Research Report

Imugene Limited (ASX: IMU)

Price: $0.052 | Valuation: $0.17 | Implied Return: 227% | 20 September 2024

SUMMARY: Imugene Limited (ASX: IMU) is a Sydney-based clinical-stage biotechnology company that focuses on the development and commercialization of a range of new and novel immunotherapies for the treatment of various cancers. Immunotherapy is an approach to cancer treatment that harnesses the body's own immune system to recognize and fight cancer cells. Imugene has developed a diverse pipeline of assets, including 5 clinical-stage therapies, utilising the company's 4 proprietary technology platforms, with a key focus on targeting disease areas with high unmet needs and low survival rates. The Company's near-term focus is to advance its core assets, including its CF33 oncolytic virotherapies (VAXINIA, which uses genetically modified oncolytic virus, combined with (hNIS) to selectively infect and kill cancer cells) & onCARlytics), which are designed to be used in combination with other drugs, to infect and destroy cancer cells, its two more traditional B-cell vaccine candidates HER-Vaxx and PD1-Vaxx, which target specific cancer markers to generate an immune response, and the more recently acquired allogeneic CD19 targeting cell therapy azer-cel, which has become a key focus for the Company.

INVESTMENT HIGHLIGHTS

- **Innovative and diverse pipeline of clinical-stage assets with significant commercial potential –** Imugene is developing a range of immunotherapies aimed at activating the immune system of cancer patients to treat and eradicate tumours. The Company has built up a comprehensive and diverse pipeline of 5 clinical-stage assets, developed across their 4 proprietary platform technologies, targeting areas of high unmet needs, low survival rates and multi-billion dollar markets. Upcoming milestones include late 2024 data readouts from key trials, including Phase 1b and Phase 2 trials for VAXINIA and azer-cel respectively.
- **Initial results of Phase 1 CF33-hNIS VAXINIA trial encouraging – both Fast Track and Orphan Drug Designation granted –** On 17 January 2024, Imugene shared results from its Phase 1 MAST trial evaluating CF33-hNIS VAXINIA in 38 patients with metastatic solid tumours, all of whom had undergone at least two prior lines of treatment. The trial escalated dosing for 19 patients receiving intratumoral (IT) injections and 19 receiving intravenous (IV) doses, either as monotherapy or in combination with pembrolizumab. Results from 31 patients evaluable for efficacy showed the treatment was safe and tolerable, with 21% achieving an objective response. One biliary tract cancer patient who had failed three lines of chemotherapy achieved a complete response with monotherapy VAXINIA and has remained in remission for over 18 months. Two melanoma patients had partial responses—one with monotherapy, the other with combination therapy. Among IV patients, 53% had stable disease as their best response. On 28 November 2023, Imugene announced FDA Fast Track Designation for VAXINIA in bile tract cancer, while on 18 September 2024, it received Orphan Drug Designation, which provides tax credits, grant funding and 7 years of market exclusivity upon FDA approval. The first patient in the bile tract cancer cohort was dosed in July 2024, with plans to enroll 10 patients. Early responses have been promising, with no safety concerns reported, with preliminary data for this cohort expected by late 2024.
- **Three complete responses in Azer-Cel CD19 CAR T Phase 1b trial for DLBCL** – On 16 August 2023, Imugene entered into an agreement with Precision Biosciences to acquire an exclusive global license for the azer-cel allogeneic CD19 CAR T therapy, an asset with extensive clinical data and fast-to-market development potential. A phase 1 clinical trial was completed in 84 blood cancer patients with good safety and efficacy data. Notably, data were especially strong in patients with Diffuse Large B Cell Lymphoma (DLBCL) who had relapsed following auto CAR T therapy, demonstrating an 83% overall response rate, a 61% Complete Response Rate, and 55% duration of response $\geqslant$ 6 months. The Company is currently undertaking a Phase 1b confirmatory study on 10 DLBCL patients who relapsed after auto-CAR T, with the first patient dosed on 10 November 2023. On 2 September 2024, the Company reported three complete responses (CRs): two in Cohort B and one in Cohort A, with CR durability in Cohort B exceeding 120 and 90 days. All patients in Cohort B remain on the trial, and IMU plans to continue enrolling patients. The Company hopes to commence a Phase 2 registration trial in CY25 following the successful completion of the Phase 1b confirmatory trial in H2CY24.
- **Strong management team with extensive experience** – IMU is led by an experienced management team with significant commercialisation expertise, a team of international cancer experts, with over 150 years of combined clinical development experience and 13 FDA-approved drugs. This was strengthened by the appointment of Dr Paul Woodard in September 2023, who has worked on a wide range of drug development and commercialisation projects in solid tumours, haematologic malignancies, and non-malignant haematologic disorders.
- **Landmark agreement with Kincell Bio to significantly reduce costs and extend cash runway –** On 16 April, 2024, Imugene announced a strategic manufacturing partnership, under which Kincell will acquire IMU's North Carolina manufacturing facility for up to USD$6m, which significantly, allows IMU to outsource azer-cel's process development, allowing it to reduce staff by 50% to realise cost savings of US$32m over the next 3 years, extending the Company's cash runway to 2026.

