

Speculative

See key risks on Page 4 and Biotechnology Risk Warning on Page 8. Speculative securities may not be suitable for Retail Clients.

Analyst

John Hester 612 8224 2871

Authorisation

Thomas Wakim 612 8224 2815

Paradigm Biopharmaceuticals (PAR)

FDA Opens the IND for Zilosul

Recommendation

Buy (unchanged)

Price

\$0.455

Valuation

\$0.80 (previously \$0.47)

Risk

Speculative

Sector

Pharmaceuticals & Biotechnology

Expected Return

Capital growth	75.8%
Dividend yield	0.0%
Total expected return	75.8%

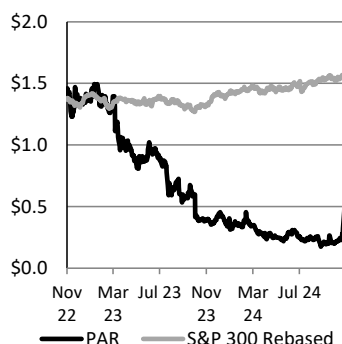
Company Data & Ratios

Enterprise value	\$141.9m
Market cap	\$158.9m
Issued capital	350m
Free float	94%
Avg. daily val. (52wk)	\$322,000
12 month price range	\$0.17 - \$0.61

Price Performance

	(1m)	(3m)	(12m)
Price (A\$)	0.21	0.24	0.38
Absolute (%)	173.81	144.68	51.32
Rel market (%)	171.09	139.44	31.52

Absolute Price



SOURCE: IRESS

Phase 3 Studies May Commence In CY25

Following conclusion of the 28 day waiting period, the revised Investigative New Drug application for iPPS (Zilosul) in the treatment of knee osteoarthritis (OA) is now cleared in the United States. Consequently the company may commence recruitment of the phase 3 trials. This event is pivotal for the company which is now officially in late stage clinical development.

PAR is not currently funded to run the two phase 3 trials required for regulatory approval. Consequently the Board will take a period to consider all available options commencing with an assessment of the likely funding requirement for the company from the present to a potential approval in approximately 3 years from now. All options remain open for consideration including partnering discussions along with raising further equity.

Safety and Efficacy Data Strongly Supportive

The safety and efficacy data for Zilosul have consistently shown the drug to be highly effective and safe for patient use at the phase 3 dose. In addition, there are up to 120 sites already through ethics approval and likely able to commence patient recruitment rapidly. The size of the prize for approval the Osteoarthritis market is highly lucrative to say the least. The US market is at least \$3bn annually on conservative estimates and likely multiple times larger.

Investment View: Retain Buy (Spec) Valuation \$0.80

The opening of the IND in the US is significant step forward. The risk of clinical trial failure is substantially reduced and the recent move in share price is a reasonable representation of this change. Valuation is amended to \$0.80 following changes to funding assumptions in the financial model which assumes further equity issuance and a partnering deal ahead of approval in ~3 years time.

Earnings Forecast

June Year End	FY24	FY25e	FY26e	FY27e
Revenues	0.0	3.0	0.0	0.0
EBITDA \$m	-58.6	-58.5	-66.0	-86.0
NPAT (underlying) \$m	-58.6	-58.0	-65.5	-85.5
NPAT (reported) \$m	-58.6	-58.0	-65.5	-85.5
EPS underlying (cps)	-16.3	-8.5	-9.6	-10.3
EPS growth %	na	nm	0.1	0.1
PER (x)	nm	nm	nm	-4.4
FCF yield (%)	nm	nm	nm	nm
EV/EBITDA (x)	nm	nm	nm	-1.7
Dividend (cps)	-	-	-	-
Franking	0%	0%	0%	0%
Yield %	0.0%	0.0%	0.0%	0.0%
ROE %	na	na	na	na

SOURCE: BELL POTTER SECURITIES ESTIMATES

All Options On The Table

Following conclusion of the 28 day waiting period, the revised Investigative New Drug application for iPPS (Zilosul) in the treatment of knee osteoarthritis is now cleared in the United States. Consequently the company may commence recruitment of the phase 3 trials. This event is pivotal for the company which is now officially in late stage clinical development.

It has been an arduous process to this point with the determination of the final dose subject to intense scrutiny at the FDA. This additional scrutiny has caused many months of delay and investment in clinical trials which ultimately proved little value add (we refer here to the dosing study of 2023). Thankfully regulators in both the US and Europe have now allowed the approval studies (the two phase 3 trials) to commence.

