available chemiluminescent reagent luminol; MetrioPharm holds composition of matter patents on all three anhydrous crystalline forms. Luminol is used in forensic science to detect blood, but is not a good drug candidate because it is unstable at room temperature in aqueous solution and not bioavailable. MetrioPharm has patented MP1032 with composition of matter claims until 2031, and for use in autoimmune and inflammatory disorders with a supplementary protection certificate until at least 2036, including data exclusivity extensions. MetrioPharm has patent protection over what the company believes are the only anhydrous crystalline forms.

MP1032 in psoriasis

Targeting early in the inflammatory cascade

MP1032 is a small-molecule, orally bioavailable immune-modulatory compound whose ROS scavenging effects give it anti-inflammatory properties. The base compound is luminol ($C_8H_7N_3O_2$), a chemiluminescent aminophthalhydrazide that glows when mixed with an appropriate oxidising agent. Luminol is highly unstable as a solid form at room temperature and is relatively stable in most polar organic solvents, but not water. Luminol (in base and sodium salt forms, but not anhydrous crystalline forms) is used by forensic scientists to detect blood, but because of its instability and lack of water solubility, it is unsuitable as a drug. MetrioPharm has investigated and patented the three anhydrous crystalline sodium salts of luminol and chosen the most stable and water-soluble as the lead development candidate MP1032. While there are no more valid composition of matter patents on luminol or its sodium salt, the discovery of the unexpected pharmaceutical properties of the anhydrous crystalline sodium salts provide MetrioPharm with a patent life until 2031, with additional marketing exclusivity extensions until at least 2036. Our valuation model runs until 2036.

In inflammatory disorders, a natural protective immune response to a non-self-challenge is for activated leukocytes, neutrophils and other cells to release ROS. These ROS damage tissues at the molecular level,[2] and promote the release of pro-inflammatory cytokines in a cascade effect[3] which, in the normal course of events, would eliminate the challenging pathogen, then subside if there is no further challenge. However, this inflammatory cascade can accelerate out of control, resulting in chronic inflammation (even without the presence of the original cause).

The treatment landscape in psoriasis

Many disease-modifying anti-inflammatory biological drugs, such as Remicade (infliximab) and Humira (adalimumab) in RA, target one of the main cytokines controlling inflammation – tumour

[2] www.ncbi.nlm.nih.gov/pubmed/15134560

[3] www.ncbi.nlm.nih.gov/pubmed/23991888

necrosis factor alpha (TNFα) – or in the case of asthma, another monoclonal antibody that targets interleukin-5 (mepolizumab, Nucala). In both cases, the aim of the monoclonal antibody is to reduce inflammation by either removing the cytokine produced as a result of the disease or preventing the target molecules from binding. Both effects are associated with disease-modifying rather than symptomatic activity. There are now many biological and small molecule drugs that are highly potent anti-inflammatories to treat moderate-to-severe inflammatory conditions. These drugs are so potent that immune surveillance can be curtailed to such an extent that cancers and infections such as tuberculosis can occur. Compared to the biologics and small molecules used to treat moderate-to-severe psoriasis, the profile of MP1032 appears very safe in the clinical and non-clinical studies conducted to date. In the first Phase IIa clinical trial, there was no difference between adverse events in patients receiving MP1032 and placebo. In the recent Phase II study, MP1032 demonstrated a statistically significant improvement in safety over placebo at the highest dose of 300mg (although more data are required for longer-term and chronic administration).

The most comparable drug to MP1032 for psoriasis is Amgen's Otezla (apremilast) because it is oral and recently launched so, in marketing terms, it has prepared the way for MP1032. Otezla is indicated for moderate-to-severe psoriasis and was first approved in 2014 with 2018 sales of $1.6bn despite its notable safety issues of suicidal ideation. MetrioPharm believes that with comparable efficacy to Otezla, but a superior safety profile and the potential for an aggressive pricing strategy, MP1032 offers it and its partners significant revenue potential.

The safety database of MP1032 is summarised in Exhibit 3. MP1032 acts much earlier in the inflammatory cascade than other interventions where only transient activity appears to be required for a lasting disease-modifying effect. At the doses tested to date, MP1032 appears to be a less potent anti-inflammatory than the anti-TNFs[4] such as Humira. Humira has demonstrated a significant difference over placebo in PASI 75 scores in moderate-to-severe psoriasis patients.[4] MetrioPharm has positioned MP1032 away from this most potent and competitive end of the inflammatory market and into the moderate segment, as defined by the European Medicines Agency (EMA). The company believes it can be an 'effective and safe' alternative treatment option in this patient population. In addition, a safe and efficacious drug such as MP1032 could be used across the disease segments before other oral systemic drugs and potentially in combination with topical and other agents.

With MetrioPharm's lead compound, the choice of first indication is very important. Psoriasis is a dermatological indication that affects many patients and is frequently chronic, which makes it commercially attractive. The moderate end of the therapy spectrum in psoriasis can include over-the-counter creams and ointments used in combination with low-dose topical steroids or the topical retinoid tazarotene (a vitamin A derivative). However, this fragmented moderate psoriasis market, with a large number of generic alternatives, remains commercially attractive to pharmaceutical and specialty pharmaceutical companies, because dermatologists will not have seen much promotional material for new products in quite some time, and interest in a new convenient oral drug entrant will be very high.