RECOMMENDATION: Imugene is developing a diverse pool of clinical stage assets, each at varying phases of the clinical process, including established as well as novel therapies, which have a more uncertain path to clinical validation and commercialisation. As a result, we have decided to value Imugene using the Sum-of-Parts (SoP) technique. In doing so, we have valued Imugene's B-Cell vaccines, PD1-Vaxx and HER-Vaxx using the risked-adjusted Net Present Value (rNPV) method on the assumption that both therapies are out licensed. Alternatively, due to their novel nature, we have valued Imugene's of oncolytic therapies, VAXINIA and onCARlytics and Allo CAR T cell Therapy azer-cel on a comparative basis, benchmarking against both peer listed companies and historical M&A transactions, and discounting based on clinical progression relative to Imugene's assets. Based on the above, we initiate our coverage of Imugene with a BUY recommendation, deriving a valuation of $0.17 per share, which reflects an implied return of 227% from current levels

COMPANY DATA

Recommendation: BUY
Price: $0.052
ASX Code: IMU
Shares on Issue: 7.44b
Market capitalization: $386.74m
Cash: $93.11m (30-06-24)

BOARD & MANAGEMENT

Paul Hopper: Chairman
Leslie Chong: Managing Director
Dr Jakob Dupont: Non-Exec Director
Kim Drapkin: Non-Exec Director
Dr Lesley Russell Non-Exec Director
Dr Jens Eckstein Non-Exec Director

