Immutep Ltd (IMMP)

Positive Signals in Pre-Clinical Studies with IMP-761

After the close, Immutep (Nasdaq: IMMP) hosted a conference call to discuss initial pre-clinical data from their IMP-761 program in development for autoimmune disease. As a reminder, IMP-761 is a first-in-class humanized monoclonal agonist antibody targeting LAG-3. *In vivo* testing was done in a delayed-type hypersensitivity model in cynomolgus monkeys. The data showed a strong reduction in inflammatory T-cell infiltration at tuberculin test sites in monkeys that were vaccinated with BCG antigen and treated with IMP-761 prior to the test. Treatment with IMP-761 showed reductions in both $CD3^+$ and $CD8^+$ T-cell infiltration. Although preclinical data, the positive signal was good to see as it indicates potential for IMP-761 in autoimmune disease. Looking ahead, management anticipates completing pre-clinical work on IMP-761 in ~18 months and expects to bring the clinical candidate through Phase II development in-house.

- **The Role of LAG-3 in Autoimmune Disease.** As a reminder, LAG-3 is implicated to be a checkpoint molecule involved in the negative regulation of T-cell activation. LAG-3 is one of the few markers identified to-date that is solely present on the surface of activated T-cells making it an attractive therapeutic target. Furthermore, high levels of LAG-3 expression is thought to be a marker of T-cell exhaustion following chronic activation, as has been show in various cancer models and models of chronic infection. We note that targeting LAG-3 in autoimmunity could in theory be overly immunosuppressive from an overcorrection effect. However, the notion that exhausted phenotype T-cells express higher levels of the marker could translate to preferential targeting of autoreactive T-cells. Taking this into account, the level of immunosuppression will depend on the T-cell specificity and the durability of the T-cell response. Overall, we believe further clinical investigation of the agent is warranted.

- **IMP-761 Demonstrates Potent Immunosuppression.** IMP-761 demonstrated inhibition of CD8+ T-cell proliferation *in-vitro* in human peripheral blood mononuclear cells exposed to a CMV, EBV and influenza peptide pool. Following exposure to the CEF pool, 36.3% of the CD8+ population was dividing, which decreased to only 8.6% when PMBCs were exposed to CEF + IMP-761, as shown in **Figure 1**. *In vivo* studies were conducted in 18 male cynomolgus monkeys that were vaccinated with BCG antigen against tuberculosis. Management noted that cynomolgus monkeys were used secondary to an absence of a surrogate antibody for mouse LAG-3. Investigators then measured the inflammatory response following a tuberculin test. 6 monkeys were additionally treated with IMP-761 prior to a second tuberculin test. As shown in **Figure 2**, IMP-761 treated monkeys showed a prominent decrease in inflammatory $CD3^+$ and $CD8^+$ T-cell infiltration.

  These data suggest potential for IMP-761 to curb the immune reaction in autoimmune conditions. Although there are parallels between infectious models and autoimmune disease given that both are associated with a state of chronic immune activation and T-cell exhaustion, we note that multiple studies have shown differences in the underlying balance of co-inhibitory and co-stimulatory signals that shape these conditions, suggesting different immune mechanisms at play. Therefore, we look forward to seeing further pre-clinical evidence for IMP-761 in models of autoimmunity.

Analysts

Sam Slutsky
(212) 915-2573
sslutsky@lifescicapital.com

Nicole Bezuevsky
(646) 876-5059
nbezuevsky@lifescicapital.com

Market Data

Price	$2.40
Market Cap (M)	$81
EV (M)	$55
Shares Outstanding (M)	33.8
Fully Diluted Shares (M)	43.7
Avg Daily Vol	247,518
52-week Range:	$1.70 - $4.21
Cash (M)*	$18.7
Net Cash/Share	$0.60
Annualized Cash Burn (M)	$12.5
Years of Cash Left	1.5
Debt (M)	$0.0
Short Interest (M)	0.11