Development Options

All options remain on the table for the Phase 3 including partnering discussion and PAR running the trials itself in conjunction with a clinical research organisation.

The company's position in any future funding discussion (either with shareholders or pharma partners) is substantially enhanced by the following factors:

- Regulators in both the US and Europe have cleared the phase 3 protocol;
- Extensive pre-clinical and clinical data packages are now available for due diligence by prospective partners;
- We believe up to 120 sites that participated in the previous PAR_OA_002 remain available to participate in subsequent trials. Each of these have cleared ethics and is likely to require only minimal time to commence dosing; and
- There are almost no competing trials in OA. It is reasonable to expect the trials would recruit rapidly, particularly from the 10 sites in Australia.

About the Phase 3

Primary endpoint is a change from baseline in pain at day 112.

Key secondary endpoints include:

- Pain and functional assessments at multiple timepoints up to Day 404;
- Patient Global Impression of Change (PGIC); and
- Structural changes as measured by MRI and X-ray.

Investigators will conduct a futility analysis when enrolment reaches 50% (n=466). Placebo will be saline injection.

There has been no discussion of a potential commencement date for a confirmatory trial, however, it is reasonable to expect this second trial may not commence until after the futility analysis is complete.

Partnering considerations and trial cost estimates

Assuming US\$75,000 per patient, the estimated cost of the two phase 3 studies (~1,000 patients in total) is ~US\$75m (A\$115m). Each patient will have 12 doses of drug plus multiple screening assessments and multiple follow ups for more than 1 year following completion of dosing. Fortunately the primary endpoint is a mere 3 months from initial dosing.

Rationalising this cost however, we estimate Zilosul has an addressable market of an estimated 31m OA sufferers in the US alone. At US\$2,500 per patient with 5% market penetration, the market is estimated at US\$3bn minimum and considerably larger once rest of world demand is realised. Patients may ultimately return for several courses of therapy over several years given the chronic nature of the disease.

Consequently we expect significant interest from potential pharma partners who each face major patent cliffs in core franchises and are on the lookout for in license opportunities.

Tempering the attitude of potential partners is the nature of the disease. Central Nervous System disease is a difficult indication where the placebo response is often the factor which leads to trials failing to achieve a statistically significant outcome or a highly statistically significant outcome. i.e. a drug with only a minor effect size is unlikely to gain support from payers. Highly effective pain relief is essential for commercial success.

PAR is pursuing a 505b2 registration in the United States. The composition of matter patent on Zilosul is long since expired, however, PAR has extensive patent protection with new dosage and use patents underpinned by the discovery work conducted over recent years.

Conclusions

The prize for success is enormous and with FDA having signed off on the IND, the path is open for a potential partner to run two large but relatively inexpensive trials (compared to oncology @+US\$200k/patient) in a relatively short time frame.

Given these risk factors, a back ended deal with lower upfront and higher milestone payments for development and commercial success are likely negotiating points.

These are just some of the factors that may influence the outcomes which should become more clear in the ensuing months.

Our financial model has been adjusted to reflect further equity issuance allowing PAR to self fund the trial and provide working capital through to approval which we estimate may be in 2028. This is one of several scenarios which may emerge in the months ahead. Alternatively the company may seek to out license the drug to a development partner, which avoids the dilution of a major capital raise while handing the major spoils (and risk) to a partner.

Our valuation is based on a DCF model which assumes a WACC of 18.25%. Valuation is amended from \$0.47 to \$0.80.

Paradigm Biopharmaceuticals

Paradigm Biopharmaceuticals is an Australia biotechnology company focused on repurposing Pentosan Polysulfate Sodium (PPS) for the treatment of Osteoarthritis (OA) in the knee. If approved the drug will have the brand name Zilosul.

The global market for a safe, effective treatment that provides superior patient outcomes compared to the standard of care is a multiple blockbuster. The recently completed phase II study produced some highly encouraging results that are worthy of further clinical trials.

In the US along the incidence of moderate to severe osteoarthritis is estimated at 30m persons. The pricing of the drug will ultimately be determined by the economic benefit associated with its use as well as the cost of other therapies. The conservative estimate is US\$2,500 per year which places the addressable market in the tens of billions of US\$.

Within the FDA's Centre for Drug Evaluation and Research (CDER), it is the office of Neuroscience – Division of Anesthesiology, Addiction Medicine, and Pain Medicine that is (DAAP) that is responsible the review of iPPS.

PATHWAY TO APPROVAL

The IND for Zilosul was opened in November 2024. PAR will enrol 2 phase 3 trial involving ~1,000 patients in total with a primary endpoint of pain reduction at day 112.