MAJOR SHAREHOLDERS

Paul Hopper: 5.50%
Vanguard: 4.24%
Mann Family: 3.57%
Total Top 15: 23.57%

CHART

Source: ASX

COMPANY OVERVIEW

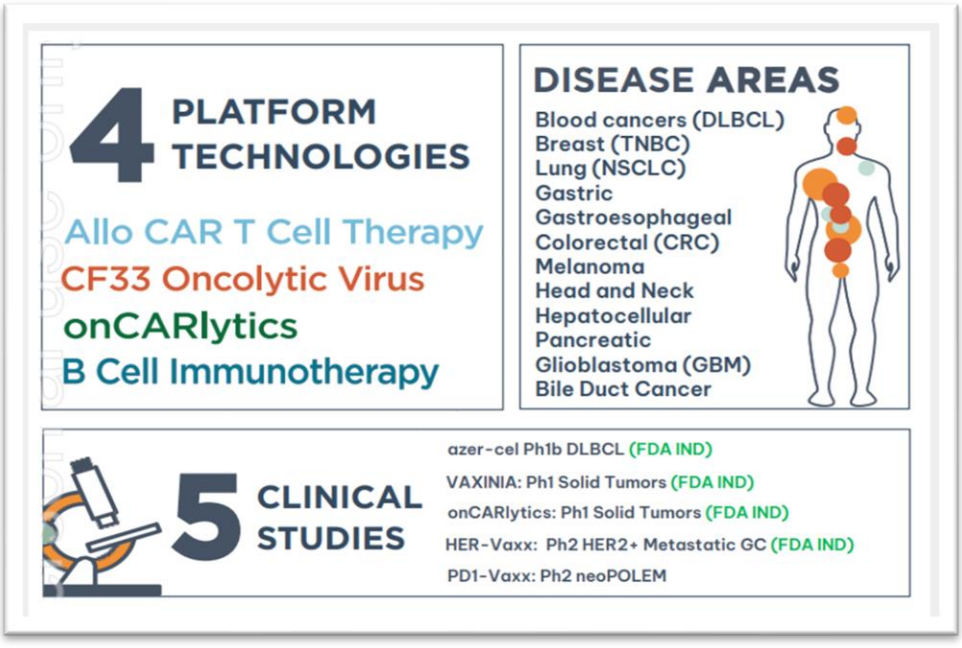
Imugene Limited (ASX: IMU) is an Australian clinical-stage biopharmaceutical company, that focuses on the development and commercialization of a range of new and novel immunotherapies for the treatment of various cancers. The Company was founded in 2013 and began as a research project with the Medical University of Vienna, which developed a B-cell peptide cancer immunotherapy targeting HER-2 overexpressing tumours. Subsequently, a startup named Biolife Science was incorporated to develop Her-Vaxx, the immunotherapy from this research, and was subsequently listed on the ASX in 2013 through a reverse takeover of an existing company, Imugene, whose name was retained.

Imugene has acquired and developed a diverse pipeline of immunotherapy assets that seek to activate the immune system against cancers. The Company's pipeline currently includes 5 unique clinical stage assets, utilizing its 4 separate platform technologies, with the potential for further assets to enter the clinic on the horizon. Imugene is targeting wide a range of different disease areas that have high unmet needs and low survival rates.

The Company, which listed into the ASX:IMU shell in December 2013, started with its two B-cell vaccine candidates, HER-Vaxx and PD1-Vaxx, which aim to treat gastric and non-small cell lung and commencing in 2024 colorectal-cancer respectively, by targeting specific cancer markers (HER2 and PD-1) to stimulate an immune response against them, to target and destroy cancer cells. Imugene is also developing two Oncolytic Virus therapies using CF33, a chimeric vaccinia poxvirus developed at the City of Hope Clinic in California, that is genetically modified to selectively target and destroy cancer cells. VAXINIA (CF33+hNIS) is being studied as a monotherapy and in combination with Pemrolizumab for the treatment of Metastatic or Advanced Solid Tumours (MAST), and onCARlytics therapy, CF33-CD19 in combination with CD19 targeting bispecific antibody blinatumomab, for the treatment of solid tumours, and the recently acquired allogeneic cell therapy azer-cel, which has become a key focus, for the treatment of blood cancers (Non-Hodgkin's Lymphoma and Acute Lympthocytic Leukemia).

Imugene's commercialization strategy is centred around the acquisition and advancement of a diverse portfolio of immunotherapy assets, primarily in the early clinical stages. The company's approach involves guiding each asset through the initial phases of clinical development, with a focus on establishing safety in Phase 1 trials and identifying early indications of efficacy in subsequent Phase 1b/2 studies. Achieving these milestones for each asset lays the groundwork for Imugene to pursue out-licensing opportunities with major pharmaceutical companies. Typically, licensing deals are generally structured with an up-front cash payment, payments upon reaching certain development milestones such as entering Phase 3 trials, payment on FDA approval of the drug, and royalties on net sales when the drug is on the market.

Imugene is well led by an experienced management team significant commercialisation expertise and is well supported by a leading team in international cancer experts, with over 150 years of combined experienced in clinical development and brought 13 FDA approved drugs to market. The Company has also de-risked its research and manufacturing capability through the acquisition of a laboratory space dedicated to research, translation and process development. In April 2024, Kincell Bio acquired Imugene's GMP-certified manufacturing facility for Advanced Therapeutics (MCAT) with a current manufacturing capacity of 1,500 doses per year. While Imugene retains all oncology rights to azer-cel, Kincell Bio will take over the manufacturing of azer-cel, thus allowing the Imugene team to focus on the development of novel cancer treatments.