An attractive drug profile

MetrioPharm has carefully optimised the safety, discovery and patenting of the anhydrous sodium salt forms of luminol that have resulted in the stable and soluble form known as MP1032. In addition, there are a number of other characteristics being exploited in MP1032's clinical development. Once- or twice-daily dosing of MP1032 in Phase I in man results in a peak serum concentration between 15 and 30 minutes and a terminal half-life of one to around five hours depending on the dosage and frequency. Upon ingestion and after first pass elimination, the remaining MP1032 is rapidly distributed throughout the body. The Phase IIa and II clinical studies

[4] www.ncbi.nlm.nih.gov/pmc/articles/PMC4733136/

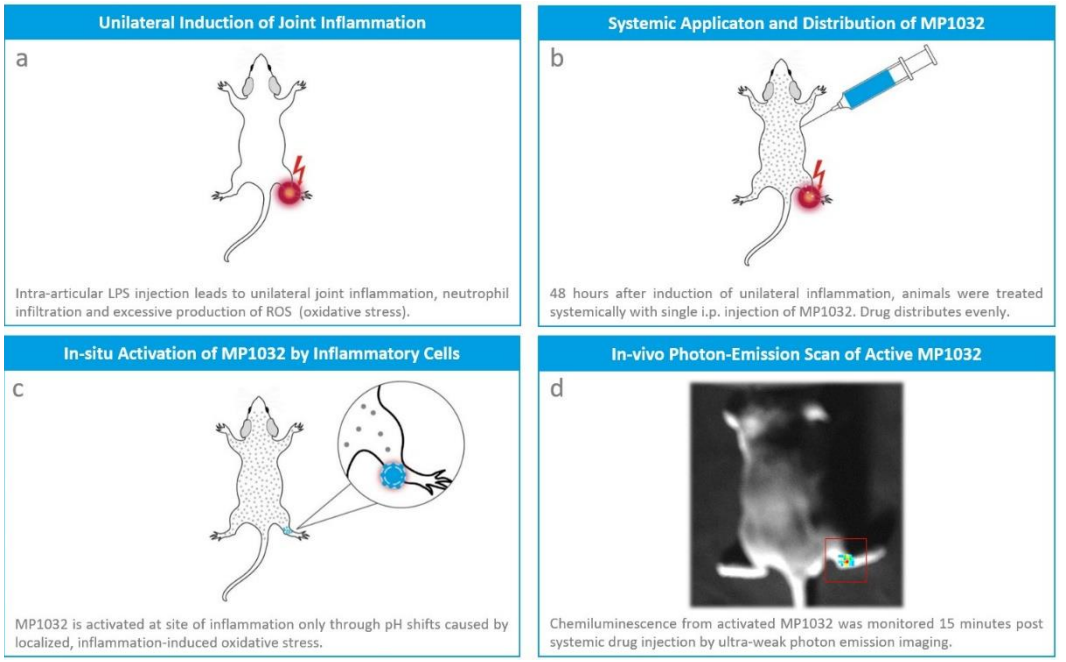
have used twice-daily dosing of MP1032, but this was to capture more safety data. Extrapolations from MetrioPharm's Phase I clinical studies and MP1032's mechanism of action suggest that once-daily dosing should be as effective as twice-daily dosing in patients. Once-daily dosing would be more competitive than Otezla's twice-daily dosing regimen. In addition, the human data so far available for MP1032 indicate a safety profile that is significantly superior to Otezla's (although Otezla's safety database now probably contains millions of patients), which could position MP1032 in earlier lines of psoriasis therapy and other inflammatory conditions (clinical data needed to support this).

The maximum-tolerated dose of MP1032 in man has not been achieved, with dosing tested up to 600mg (per day) in Phase I. A short half-life can be a double-edged sword in drug development because although it means a drug has no depot or plasma-binding effects that might result in high exposure and off-target effects, higher doses or more frequent administration may be required if additional drug delivery formulations are not employed. The Phase I single and multiple dosing studies have shown this to be academic for MP1032. Despite its shorter systemic half-life, administration of MP1032 has resulted in long-lasting biological anti-inflammatory effects in all chronic disease models studied.

Due to MP1032s small size and good water solubility, the compound is widely distributed throughout the body (in animal studies). The company recently completed an in-silico analysis of all its animal and human PK data, which concluded that MP1032 is potentially 100% available in the gastrointestinal (GI) tract for uptake. Most of MP1032's benign safety attributes appear to be due to the drug only being active when it encounters ROS in an elevated (shifted at the sub-cytoplasmic level, as described above) pH environment. We believe this almost certainly limits any off-target effects. MP1032's wide biodistribution, but activity only in proximity to inflammation, is illustrated by Exhibit 1. The start of the inflammatory process is an acidic, or a low pH, environment partly due to the production of lactic acid by either the host or infecting microorganisms. MetrioPharm's data and research suggest that it is the subsequent shift to a higher pH within the cytoplasm of cells in an inflammatory environment that triggers the activation of MP1032. In this higher pH environment, the level of deprotonation in diphenolic anionic species such as MP1032 in solution shifts to a higher level of activation, enabling ROS scavenging. MetrioPharm believes that once localised inflammation returns to physiologically normal levels, MP1032 returns to its inert form, subsequently ceases any activity and is then excreted without any active metabolites.

Exhibit 1 shows that when injected systemically (distal to the intended site of action) into a mouse with an inflamed lower limb joint, MP1032 is not only widely distributed but is only activated within the inflamed joint. Perhaps the most important property of MP1032 in inflammatory diseases derives from ROS generation being at the start of the inflammatory process. This means the subsequent inflammatory cascade is likely quenched at its earliest stages and takes time to re-start.

Exhibit 1: Biodistribution and activation of MP1032 only at an activated site in a mouse model of inflammation



Source: MetrioPharm

The short half-life of MP1032 provides this short sharp shock to the inflammatory cascade. The after effects continue for about 36 to 72 hours then, if the drug has not been re-dosed, the inflammatory process is presumed to restart. As MP1032 is believed to be activated in a higher pH environment where it can quench the ROS associated with the inflammatory cascade, no detrimental or off-target effects have been observed and MP1032 does not appear to scavenge ROS produced as part of the typical metabolism at lower levels of a normal physiological pH. The company believes a partial antagonist effect in ROS differentiates MP1032 from earlier ROS scavenging compounds, and reduces or eliminates the potential for adverse events.