ADJACENT INDICATIONS

The second indication for PPS is mucopolysaccharidoses (MPS), a group of inherited lysosomal storage disorders. A key unmet medical need in this class of inherited disease is the lack of treatment of joint pain and dysfunction akin to osteoarthritis, hence the applicability of iPPS in treating these rare joint diseases. MPS is classified as an Orphan Indication/Designation in the US/EU and provides Paradigm the opportunity to serve a US\$1.4bn p.a. market that is in desperate need of new cost-effective treatments.

KEY RISK AREAS

Regulatory Pathway - PAR is seeking registration for iPPS under the 505(b)2 regulatory pathway. The pathway is designed specifically for repurposed drugs including changes in dose form, strength, route of administration, formulation, dosing regimen or indication. This proposed repurposing of PPS has some rare characteristics.

While the drug has been approved for years as an oral format and there is ample safety data, the proposed format, the dose and the indication (being OA) are all new.

There is also the issue of the opioid crisis. PPS is a non steroid, non opioid, non addictive substance that has been shown to have a significant impact of pain levels associated with OA. It may help to reduce the accidental deaths from opioid overdose.

PAR will present a comprehensive set of safety data from the recent Phase II trial together with data from subjects treated in the compassionate use program and two phase 3 trials, thus representing a safety set of ~1,000 subjects. The evidence of treatment will be established from two adequate and well controlled studies and further supported by the phases 2 data set.

Intellectual Property

The company has several patents over the formulation and dosing on iPPS for the treatment of OA. The validity of these patents is highly likely to be challenged at some point, especially if the drug is a commercial success.

The company has an exclusive supply contract with Bene Pharmaceuticals (Bene). We understand the exclusivity applies to human use only (excludes veterinary use). Bene holds the only drug Masterfile with the FDA to manufacture PPS. This supply contract

represents a crucial piece of the company's value as it effectively prevents or delays the creation of generics.

We are not aware of the contractual conditions that may lead to a termination of this contract (if any).

We understand there are some other manufacturers of PPS, however, these products are not registered for human use and may not be referenced in any application for registration for human use. We understand the primary use of these products is veterinary.

Clinical Risk

The efficacy of iPPS has not been validated in a large, multicentre, randomised, controlled clinical trial. There is no guarantee that the results from earlier studies will be repeated in a larger phase III study.

Commercial Validation

Our valuation makes assumptions regarding selling price and volume in relation to future revenues from the sale of iPPS. In order for physicians to prescribe the drug and for payers to offer reimbursement, the clinical trials will need to demonstrate clinically significant improvement over the standard of care i.e. meaningful improvement in patient quality of life for pain reduction, side effect management and mobility amongst others. Early indicators based on the data from the phase II study are encouraging.

Revenue Forecast and Funding

Our financial forecast includes an assumption that the company completes an out license deal for iPPS in FY25. The nature of this transaction includes a small upfront payment followed by a series of development milestones. Transactions of this nature are commonplace in the biotechnology industry, however, the execution of such a transaction is dependent upon numerous factors including but not limited to the results of clinical trials, the company's funding position and demand from potential partners.

There is no guarantee that such a transaction will be executed and the terms of any such transaction may be different to the assumptions in the model.

Recommendation structure

Buy: Expect >15% total return on a 12 month view. For stocks regarded as 'Speculative' a return of >30% is expected.

Hold: Expect total return between -5% and 15% on a 12 month view

Sell: Expect <-5% total return on a 12 month view

Speculative Investments are either start-up enterprises with nil or only prospective operations or recently commenced operations with only forecast cash flows, or companies that have commenced operations or have been in operation for some time but have only forecast cash flows and/or a stressed balance sheet.

Such investments may carry an exceptionally high level of capital risk and volatility of returns.