Summary of Imugene's technology and ongoing clinical studies, Source: Imugene

SCIENTIFIC OVERVIEW – ONCOLOGY AND IMMUNOTHERAPIES

Oncology is the branch of medicine that deals with the prevention, diagnosis, and treatment of cancer. It is a multidisciplinary field that involves medical professionals from various specialties, including medical oncologists, surgical oncologists, radiation oncologists, and others. The primary goal of oncology is to understand and manage cancer, a group of diseases characterized by the uncontrolled growth and spread of abnormal cells.

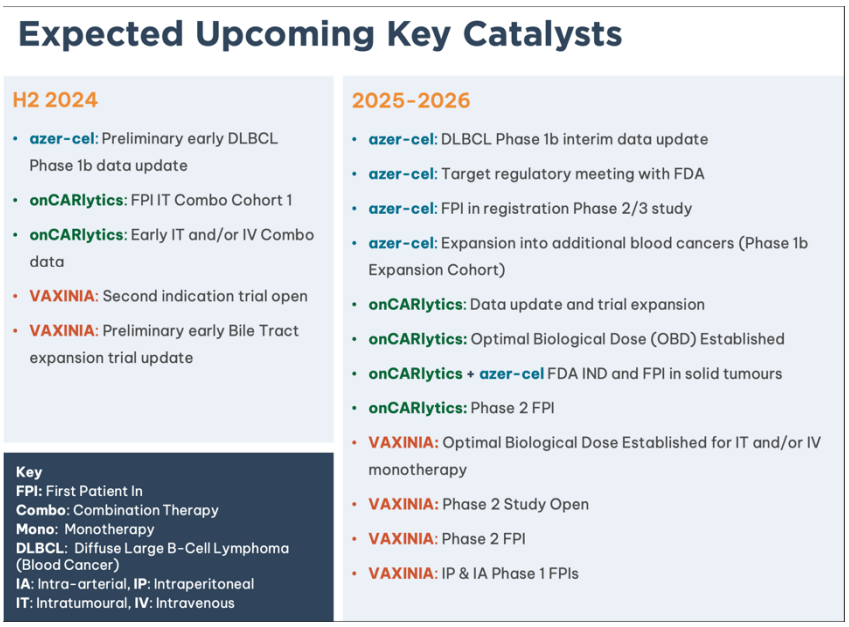
Oncology has been significantly transformed by the advent of immunotherapy. Whereas traditional cancer treatments like surgery, chemotherapy and radiation directly target cancer cells, immunotherapy works indirectly by boosting or modifying the immune systems response to cancer cells. This approach can be more targeted, potentially leading to fewer side effects.

Immunotherapies

Immunotherapies are a type of cancer treatment that use the body's immune system to fight cancer. These therapies are a significant breakthrough in oncology, offering new treatment options for various types of cancer. Here's an overview of the main types of immunotherapies:

1. Checkpoint Inhibitors: These drugs work by blocking immune checkpoints, which are proteins on immune cells that need to be activated (or inactivated) to start an immune response. By blocking these checkpoints, these drugs boost the immune response against cancer cells. Examples include drugs targeting PD-1, PD-L1, and CTLA-4.
2. CAR T-Cell Therapy: This involves genetically engineering a patient's T-cells to produce special receptors on their surface called chimeric antigen receptors (CARs). These receptors allow the T-cells to recognize and attack cancer cells. CAR T-cell therapies are mainly used in the treatment of certain blood cancers, such as leukemia and lymphoma.
3. Cancer Vaccines: Unlike traditional vaccines that prevent disease, cancer vaccines are designed to treat existing cancer or to prevent cancer from coming back. They work by stimulating the immune system to attack cancer cells.
4. Oncolytic Virus Therapy: This therapy uses viruses that are modified to infect and kill cancer cells. While these viruses cause the cancer cells to rupture and die, they also stimulate an immune response against the cancer.
5. Monoclonal Antibodies: These are immune system proteins created in the lab to bind to specific targets on cancer cells. Some monoclonal antibodies mark cancer cells so that they are better seen and destroyed by the immune system.
6. Adoptive Cell Transfer: In this therapy, immune cells are taken from the tumor, modified or treated in the lab to enhance their ability to fight cancer, and then reintroduced into the patient's body.
7. Immune System Modulators: These therapies enhance or suppress the immune system to help the body fight cancer, infections, and other diseases. They include treatments like cytokines (interferons and interleukins) which modulate the immune system's response to cancer.