MP1032 clinical development in psoriasis

The lead indication for MP1032 is moderate psoriasis, which may initially be the lower PASI scores in the moderate labelled indication. However, over time, by virtue of its safety profile, we expect penetration into the mild-to-moderate and perhaps later lines of therapy in combination. Psoriasis is an inflammatory skin condition that results in red, flaky, crusty patches of skin covered with silvery scales. These patches appear initially on the elbows, knees and lower back, but in later and more advance disease can appear anywhere on the body. Most patients (78%) experience moderate psoriasis[5] but, whatever the extent of lesions, they can be itchy and sore, may result in embarrassment and in some cases, social exclusion. Psoriasis is usually a chronic disease, but seems to cycle between periods where patients have no observable lesions and periods where symptoms peak. Although the exact mechanism and inflammatory triggers are unknown in psoriasis, there is helper T-cell (T_h17) and interleukin-17 (IL-17) involvement.[6] We have used literature sources for the diagnosed, treated and lapsed psoriasis patient numbers.[7]

5 www.ncbi.nlm.nih.gov/pubmed/23925466

6 www.ncbi.nlm.nih.gov/pmc/articles/PMC4389010/

7 www.ncbi.nlm.nih.gov/pmc/articles/PMC5336424/pdf/13555_2016_Article_153.pdf

Existing competition in moderate psoriasis

At the moderate end of the psoriasis spectrum, there is a large number of treatments that includes symptomatic creams and ointments, coal tar, ultraviolet (UV) light and low-dose topical corticosteroids or vitamin D analogues. From MetrioPharm's perspective, most of these treatment options are generic and available over the counter in many markets, so they have little impact. A newly launched oral prescription therapy for moderate psoriasis is likely to have a large presence on the market among physicians treating psoriasis patients. There is a need for a relatively potent, tolerable and easy to administer (oral) medication early in the disease process that follows local topical therapy, but comes before the less tolerable oral medications (such as Otezla). Exhibit 2 illustrates some of MP1032's possible competitors in moderate psoriasis.

Exhibit 2: Marketed oral competitors to MP1032 in moderate psoriasis

Compound	Dosage form	Annualised US cost ($)	Comment
Psoralen (methoxsalen)	Oral tablet	3,792	An oral therapy used in combination with long-wave UV light
Methotrexate	Oral tablet	5,000	Liver function monitoring required, resulting in intermittent therapy
Cyclosporin	Oral capsule	5,019	Associated with kidney damage and hypertension
Acitretin	Oral capsule	12,359	Black Box warnings for teratogenicity, liver function test required
Apremilast	Oral tablet	23,114	Indicated for moderate-to-severe psoriasis, side effect profile includes suicide ideation and infections

Sources: NICE, British Association of Dermatologists, American Academy of Dermatology, Drug Benefit Trends, May 2005

At the moderate-to-severe end of the disease spectrum, promotional awareness has already been achieved by Celgene's launch of Otezla (apremilast). Otezla is an oral product for moderate-to-severe psoriasis that was acquired by Amgen in August 2019 for $13.4bn, and has prepared the market for another new oral therapy such as MP1032. In addition, many psoriasis patients are treated either by clinic-based dermatologists or primary care physicians who have a specialisation in dermatology and would not have had a new product to prescribe for milder psoriasis patients in many years. A safe, systemic treatment option such as MP1032 is likely to appeal to these physicians and their patients because it could be combined with topical drugs. MP1032 could first be utilised as a monotherapy, with later development combining it with other drugs to treat more severe versions of psoriasis. This expanded use would be subject to the successful completion of clinical and drug-drug interaction studies.

The cost of oral therapies in the moderate segment ranges from low-dose methotrexate or cyclosporine, which require liver function monitoring or liver biopsies, or renal function testing, respectively. This testing costs about $5,000 (CHF4,925) per year in the US, more than the direct drug costs. At the higher end of US costs is the non-biologic oral branded PDE4 drug Otezla, which costs $23,114 (CHF22,768) per year and is approved for moderate-to-severe psoriasis usually as a single agent. Outside the moderate psoriasis segment, although there may be some eventual use of MP1032 in patients in combination (explored in the Sensitivity section, below), it is unlikely to be used in the severe segment (12% of the market), where the extent and severity of the lesions needs a more potent and potentially toxic therapy from the biologic category. The archetypal biological drug for moderate-to-severe psoriasis is Humira (adalimumab), which has an annual cost of about $38,000 (CHF37,434) per year in the US.

Clinical trials

The accepted and standardised clinical endpoint for psoriasis studies is the Psoriasis Area and Severity Index (PASI), which is an objective measurement of the extent of the disease, on which clinicians can be trained to score patients consistently. An objective PASI score is useful in monitoring the progression of an individual patient and as an efficacy measure in clinical trials. To determine the PASI score, the body is divided into four sections, each of which is scored separately

on the percentage of the area covered by psoriatic lesions, then the severity, which is measured on a scale from one to four, taking into account redness, thickness and scaling. The resulting total PASI score can range from zero, which is no disease, to 72. PASI scores at baseline are used to recruit patients into a clinical study. Exhibit 3 includes the clinical characteristics of the completed Phase IIa and Phase II studies – with the PASI scores as inclusion criteria − of MP1032. A PASI score of 10 or under usually equates to mild psoriasis with less than 3% of the body's surface affected, with isolated patches on the limbs and scalp. The mild psoriasis definition is the same in the US and the EU. The EMA definition of moderate psoriasis equates to a PASI score of between 10 and 20 where between 3% and 10% of the body surface has patches that can extend to the arms, legs and torso. In clinical trials, the PASI score data can be amalgamated in each treatment arm to calculate the proportion of patients that achieve a certain percentage of improvement from baseline. Thus, the PASI-50, PASI-75 and PASI-90 scores are the percentages of patients who reach a 50%, 75% or 90% improvement in their PASI score compared to the score measured at baseline (start of the study). Patients who do not reach a PASI-50 score on treatment are usually considered as failures or non-responders. The EMA defines patients with severe psoriasis as having a PASI score of between 20 and 72, while in the US, severe psoriasis is usually defined as patients with a PASI score of between 40 and 72.

Exhibit 3: MP1032 clinical trial characteristics and safety database

	MP1032 clinical trial	
	Phase IIa	**Phase II**
Dose and frequency	100mg bid	150mg bid, 300mg bid
Screening period (weeks)	4	4
Treatment duration (weeks)	6	12
Follow-up (weeks)	4	4
PASI score at recruitment	>10 (10–40)	10–20
Placebo-controlled	Yes	Yes
Randomisation	1:1	1:1:1
Study start	May-16	Feb-18
Study end	Feb-17	Jun-19
Clinicaltrials.gov identifier	NCT02908347	NCT03706209

Clinical trial	**Number of patients treated with MP1032**
Phase I single ascending dose (up to 600mg)	12
Phase I multiple ascending dose	12
Phase IIa	23
Phase II	97
Total safety database to date	144

Source: Clinicaltrials.gov, MetrioPharm. Note: bid = twice daily dosing.