Research Team

Staff Member	Title/Sector	Phone	@bellpotter.com.au
Chris Savage	Head of Research/Industrials	612 8224 2835	csavage
Rob Crookston	Strategy	612 8224 2813	rcrookston
Analysts			
John Hester	Healthcare	612 8224 2871	jhester
Martyn Jacobs	Healthcare	613 9235 1683	mjacobs
Thomas Wakim	Healthcare	612 8224 2815	twakim
Michael Ardrey	Industrials	613 9256 8782	mardney
Marcus Barnard	Industrials	618 9326 7673	mbarnard
Sam Brandwood	Industrials	612 8224 2850	sbrandwood
Joseph House	Industrials	613 9325 1624	jhouse
Baxter Kirk	Industrials	613 9325 1625	bkirk
Daniel Laing	Industrials	612 8224 2886	dlaing
Hayden Nicholson	Industrials	613 9235 1757	hnicholson
Chami Ratnapala	Industrials	612 8224 2845	cratnapala
Jonathan Snape	Industrials	613 9235 1601	jsnape
Connor Eldridge	Real Estate	612 8224 2893	celdridge
Andy MacFarlane	Real Estate	612 8224 2843	amacfarlane
Regan Burrows	Resources	618 9236 7677	rburrows
David Coates	Resources	612 8224 2887	dcoates
Stuart Howe	Resources	613 9325 1856	showe
Brad Watson	Resources	618 9326 7672	bwatson
James Williamson	Resources	613 9235 1692	jwilliamson
Associates			
Leo Armati	Associate Analyst	612 8224 2846	larmati
Kion Sapountzis	Associate Analyst	613 9235 1824	ksapountzis
Ritesh Varma	Associate Analyst	613 9235 1658	rvarma

Disclosures**Research Coverage & Policies**

For Bell Potter Securities' Research Coverage Decision Making Process and Research Independence Policy please refer to our company website: <https://bellpotter.com.au/research-independence-policy/>.

Authoring Research Analyst's Certification

The Authoring Research Analyst is responsible for the content of this Research Report, and, certifies that with respect to each security that the Analyst covered in this Report (1) all the views expressed accurately reflect the Analyst's personal views about those securities and were prepared in an independent manner and (2) no part of the Analyst's compensation was, is or will be, directly or indirectly, related to specific recommendations or views expressed by that Research Analyst in the Research Report.

Research Analyst's Compensation

Research Analyst's compensation is determined by Bell Potter Securities Research Management and Bell Potter Securities' Senior Management and is based upon activities and services intended to benefit the investor clients of Bell Potter Securities Ltd. Compensation is not linked to specific transactions or recommendations. Like all Company employees Research Analysts receive compensation that is impacted by overall Company profitability.

Prices

The Price appearing in the Recommendation panel on page 1 of the Research Report is the Closing Price on the Date of the Research Report (appearing in the top right hand corner of page 1 of the Research Report), unless a before midday (am) time appears below the Date of the Research Report in which case the Price appearing in the Recommendation panel will be the Closing Price on the business day prior to the Date of the Research Report.

Availability

The completion and first dissemination of a Recommendation made within a Research Report are shortly after the close of the Market on the Date of the Research Report, unless a before midday (am) time appears below the Date of the Research Report in which case the Research Report will be completed and first disseminated shortly after that am time.

Disclosure of Interest

Disclosure: Bell Potter Securities acted as lead managers of the company's November 2023 capital raise for \$30m and received fees for that service.

Dissemination

Bell Potter generally disseminates its Research to the Company's Institutional and Private Clients via both proprietary and non-proprietary electronic distribution platforms. Certain Research may be disseminated only via the Company's proprietary distribution platforms; however such Research will not contain changes to earnings forecasts, target price, investment or risk rating or investment thesis or be otherwise inconsistent with the Author's previously published Research. Certain Research is made available only to institutional investors to satisfy regulatory requirements. Individual Bell Potter Research Analysts may also opt to circulate published Research to one or more Clients by email; such email distribution is discretionary and is done only after the Research has been disseminated.

The level and types of service provided by Bell Potter Research Analysts to Clients may vary depending on various factors such as the Client's individual preferences as to frequency and manner of receiving communications from Analysts, the Client's risk profile and investment focus and perspective (e.g. market-wide, sector specific long term and short term etc.) the size and scope of the overall Client relationship with the Company and legal and regulatory constraints.

Disclaimers

This Research Report is a private communication to Clients and is not intended for public circulation or for the use of any third party, without the prior written approval of Bell Potter Securities Limited.

The Research Report is for informational purposes only and is not intended as an offer or solicitation for the purpose of sale of a security. Any decision to purchase securities mentioned in the Report must take into account existing public information on such security or any registered prospectus.

This is general investment advice only and does not constitute personal advice to any person. Because this Research Report has been prepared without consideration of any specific client's financial situation, particular needs and investment objectives ('relevant personal circumstances'), a Bell Potter Securities Limited Broker (or the financial services licensee, or the representative of such licensee, who has provided you with this report by arrangement with Bell Potter Securities Limited) should be made aware of your relevant personal circumstances and consulted before any investment decision is made on the basis of this Research Report.