Each of these therapies has its advantages and is suitable for different types of cancer. The choice of therapy depends on various factors, including the type of cancer, its stage, and the patient's overall health. Immunotherapies have revolutionized cancer treatment, offering hope for many patients, especially those with cancers that were previously considered difficult to treat. However, they can also cause side effects by stimulating the immune system, and ongoing research aims to improve their efficacy and safety profiles.



Summary of Imugene's technology and ongoing clinical studies, Source: Imugene

ASSET PIPELINE & CLINICAL PROGRESS

Imugene's asset pipeline is a collection of innovative therapies in the field of immuno-oncology, each at different stages of clinical development. Here's a detailed overview of their main assets:

1. B-cell Vaccine Candidates:

A. **HER-Vaxx (Phase 2):** This therapy targets tumours that overexpress the HER-2/neu receptor, such as gastric, breast, ovarian, lung, colorectal and pancreatic cancers. HER-Vaxx uses B-Cell Immunotherapy technology to stimulate an immune response against the HER2 surface marker.

- Target: HER-Vaxx works by targeting the HER-2/neu receptor, which is often overexpressed in certain types of cancer. Overexpression of this receptor is associated with aggressive tumour growth and poor prognosis in patients.
- Mechanism of Action: The vaccine uses B-cell immunotherapy technology. It stimulates the patient's immune system to produce an immune response against the HER2 surface marker. This response is expected to help the body's own immune system recognize and attack the cancer cells.
- Potential and Advantages: HER-Vaxx represents a novel approach in the treatment of HER-2 positive cancers. The use of the body's own immune system to fight cancer can potentially offer a more targeted and less toxic alternative to traditional cancer therapies like chemotherapy.
- Clinical Progress:
  - **Gastric Cancer:** In June 2022, Imugene announced final HER-Vaxx Overall Survival results in its randomized Phase 2 trial in Advanced Gastric Cancer. The final analysis results from the randomised clinical HERIZON study, which was designed with a specified 1-sided false positive probability of 0.10, showed a 41.5% survival benefit for patients treated with HER-Vaxx plus SOC chemotherapy compared to SOC chemotherapy alone. This translated into an overall survival Hazard Ratio (HR) of 0.585 (80% 2-sided CI: 0.368, 0.930) with a statistically significant p-value of 0.066. There was no difference in safety events between the two treatment arms, suggesting that HER-Vaxx does not add toxicity to SOC chemotherapy. The company has presented updated results at major oncology conferences since June 2022. Business development discussions are ongoing.

B. **PD1-Vaxx (Phase 1 & Phase 2):** This candidate aims to induce the body to produce antibodies that block PD-1 signalling. The goal is to produce an anticancer effect similar to monoclonal antibodies like Keytruda® and Opdivo®.