Clinical studies for other agents used to treat moderate psoriasis have been performed and topical coal tar, for example, achieved a statistically significant difference over placebo in the endpoint of total sign score of individual plaques, but not PASI.[8] Topical corticosteroids, either alone or in combination, improve PASI scores by between 40% and 70%[9] depending on the study, but are not recommended for chronic use due to safety concerns.

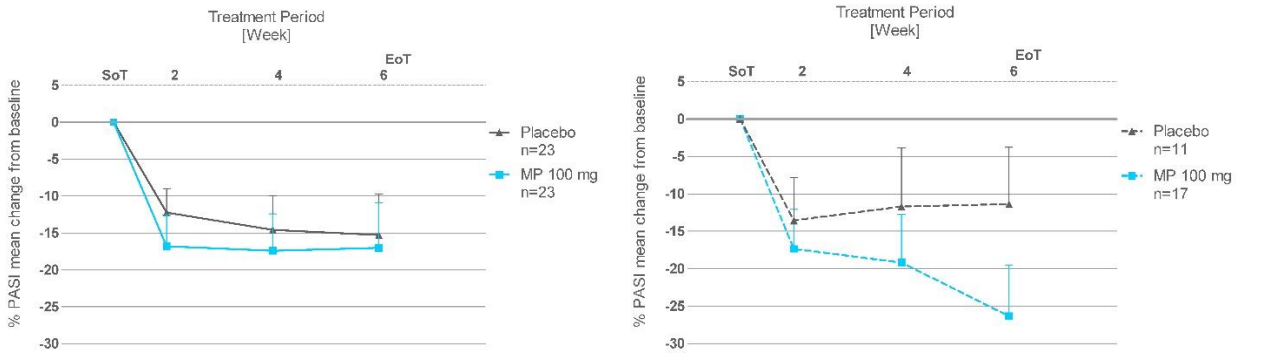
MetrioPharm completed the Phase IIa clinical study (CT-02) for MP1032 in moderate psoriasis patients in 2017. As Exhibit 3 shows, it was a two-arm study with patients randomised to receive either placebo or 100mg MP1032 twice daily for six weeks, with a further four weeks follow-up. The top-line data showed that 100mg twice-daily MP1032 resulted in an 18% reduction in PASI score against a 16% reduction for placebo. This per-protocol top-line result was not significantly different to placebo; however, a stratification of patients by their PASI score demonstrated an (non-statistically relevant) improvement (Exhibit 4) in patients with a lower PASI score (10–15). This

[8] www.ncbi.nlm.nih.gov/pubmed/14754644

[9] https://bpac.org.nz/2017/psoriasis-1.aspx

study confirmed MP1032's target in the Phase II study as patients at the milder end of the psoriasis disease severity spectrum.

Exhibit 4: Phase IIa (CT-02) results for MP1032 in patients with psoriasis



Source: MetrioPharm. Note: PASI 10–40 on the left, PASI 10–15 on the right.

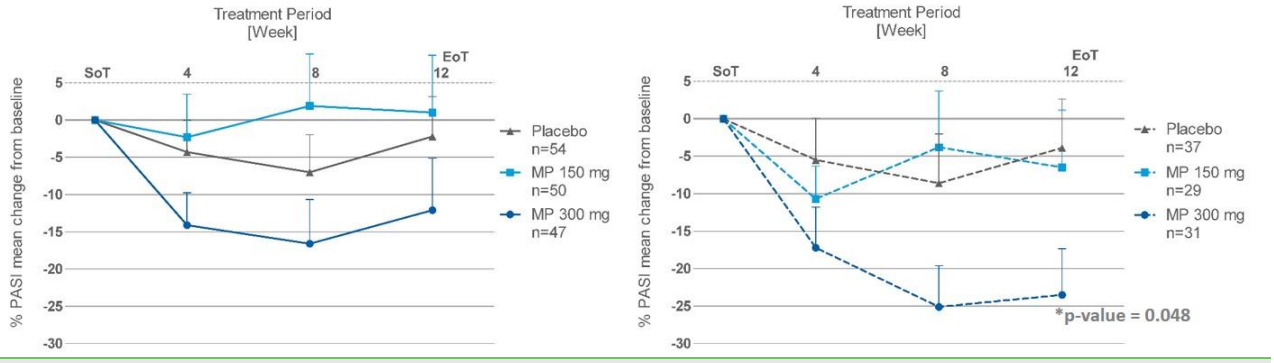
A suspicion of underdosing in this first study was confirmed by analysis of a subgroup of seven MP1032 patients that had higher plasma concentrations and an average 36% reduction in PASI scores. In addition, MetrioPharm's Phase IIa data suggest that the higher blood levels in individual patients were due to higher absorption by patients for the low (100mg) dose and this appears to be correlated with those patients with a lower body mass index. This was confirmed by the pharmacokinetic data in man where higher or more frequent dosing results in a type of saturation effect, which in turn results in a moderately increased plasma half-life. The half-life for MP1032 at 100mg dosed once daily is 1.13 hours, whereas 300mg dosed twice daily results in a half-life of 4.94 hours. It was the key result of the Phase IIa and earlier studies that MP1032 was underdosed in Phase IIa and logically, by extension, higher doses should result in higher reductions in PASI scores.

Phase II data positive in PASI 10–15 subgroup

Exhibit 3 illustrates the differences between the Phase IIa (CT-02) and Phase II (CT-04) studies for MP1032. The Phase II study has completed and MetrioPharm recently announced the results. As well as addressing the underdosing issue in the previous study by increasing the dose to either 150mg or 300mg twice daily, the treatment period has been doubled from six to 12 weeks. In addition, the number of patients has been grown (155 patients) to increase the statistical power of a three-arm study. Furthermore, the recruitment criterion of the baseline PASI score range has been tightened from >10 (it was10–40 in the Phase IIa study) to 10–20 to focus on milder patients in the Phase II study who responded better to MP1032 in the Phase IIa study.