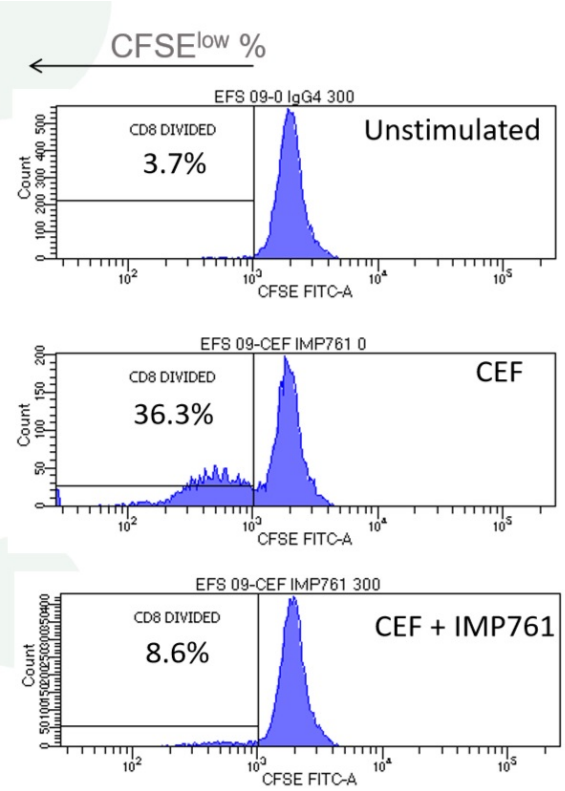
*

Financials

FY Jun		2017A	2018A	2019A
EPS	H1	(0.19)	(0.18)	NA
	H2	NA	NA	NA
	FY	(0.41)	(0.49)	NA

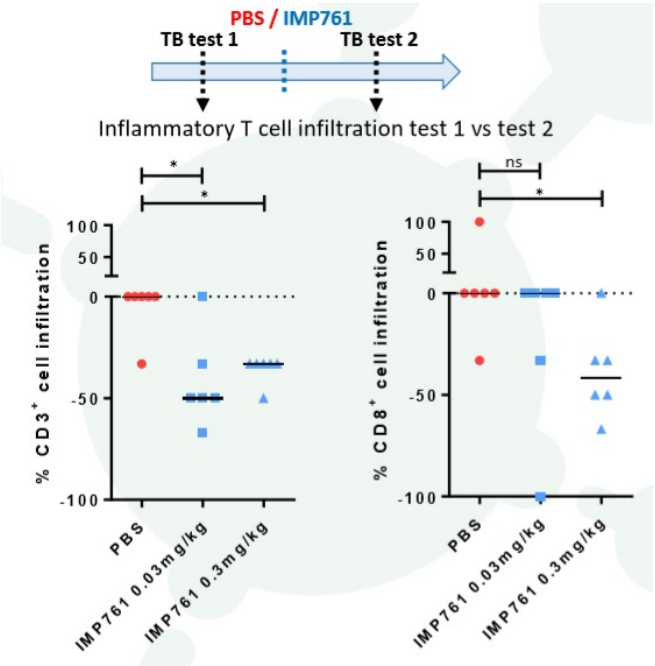
For analyst certification and disclosures please see page 4

Figure 1. In Vitro Inhibition of CD8+ T-cell Proliferation by IMP-761



Source: Immutep Presentation

Figure 2. IMP-761 Results in Reductions of Inflammatory T-cell Infiltration



Source: Immutep Presentation

Expected Upcoming Milestones

- Early 2019 – Initiation of TACTI-002 in HNSCC/NSCLC.
- Q1 2019 – Initiation of INSIGHT-004 in advanced solid malignancies.
- H2 2019 – Primary progression free survival data from AIPAC in TNBC.

Risk to Investment

We consider an investment in Immutep to be a high-risk investment. Immutep is a development stage company with no history of taking a treatment to market, and currently with no FDA approved drugs in its portfolio. There are several other companies trying to target the same indications as Immutep, and the cancer treatment pipeline is especially crowded with competitors. Immutep lead program has not yet generated pivotal data and has limited clinical data to date. Furthermore, early indications of efficacy do not necessarily translate into positive late-stage results. As with any company, Immutep may be unable to obtain sufficient capital to fund planned development programs. There are regulatory risks associated with the development of any drug and Immutep may not receive FDA approval for its candidates despite significant time and financial investments. Regulatory approval to market and sell a drug does not guarantee that the drug will penetrate the market, and sales may not meet the expectations of investors.

Analyst Certification

The research analyst denoted by an "AC" on the cover of this report certifies (or, where multiple research analysts are primarily responsible for this report, the research analyst denoted by an "AC" on the cover or within the document individually certifies), with respect to each security or subject company that the research analyst covers in this research, that: (1) all of the views expressed in this report accurately reflect his or her personal views about any and all of the subject securities or subject companies, and (2) no part of any of the research analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the research analyst(s) in this report.

DISCLOSURES

Neither the research analyst(s), a member of the research analyst's household, nor any individual directly involved in the preparation of this report has a financial interest in the securities of the subject company/companies.

LSC (or an affiliate) has received compensation from Immutep Ltd for producing this research report. LSC is paid a monthly payment of $1,000 from the Affiliate for preparing and distributing research pertaining to each subject company under contract with the Affiliate. The subject company of this report is covered by this arrangement between LSC and the Affiliate, and LSC has therefore indirectly received compensation from the subject company for publishing this report. No explicit or implicit promises of favorable research coverage have been made to the subject company by LSC or the Affiliate. Neither LSC nor the Affiliate has promised any specific research content as an inducement for the receipt of business or compensation.

LSC (or an affiliate) has provided non-investment banking securities-related services, non-securities services, and other products or services other than investment banking services to Immutep Ltd and received compensation for such services within the past 12 months.

Neither LSC nor any of its affiliates beneficially own 1% or more of any class of common equity securities of the subject company/companies.

This research contains the views, opinions and recommendations of LifeSci Capital, LLC ("LSC") research analysts.

Additionally, LSC expects to receive or intends to seek compensation for investment banking services from the subject company/companies in the next three months.

LSC does not make a market in the securities of the subject company/companies.

LSC is a member of FINRA and SIPC. Information used in the preparation of this report has been obtained from sources believed to be reliable, but LSC does not warrant its completeness or accuracy except with respect to any disclosures relative to LSC and/or its affiliates and the analyst's involvement with the company that is the subject of the research. Any pricing is as of the close of market for the securities discussed, unless otherwise stated. Opinions and estimates constitute LSC's judgment as of the date of this report and are subject to change without notice. Past performance is not indicative of future results. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, companies, financial instruments or strategies to particular clients. The recipient of this report must make his/her/its own independent decisions regarding any securities or financial instruments mentioned herein. Periodic updates may be provided on companies/industries based on company specific developments or announcements, market conditions or any other publicly available information. Additional information is available upon request.

Please visit http://www.lifescicapital.com/equity-research/ for disclosures related to each company that is a subject of this report. Alternatively, please contact us by telephone at (646) 597-6991 or by mail at LifeSci Capital LLC, Attn: Compliance, 250 West 55th Street, Suite 3401, New York, NY 10019 to obtain disclosures relating to any of the companies that are the subject of this report.