- Target: PD1-Vaxx targets the PD-1 receptor, a crucial component in the immune checkpoint pathway. The PD-1 receptor is a protein on the surface of immune cells and plays a significant role in downregulating the immune system, preventing the activation of immune cells, which is a mechanism often exploited by cancer cells to evade the immune response.
- Mechanism of Action: The vaccine is designed to induce the body to produce polyclonal antibodies that block PD-1 signaling. By inhibiting this pathway, PD1-Vaxx aims to restore the immune system's ability to detect and destroy cancer cells.
- Potential and Advantages: The approach of using the body's own immune system to generate a response against PD-1 has the potential to be a more natural and less toxic alternative to existing treatments. It could complement or provide an alternative to existing monoclonal antibodies used in cancer treatment, like Keytruda and Opdivo.
- Clinical Progress:
  - **Non-Small Cell Lung Cancer (NSCLC)**: Imugene is currently winding down (closed to new patient enrolment) a Phase 1/1b trial (IMPRINTER) of PD1-Vaxx, a B-cell activating immunotherapy, for treating non-small cell lung cancer (NSCLC). The trial is designed to evaluate the safety, tolerability, and efficacy of PD1-Vaxx both as a monotherapy and in combination with atezolizumab, a PD-L1 targeting checkpoint inhibitor. The aim is to assess how well PD1-Vaxx can enhance the immune response against cancer cells in NSCLC patients. On 1 June, 2023, Imugene announced that the first patient has been dosed in the combination cohort of the IMPRINTER study.
  - **Colorectal Cancer (CRC)**: On December 6, 2023, Imugene announced that it had signed a letter of intent to open a phase 1 clinical trial (Neo-POLEM) in which PD1-Vaxx vaccine will be evaluated for patients diagnosed with operable CRC cancer. Treatment with PD1-Vaxx will be administered before surgery (neoadjuvant). The trial is expected to recruit approximately 44 patients in sites both in Australia and the UK.

PD1-Vaxx represents a significant advancement in the field of cancer immunotherapy, particularly in leveraging the body's immune system to fight cancer more effectively.

2. CF33 Oncolytic Virus (OV) Therapy

A. **VAXINIA (CF33 + hNIS) (Phase 1)**: This therapy involves a genetically modified poxvirus that infects and destroys cancer cells, leading to an immune response against the cancer antigens.

- Oncolytic Virus Therapy: VAXINIA is based on the principle of oncolytic virotherapy, which involves using viruses to selectively infect and kill cancer cells. It's a form of immunotherapy that uses genetically modified viruses to target and destroy cancer cells.
- VAXINIA(CF33 + hNIS): The therapy combines a chimeric vaccinia (pox) virus (known as CF33) with human sodium iodide symporter (hNIS). CF33 is a genetically engineered virus designed to selectively infect and kill cancer cells, while hNIS is an added gene that allows for imaging of the virus in the body and potential synergistic treatments.
- Mechanism of Action: VAXINIA works by infecting cancer cells with the CF33 virus, which then replicates inside these cells and causes them to burst (lyse). This lysis releases new viral particles that can infect other cancer cells, and it also releases tumor antigens that can stimulate a systemic immune response against the cancer.
- Potential Benefits: The therapy aims to provide a novel treatment option for patients with solid tumors. Its mechanism offers the potential for direct tumor destruction and the initiation of an immune response against cancer, which could be beneficial in treating various types of cancer, including colorectal, bile tract, pancreatic and liver cancer.
- Clinical Progress:
  - **Metastatic or Advanced Solid Tumours (MAST):**

Imugene's Phase 1 clinical trial (MAST) of VAXINIA is evaluating the safety, tolerability, and preliminary effectiveness of this oncolytic virus therapy in patients with advanced solid tumors who have received at least two prior treatments. The trial is being administered intratumorally (IT) or intravenously (IV), either as monotherapy or in combination with Pembrolizumab (KEYTRUDA®). The study aims to recruit up to 100 patients across 12 sites in the US and Australia.

As of 19 January 2024, the first patients in cohort 5 of both IT and IV arms were dosed. By 24 April 2024, 47 heavily pre-treated patients had been dosed, with 40 evaluable patients (having received their first scan by day 42). Nearly 48% of these patients remained on treatment for over 3 months, demonstrating significant disease control. One bile duct cancer patient achieved a complete response (CR) lasting 1.75 years (630 days), while 2 melanoma patients showed partial responses (PRs), and 17 patients achieved stable disease (SD).