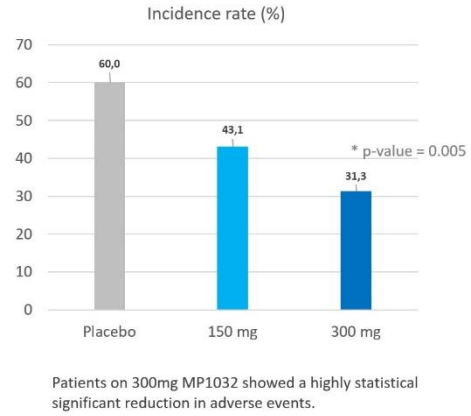
The trial demonstrated dose-dependent improvements in PASI 50, PASI 70 and PASI 75. However, improvements were not statistically significant. In the pre-specified subgroup of patients with PASI 10–15, a statistically significant greater mean reduction of absolute change in PASI scores was observed at 12 weeks in patients treated with the 300mg dose (Exhibit 5). Impressively and somewhat unusually, patients experienced a decrease in adverse events (Exhibit 6) at increasing doses of MP1032 with a statistically significant improvement in adverse events at 300mg (31.3% incidence of adverse events vs 60.0% in placebo group).

Exhibit 5: Phase II (CT-04) results for MP1032 in patients with psoriasis. PASI 10–20 on left, PASI 10–15 on right



Source: MetrioPharm

Exhibit 6: Phase II safety data



Adverse events — Count/Incidence (Incidence rate %)

	MP1032 300 mg bid (N = 48)	MP1032 150 mg bid (N = 51)	Placebo bid (N = 55)
TEAEs	31 / 15 (31.3. %)	34 / 22 (43.1 %)	68 / 33 (60.0 %)
TEAEs by intensity			
Severe	0 / 0 (0.0 %)	2 / 2 (3.9 %)	5 / 4 (7.3 %)
Moderate	9 / 4 (8.3 %)	8 / 7 (13.7 %)	27 / 15 (27.3 %)
Mild	22 / 11 (22.9 %)	24 / 13 (25.5 %)	36 / 14 (25.5 %)

Source: MetrioPharm

MP1032 outside of psoriasis

Psoriasis is the lead indication for MP1032, because a disease-modifying effect can be observed in smaller clinical studies that take less time to complete (and are cheaper) than other larger, even more commercially attractive indications. We estimate that MetrioPharm's operational spend is relatively constant over the next few years to simulate either MetrioPharm retaining a larger financial interest in return for some funding of the early clinical studies as part of the out-licensing, or choosing to retain all rights, separate to a psoriasis deal, until the Phase II clinical proof of principle in non-psoriasis indications. The repetition of the last three years' clinical spend in our forecasts is also meant to simulate MetrioPharm's investment in its pipeline indications for MP1032 up to clinical proof of principle.

There are many inflammatory conditions where a drug that works by a different mechanism of action across the disease spectrum would be attractive to a potential partner. However, as in psoriasis, we have assumed MP1032 will be used in the moderate segment (as defined by the EMA) in newly diagnosed or relapsing patients, once they have had their disease flares reduced in severity. Because of the involvement of the T_h-17 response in the aetiology of both psoriasis and MS, we initially considered MS to be an attractive next indication for MP1032. While this is true on face value, the size and cost of a Phase II programme and the likelihood that clinical proof of principle would only come after the end of a large Phase III programme make MS an unlikely early indication for MP1032 (without a partner).

Other inflammatory conditions where a broad-acting and safe anti-inflammatory agent that is orally bioavailable is attractive include OA, RA and COPD. Of these, RA has many disease-modifying

drugs against which MP1032 would ultimately compete, despite the potential for MP1032 to be used in combination with Enbrel (etanercept), Humira or with less potent treatment options to achieve a similar effect to the biologics alone. Of all the indications we have used in our valuation model, RA has the lowest prevalence in developed markets at about 1% (when compared to more prevalent conditions like OA), so we estimate that peak sales of MP1032 in OA are about eight times those in RA, which has the lowest-value indication in our model. In mild-to-moderate OA, the unmet clinical need is probably higher because non-disease modifying therapies such as the non-steroidal anti-inflammatory drugs and opioids are used but have their own liabilities. Finally, COPD is a large indication[10,11] with a considerable unmet clinical need and where the endpoints of most studies (the measurement of forced expiratory volume or forced vital capacity; FEV_1 or FVC) are very easy and inexpensive to measure and are validated by the regulatory authorities. Chronic COPD is treated by inhaled generic corticosteroids, but the efficacy of inhaled corticosteroids and combinations with other drugs in double and triple combinations are much less efficacious against the largely inflammatory mucus-mediated disease that is COPD. This is somewhat different from the allergic airway constriction that is seen in asthma. MetrioPharm is developing an inhaled dosage form of MP1032. In the commercially available preclinical nebuliser device, optimised for delivering inhaled MP1032, the formulation showed unique physicochemical features. It offers the potential compared to corticosteroids of few or no adverse side effects. Mouse experiments with this formulation are ongoing and results are expected in Q120. This will allow MetrioPharm to create additional valuable intellectual property for other pulmonary conditions valid until at least 2040 and potentially offer a non-oral dosage form with different pricing. With the toxicology clearances already available for MP1032 in psoriasis, the company expects that the completed Phase II study in psoriasis and completion of the inhaled version of MP1032 will enable it to benefit from accelerated development in pulmonary indications. Although we have maintained the same price of MP1032 across all indications, a pulmonary inhaled version of MP1032 could provide an opportunity to price MP1032 differently (higher) from the oral version.