While this Research Report is based on information from sources which are considered reliable, Bell Potter Securities Limited has not verified independently the information contained in this document and Bell Potter Securities Limited and its directors, employees and consultants do not represent, warrant or guarantee expressly or impliedly, that the information contained in this Research Report is complete or accurate.

Nor does Bell Potter Securities Limited accept any responsibility for updating any advice, views, opinions or recommendations contained in this Research Report or for correcting any error or omission which may have become apparent after the Research Report has been issued.

Bell Potter Securities Research Department has received assistance from the Company referred to in this Research Report including but not limited to discussions with management of the Company. Bell Potter Securities Policy prohibits Research Analysts sending draft Recommendations, Valuations and Price Targets to subject companies. However, it should be presumed that the Author of the Research Report has had discussions with the subject Company to ensure factual accuracy prior to publication.

All opinions, projections and estimates constitute the judgement of the Author as of the Date of the Research Report and these, plus any other information contained in the Research Report, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice.

Notwithstanding other departments within Bell Potter Securities Limited advising the subject Company, information obtained in such role is not used in the preparation of the Research Report.

Although Bell Potter Research does not set a predetermined frequency for publication, if the Research Report is a fundamental equity research report it is the intention of Bell Potter Research to provide research coverage of the covered issuers, including in response to news affecting the issuer. For non-fundamental Research Reports, Bell Potter Research may not provide regular updates to the views, recommendations and facts included in the reports.

Notwithstanding that Bell Potter maintains coverage on, makes recommendations concerning or discusses issuers, Bell Potter Research may be periodically restricted from referencing certain Issuers due to legal or policy reasons. Where the component of a published trade idea is subject to a restriction, the trade idea will be removed from any list of open trade ideas included in the Research Report. Upon lifting of the restriction, the trade idea will either be re-instated in the open trade ideas list if the Analyst continues to support it or it will be officially closed.

Bell Potter Research may provide different research products and services to different classes of clients (for example based upon long-term or short term investment horizons) that may lead to differing conclusions or recommendations that could impact the price of a security contrary to the recommendations in the alternative Research Report, provided each is consistent with the rating system for each respective Research Report.

Except in so far as liability under any statute cannot be excluded, Bell Potter Securities Limited and its directors, employees and consultants do not accept any liability (whether arising in contract, in tort or negligence or otherwise) for any error or omission in the document or for any resulting loss or damage (whether direct, indirect, consequential or otherwise) suffered by the recipient of the document or any other person.

In the USA and the UK this Research Report is only for institutional investors. It is not for release, publication or distribution in whole or in part in the two specified countries. In Hong Kong this Research Report is being distributed by Bell Potter Securities (HK) Limited which is licensed and regulated by the Securities and Futures Commission, Hong Kong. In the United States this Research Report is being distributed by Bell Potter Securities (US) LLC which is a registered broker-dealer and member of FINRA. Any person receiving this Research Report from Bell Potter Securities (US) LLC and wishing to transact in any security described herein should do so with Bell Potter Securities (US) LLC.

Biotechnology Risk Warning

The fact that the intellectual property base of a typical biotechnology company lies in science not generally regarded as accessible to the layman adds further to the riskiness with which biotechnology investments ought to be regarded. Clinical and regulatory risks are inherent in biotechnology stocks. Biotechnology developers usually seek U.S. FDA approval for their technology which is a long and arduous three phase process to prove the safety, effectiveness and appropriate application or use of the developed drug and even after approval a drug can be the subject of an FDA investigation of subsequently discovered possible links between the drug and other diseases not previously diagnosed. Furthermore, the Australian exchange listed biotechnology sector is subject to influence by the global biotechnology sector, particularly that in the USA. Consequently, Australian exchange listed biotechnology stocks can experience sharp movements, both upwards and downwards, in both valuations and share prices, as a result of a re-rating of the sector both globally and in the USA, in particular. Investors are advised to be cognisant of these risks before buying such a stock.

Bell Potter Securities Limited
 ABN 25 006 390 772
 Level 29, 101 Collins Street
 Melbourne, Victoria, 3000
 Telephone +61 3 9256 8700
 www.bellpotter.com.au

Bell Potter Securities (HK) Limited
 Room 1701, 16/F
 Prosperity Tower, 39 Queens
 Road Central, Hong Kong, 0000
 Telephone +852 3750 8400

Bell Potter Securities (US) LLC
 Floor 39
 444 Madison Avenue, New York
 NY 10022, U.S.A
 Telephone +1 917 819 1410

Bell Potter Securities (UK) Limited
 16 Berkeley Street London, England
 W1J 8DZ, United Kingdom
 Telephone +44 7734 2929