On 28 November 2023, the FDA granted Fast Track Designation for VAXINIA in bile duct cancer, allowing for expedited regulatory processes. In September 2024, Imugene further received Orphan Drug Designation (ODD) from the US FDA for CF33-hNIS (VAXINIA) in treating cholangiocarcinoma, a rare and aggressive bile duct cancer. ODD offers benefits such as tax credits, potential grant funding, administrative fee waivers, and seven years of market exclusivity. Imugene plans to expand the study to include an additional 10-20 bile duct cancer patients. The trial continues to progress, with cohort 5 cleared for both IT and IV arms, and no safety signals observed. The sixth cohort is now open and enrolling. On 10 July 2024, the first patient was dosed in the bile duct cancer expansion trial, which is expected to recruit 10 patients across 8 US sites and 2 Australian sites. VAXINIA combines the cancer cell-killing effects of oncolytic viruses with immune system activation, offering a promising new approach to cancer treatment.

B. **onCARlytics CF33-CD19 OV Therapy (Phase 1)**: CD-19 CAR-T or CD-19 Bispecific antibody - therapy focuses on modifying T cells to target cancer cells, particularly B cell malignancies or blood cancers. The combination of onCARlytics with the CF33 oncolytic virus aims to target solid tumors more effectively.

- Chimeric Antigen Receptor T-Cell Therapy (CAR-T): This therapy involves genetically engineering T-cells (a type of immune cell) to produce a chimeric antigen receptor (CAR) that specifically targets CD19, a protein found on the surface of B-cells.
- Target: CD-19 is a protein expressed on the surface of B-cells, which are a part of the immune system. By targeting CD-19, this therapy aims to treat B-cell malignancies, which are types of blood cancers that affect B-cells, like certain leukemias and lymphomas.
- Mechanism of Action: The engineered CAR-T cells are designed to recognize and attach to CD-19 expressed on the surface of cancerous B-cells. Once bound, these CAR-T cells can kill the cancerous B-cells. This process is intended to help the immune system in identifying and eliminating cancer cells.
- Potential and Advantages: CAR-T therapies have shown promise in treating certain types of cancers, particularly blood cancers. The CD-19 CAR-T therapy could potentially offer a new treatment option for patients with B-cell malignancies, especially for those who have not responded to other treatments.
- Clinical Progress:
    - **Advanced or Metastatic Solid Tumours:**
      Imugene has commenced a first-in-class Phase 1 clinical trial of onCARlytics (on-CAR-19, CF-33-CD19 HOV4), known as OASIS. The trial aims to evaluate the safety and efficacy of onCARlytics in adult patients with advanced or metastatic solid tumours, using intratumoral (IT) injection or intravenous (IV) infusion, either alone or in combination with bispecific antibody blinatumomab (Blincyto®). The dose escalation trial is being conducted across over 10 sites in the US, with plans to recruit approximately 40-45 patients.
      Imugene confirmed that the first patient with ovarian cancer was dosed in the IT administration cohort, and another patient with bile duct cancer was dosed in the IV cohort at City of Hope's Cancer Center in Duarte, California. The Cohort Review Committee (CRC) observed no safety issues in the onCARlytics monotherapy lead-in trial and recommended opening the combination arm. On 24 June 2024, Imugene announced that it had dosed the first patient in the IV combination arm.
      Preliminary data from the combination arm is expected by Q4 2024, pending patient enrollment. This therapy represents an important area of cancer research, particularly for solid tumors, which make up 90% of the cancer market. If successful, onCARlytics could expand the use of CD19-targeted therapies, currently approved for blood cancers, to treat solid tumors.

3. Allogeneic CAR T Cell Therapy

A. Azer-cel (Phase 1): A type of therapy that involves modifying healthy donor T-cells (a type of immune cell) to express a chimeric antigen receptor (CAR) that targets CD19, a protein commonly found on the surface of B-cell lymphomas and leukemias, allowing the T-cells to recognize and kill cancer cells. Imugene acquired azer-cel from US-based Precision Biosciences in August 2023.