Valuation

Using an rNPV model, we value MetrioPharm at CHF253m, or CHF2.06 per share. The majority (58%) of the valuation compromises MP1032 in the moderate psoriasis indication. We have taken the epidemiology of psoriasis in adults in the US,[5] Canada, the EU, Australia and Japan as summarised in detail for the largest indication in Exhibit 7. We have used the prevalence of moderate psoriasis (36% of all adult diagnosed psoriasis patients, except in the EU where it is 23%) and 68% of all diagnosed patients treated in all markets to give us the potential addressable population for MP1032 in psoriasis. We consider that as it is a safe drug, which has demonstrated efficacy in Phase II and ultimately in Phase III, MP1032 could be used across the moderate adult psoriasis population achieving a maximum market share of 10% (in all indications except COPD, where it is 5% due to the very large but competitive market). The number of patients treated would be higher, if we include the mild psoriasis segment, which is 52% of all psoriasis diagnoses in the US. We estimate the value of including this segment as a possible upside in our sensitivity analysis.

10 www.ncbi.nlm.nih.gov/pmc/articles/PMC2104564/

11 www.uptodate.com/contents/epidemiology-clinical-manifestations-and-diagnosis-of-psoriasis

Exhibit 7: Estimated number of people with moderate psoriasis in target regions in 2019

Region	Population aged 15 and older (000s)	Estimated share of patients with psoriasis (%)	No. of adults treated for moderate psoriasis treated (000s)
United States	330,276	2.00	1,310
Canada	37,596	2.00	155
Europe	513,035	2.00	1,364
Japan	126,293	0.44	118
Australia	25,393	2.30	124

Source: Statista, World Health Organization (2016) global report on psoriasis. Note: There is significant variability on prevalence data from these regions. Europe is the average of France, Germany and Italy.

We assume that MetrioPharm develops MP1032 in all indications to the end of Phase IIa, except for psoriasis which, as it is the first indication, is being developed by MetrioPharm until the end of Phase II. We assume that after Phase II in psoriasis and Phase IIa in all other indications, MP1032 will be developed by MetrioPharm's partners. We have used the partnering transaction values for a Phase II-ready asset that we have employed in our analyses of other products, which are illustrated in Exhibit 8. Although we have used all of these risk-adjusted milestones and royalty cash flows in our valuation (below), only the first two risk-adjusted milestones of $10m and $5m in 2020 appear in the timeframe for our forecast financials (Exhibit 11) as illustrative debt in our balance sheet, which simulates these forecast cash flows. Exhibit 9 shows the in-market peak sales of MP1032 in each indication at MetrioPharm's partners, on which the 15% risk-adjusted royalties are based.

Exhibit 8: MP1032 milestone, royalty assumptions and estimated timings

Milestone/royalty	Date in psoriasis	Date in OA/RA	Date in COPD	Rate/value
Royalty rate	From 2023	From 2026	From 2026	15%
Collaboration agreement	2020	2023	2022	$10m
Phase III start	2020	2023	2023	$5m
NDA filing	2022	2025	2024	$5m
Approval/launch	2023	2026	2025	$10m
$50m global sales hurdle	2023	2026	2025	$10m
$100m global sales hurdle	2023	2026	2025	$20m
$300m global sales hurdle	2024	2027	2025	$30m
$500m global sales hurdle	2025	2027	2026	$50m
$1bn global sales hurdle	2026	2028	2026	$50m
Total milestone value ($m)				**$190m**

Source: MetrioPharm (clinical trial and launch timings) and Edison Investment Research (milestone and royalty values)

We have forecast the launch and market entry of MP1032 using a Gompertz curve[12] with three key variables (rate of uptake, peak market penetration and lag period) set at 0.5 (and flexed in the sensitivity analysis), 10% (in all indications except COPD, where it is 5%) and one year, respectively. The rate of uptake was initially set at 0.5 to reflect the midpoint between the very fast specialty pharmaceutical launch that was seen with Gilead Sciences' launch of Sovaldi (sofosbuvir; $2.3bn in its first quarter on the market) and a slow primary care product launch into a highly competitive, partially generic market.

The Gompertz curve uptake results in a market share of less than 1% in the first year of launch (2023 in the US for psoriasis), reaching a peak in 2029. In all indications, we assume MetrioPharm's partner launches each indication first in the US, with all other markets following one year later. An upside that we have not included in this analysis is for launches in the US and Europe in the same year, which is possible by filing a common technical document.

We have also reversed the parameters for the Gompertz curve to reflect a gross-to-net price erosion, which is a common real-life effect in global pharmaceuticals, starting seven years after the launch in each indication. We have estimated the launch price of MP1032 in the US at $11,000 per patient per year ($9,778 in Japan and $6,111 in Europe, Australia and Canada to reflect core pricing indexes in each market) before the impact of gross-to-net discounts comes into effect. This

[12] https://www.degruyter.com/downloadpdf/j/fman.2015.7.issue-1/fman-2015-0035/fman-2015-0035.pdf

estimates the annual (US) cost of MP1032 between that of methotrexate and Otezla as the two boundary prices for generic and branded oral treatments for moderate psoriasis. We have not changed the price for MP1032 in COPD, even though MetrioPharm is developing a new inhaled formulation that could be sold at a higher price point than the oral version and the inhaled product may be one of the other MP1000 series of patent-protected agents.

Exhibit 9: Valuation of MetrioPharm

Product	Indication	US launch	Peak global sales ($m)	NPV (CHFm)	NPV/share (CHF)	Probability	Licensing deal probability	rNPV (CHFm)	rNPV/share (CHF)
MP1032	Psoriasis	2023	2,827						
MP1032	OA	2026	6,269						
MP1032	RA	2026	742						
MP1032	COPD	2025	5,100						
MP1032 in psoriasis				993.7	8.3	20%	70%	146.0	1.2
MP1032 in OA/RA				1,832.9	15.4	5%	70%	64.2	0.5
MP1032 in COPD				1,330.0	11.1	5%	70%	46.6	0.4
Net cash/(debt)				(3.7)	(0.0)	100%	100%	(3.7)	(0.0)
Valuation				**4,153.0**	**34.8**			**253.0**	**2.1**

Source: Edison Investment Research

For new pharmaceutical products with a unique mode of action and clinical effectiveness, there is scope (indeed legislation in Japan) for higher prices than we have used in our model and a range of prices above $11,000 (in the US) are covered in our sensitivity analysis. Our risk-adjustment is 20% for psoriasis reflecting the status of the development of MP1032 in this indication at the end of Phase II. However, as MetrioPharm is continuing to develop MP1032 until the product is licensed in 2020, the R&D and administration costs in this indication are not risk-adjusted. After 2020, and reflecting the expected contribution of its partners, MetrioPharm's spend on all other indications is risk-adjusted at the same rate as the milestones and royalties received for that indication. All non-psoriasis indications are risk-adjusted at 5%, representing their early-stage nature. Because all indications will be partnered, we have further risk-adjusted the value of all products by 70% to represent the licensing probability.

Sensitivities

MetrioPharm has a platform of ROS scavenger molecules as anti-inflammatory drugs and, while other molecules from the MP1000 series exist, their development is not included in our assessment. The clinical success of MP1032 will have a dramatic effect on the fortunes of MetrioPharm. As with most biotech companies, MetrioPharm is susceptible to clinical development delays or failures, regulatory risks, competitor successes, partnering setbacks, and financing and commercial risks. The key short-term sensitivities for the company relate to crystallising value from its early-stage pipeline, notably MP1032. Additionally, its ability to secure additional capital through either partnerships/out-licensing or a capital raise (through equity or debt) will be critical to its future prospects. MetrioPharm has not paid a dividend or generated significant product revenues to date.

Our assumption of clinical trials, regulatory reviews and commercial launch timelines following the Phase II in psoriasis imply an optimal path and anticipate no delays that might result from a longer regulatory review, or from waiting for the approval of longer dosing duration in Phase III before the full toxicology studies are available. However, it appears that the timeline for completion of MetrioPharm's long-term toxicology studies will precede any partner Phase III initiation.

In our valuation of MP1032 in psoriasis, we have considered moderate adult psoriasis as the addressable population. There is a balance between use only in new and existing moderate patients (the latter are not severe enough for treatment escalation to more potent products, which is an unlikely downside because MP1032's safety implies use before other therapies) and its use in mild patients. The use of MP1032 is entirely possible in the mild segment as either a monotherapy

or in combination with topical therapies, or it could be used to spare patients from therapies which, unlike MP1032, have toxicities. We have assumed that MP1032's good safety profile continues, is unaffected by more chronic dosing and, as more data become available (from the Phase II study, for example), regulators will allow longer dosing durations. As a separate sensitivity in our model, we have included the use of MP1032 in mild psoriasis patients (52% of all psoriasis diagnoses)[5] that have failed topical therapies (42% of mild psoriasis patients). If MP1032 penetrates the mild patient segment at the same time and at the same rate as the moderate segment, our valuation of MetrioPharm would move from CHF253m to CHF342m.

Key valuation drivers

In any valuation model, there are what Professor Rappaport, an early innovator in company valuation in what came to be known as the economic value-added school, termed key valuation drivers[13] – those variables in which a small change can result in a large change in value. We have already explored one of these above, with the addition of the mild patient segment failing topical drugs (or where patients find a topical therapy inconvenient compared to an oral daily dose) in our valuation based on the use of MP1032 in the moderate patient segment. We have also run a sensitivity analysis that examines the effect on our valuation of MetrioPharm of changing the key variables in the price of MP1032 per year, against the rate of uptake, in Exhibit 10. We have already discussed the spectrum of prices of efficacious drugs used to treat psoriasis, which ranges from the total cost of administering methotrexate at $5,000 to the net cost of Otezla at $23,114 per year. At the 0.5 uptake coefficient level, a $1,000 increase or decrease in the annual price of MP1032 (in all indications) changes our valuation linearly by ±CHF20m. By contrast, the Gompertz function is not linear, so if the uptake coefficient changed by plus or minus 0.1 and the annual price remained at $11,000 per year, our valuation would change by plus CHF7.7m or minus CHF10.7m, respectively.

Exhibit 10: Sensitivity of the valuation of MetrioPharm (in CHFm) to the annual price of MP1032 in all indications and the rate of uptake of its launches

		Price per patient per year ($000)						
		8,000	9,000	10,000	11,000	12,000	13,000	14,000
Gompertz curve uptake coefficient (0.0<x<1.0)	0.2	153	170	186	202	219	235	252
	0.3	171	189	208	227	245	264	282
	0.4	182	202	222	242	262	282	302
	0.5	190	211	232	**253**	274	295	316
	0.6	196	217	239	261	282	304	326
	0.7	200	222	244	266	289	311	323
	0.8	203	226	248	271	293	316	339
	0.9	205	228	251	274	297	320	343

Source: Edison Investment Research

Toxicology: Largely complete

Although most of the toxicology studies required for approval in a chronic indication have been completed, there are a few toxicology risks to MP1032. Two major studies remain: reproductive toxicology and two-year animal carcinogenicity. In addition, we have not included the cost of any drug-to-drug interaction studies in our models because, as a potential first-line therapy that may be used in combination with topical treatments in the range of mild-to-moderate psoriasis patients, these will probably not be required initially. The company has tested whether MP1032 is metabolized by cytochromes or influences cytochrome activity, which can be considered a proxy for the probability of drug-to-drug interactions, and both effects were negative. We have assumed the cost of any remaining toxicology studies will be met by the expected partner for the psoriasis indication. With a safety database of hundreds of patients, the risk of uncovering a toxic liability in a wider patient population is small but it is not zero.

[13] www.cbsnews.com/news/implementing-shareholder-value-analysis/

Financials

MetrioPharm is a private, mid-stage Swiss pharmaceutical development company that has raised a total of CHF63m since its inception. MetrioPharm has not paid a dividend or generated significant product revenues to date. Its funding history includes a CHF20m series D fund-raising in December 2018 to allow completion of the Phase II study of MP1032 in psoriasis and the preparation of supporting clinical or non-clinical studies in OA/RA and COPD. Although we expect a partnering transaction or an institutional funding round based on the Phase II trial, with the investment in its pipeline, investors should expect MetrioPharm to continue to be loss-making for the foreseeable future. That said, although not a virtual company, costs are contained by keeping only sensitive tasks in-house. We estimate the series D financing round will give MetrioPharm a cash runway well into 2020, when we anticipate a licensing transaction of at least $15m, which appears in our financials as illustrative debt and simulates a licensing transaction, another private financing round or an IPO, or combination thereof. Operational expenses comprised mainly R&D and administration expense resulted in a net loss of CHF6.9m in FY18. This increased from a loss of CHF5.2m in FY17 due to initiating and carrying out the Phase II study in psoriasis and other safety studies. Private Swiss companies report under Swiss GAAP but do not publish a cash flow statement.

Exhibit 11: Financial summary

Accounts: Swiss GAAP; year-end 31 December; CHF000s	2015	2016	2017	2018	2019e	2020e
INCOME STATEMENT						
Total revenues	3	5	5	5	0	0
Cost of sales	0	0	0	0	0	0
Gross profit	3	5	5	5	0	0
SG&A (expenses)	(1,726)	(2,363)	(1,809)	(3,002)	(3,002)	(1,802)
R&D costs	(999)	(1,681)	(1,596)	(1,596)	(1,681)	(1,596)
Other income/(expense)	(54)	(60)	(41)	(124)	(35)	(35)
Depreciation and amortisation	(761)	(979)	(1,154)	(1,328)	(1,390)	(1,456)
Reported EBIT	(3,537)	(4,464)	(4,596)	(6,131)	(6,109)	(4,889)
Finance income/(expense)	(167)	(341)	(595)	(744)	(661)	(1,541)
Other income/(expense)	0	(1)	27	0	0	0
Reported PBT	(3,704)	(4,806)	(5,165)	(6,875)	(6,770)	(6,430)
Income tax expense (includes exceptionals)	0	0	0	0	0	0
Reported net income	(3,704)	(4,806)	(5,165)	(6,875)	(6,770)	(6,430)
Basic average number of shares, m	96	99	99	119	119	119
Basic EPS (c)	(38.7)	(48.3)	(52.0)	(57.6)	(56.7)	(53.9)
Adjusted EBITDA	(2,776)	(3,484)	(3,442)	(4,802)	(4,718)	(3,433)
Adjusted EBIT	(3,537)	(4,464)	(4,596)	(6,131)	(6,109)	(4,889)
BALANCE SHEET						
Property, plant and equipment	0	0	0	0	0	0
Goodwill	0	0	0	0	0	0
Intangible assets	5,882	8,401	9,868	10,977	11,587	12,131
Other non-current assets	32	32	32	31	31	31
Total non-current assets	5,915	8,433	9,900	11,008	11,618	12,162
Cash and equivalents	409	2,047	2,610	7,577	198	7,786
Inventories	0	0	0	0	0	0
Trade and other receivables	8	80	141	9	9	9
Other current assets	235	887	639	3,999	3,999	3,999
Total current assets	652	3,014	3,389	11,585	4.205	11,794
Non-current loans and borrowings	0	6,030	9,968	11,228	11,228	25,791
Other non-current liabilities	0	0	0	0	0	0
Total non-current liabilities	0	6,030	9,968	11,228	11,228	25,971
Trade and other payables	310	1,194	954	689	689	689
Current loans and borrowings	4,012	3,185	6,319	0	0	0
Other current liabilities	370	635	800	743	743	743
Total current liabilities	5,020	5,337	8,407	2,934	2,934	2,934
Equity attributable to company	1,547	80	(5,085)	8,431	1,662	(4,769)
Non-controlling interest	0	0	0	0	0	0
CASH FLOW						
Increase/(decrease) in cash and equivalents	(2,943)	1,878	100	6,050	(7,379)	7,589
Cash and equivalents at end of period	409	2,047	2,610	7,577	198	7,786
Net (debt)/cash	(3,603)	(7,168)	(13,677)	(3,650)	(11,030)	(18,004)

Source: MetrioPharm, Edison Investment Research. Note: Under Swiss GAAP reporting standards, cash flow statements are not published.

Contact details	Revenue by geography
Bleicherweg 10 CH-8002 Zurich Switzerland +41 (44) 5620335 www.metriopharm.com/en/	N/A

Management team and founders

CEO and co-founder: Wolfgang Brysch MD	COO and co-founder: Ekkehard Brysch
Dr Wolfgang Brysch was appointed as CEO of MetrioPharm in 2016 and previously served as chief scientific officer, director and chairman of the company (2007–16). Before that, he co-founded BioMedion, an IT company specialising in pharmaceutical industry solutions. Dr Brysch also served as managing director and chief scientific officer of Biognostik. Prior to these appointments, he served as the head of a research group for molecular neurobiology and cancer at the Max Planck Institute.	Ekkehard Brysch is a co-founder of MetrioPharm and was appointed COO in 2016. He previously served as CEO of the company from 2007 to 2016. Mr Brysch also serves as managing director of Athenion, a holding company focused on pharmaceutical and healthcare industries. Before these appointments, he served as managing partner of BioMedion.
Head of drug development: Astrid Kaiser PhD	**Chairman of the board and co-founder: Rudolf Stäger**
Dr Astrid Kaiser was appointed head of drug development at MetrioPharm in 2015. She previously served as senior project manager of MP1000 drug development for five years. Before joining the company, she worked as a research and development consultant for Jerini, which was acquired by Shire in 2008. Dr Kaiser also worked as a senior researcher in human cancer research at Benjamin Franklin University Hospital.	Rudolf Stäger is a co-founder of MetrioPharm and serves as chairman of the board of directors. He is an independent management consultant and primarily advises small and medium-sized enterprises. Mr Stäger previously served as an active bank manager and member of the executive boards of Schroder & Co Bank, Vontobel Bank and Luzerner Kantonalbank.
CFO: Sven Zimmermann PhD	
Dr Zimmermann joined as CFO of MetrioPharm in August 2019, bringing more than a decade of experience in strategic transactions and exits. He holds a doctorate in molecular biology and worked as an analyst on the European biotech sector in Zurich and London for UBS. Most recently, Dr Zimmermann was CFO of Novimmune, where the company's main asset was sold to Swedish Orphan Biovitrum (Sobi) for CHF515m.	

Companies named in this report

Celgene (CELG.US), Gilead Sciences (GILD.US)

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