- Target: Given that azer-cel targets CD19, it is primarily aimed at treating B-cell malignancies. These can include various types of lymphomas and leukemias, which are cancers originating in the cells of the immune system.
- Mechanism of Action: Azer-cel works by reprogramming the healthy donor T-cells to express a chimeric antigen receptor (CAR) that specifically recognizes CD19 on cancer cells. Once these engineered T-cells are infused into the patient, they seek out and destroy cells expressing CD19.
- Potential Benefits: The primary benefit of CAR T-cell therapies like azer-cel is their ability to offer a targeted treatment option for cancers that may not respond well to conventional therapies. They represent a significant advancement in personalized medicine.
- Acquisition Terms: Under the terms of the agreement, Imugene acquired world-wide exclusive rights to develop and commercialize the azer-cel technology for oncology for the following consideration:
    - US$8m cash and US$13m in deferred consideration on closing, of which the deferred portion has a term of 12 months and may be converted not share and/or redeed for cash at the election of Imugene.
    - US$8m cash on satisfactory completion of Phase 1b clinical trial shortly to commence, which may be paid via the issuance of shares at the election of Imugene.
    - Up to $198m in performance-based payments over the development life of azer-cel linked to the achievement of certain value-inflection development milestones, including approval in multiple indication and sales in US and EU.
    - Industry standard royalties on net sales.
    - Imugene also acquired the lease to a state-of-the-art 32,800 sq feet GMP manufacturing facility in North Carolina, drug material for completion of Phase 1b clinical trial and a highly experienced cell therapy and manufacturing team of approx. 50 personel.
    - In April 2024, Imugene and Kincell Bio announced a strategic partnership, including the sale of Imugene's manufacturing facility to Kincell Bio for up to $6 million USD in upfront and milestone payments. The transaction is expected to yield Imugene approximately A$49.0 million (USD$32 million) in cost savings from salaries, drug manufacturing, and overhead costs. While Imugene retains all oncology rights to azer-cel, Kincell Bio will take over the manufacturing of azer-cel, thus allowing the Imugene team to focus on the development of novel cancer treatments
- Clinical Progress:
    - **Blood Cancers – Non-Hodgkin's Lymphoma (NHL) and Acute Lympthocytic Leukemia (ALL)**:
      A Phase 1 trial of azer-cel was completed by Precision Biosciences, involving 84 relapsed blood cancer patients, particularly those previously treated with autologous (auto) CAR T therapy. Results demonstrated encouraging safety and efficacy, with patients who relapsed after auto CAR T therapy achieving an 83% overall response rate (ORR), a 61% complete response rate (CR), and a 55% duration of response lasting 6 months or more.
      On 10 November 2023, Imugene announced the dosing of the first patient in its Phase 1b confirmatory clinical trial using azer-cel for patients with Diffuse Large B-Cell Lymphoma (DLBCL) who relapsed after auto CAR T therapy. In its most recent update released on 2 September 2024, the Company reported three complete responses (CRs)—two in Cohort B and one in Cohort A—with CR durations exceeding 120 and 90 days in Cohort B. So far 10 patients have been treated with azer-cel in the Phase 1b diffuse large B-Cell lymphoma (DLBCL) trial. Cohort A included 6 patients that were treated with azer-cel and lymphodepletion (chemotherapy), while Cohort B included 4 patients with azer-cel, lymphodepltion (chemotherapy) and interleukin (IL-2). Preliminary results from the Phase 1b trial are expected by late 2024. If successful, these results will support the commencement of a Phase 2 registration study, subject to FDA approval. This could make azer-cel the first approved allogeneic CAR T-cell therapy for cancer.
      These therapies reflect Imugene's commitment to advancing cancer treatment through immunotherapy. The company's success in developing these therapies could provide new, effective treatment options for various types of cancer. Imugene's approach is particularly notable for its focus on stimulating the immune system to recognize and fight tumors, a strategy that has shown promise in recent years.

MARKET OVERVIEW

Gastric Cancer [HER-Vaxx]
The prevalence of gastric cancer is impacted by a range of factors, including geographic variation (higher prevalence in East Asia, Eastern Europe and South America), dietary factors (diets with higher salt, smoked foods), history of helicobacter pylori infection, age/gender and other genetic, lifestyle and socioeconomic aspects. It is estimated there around 1 million people are diagnosed with gastric cancer per year globally, and between 15% and 20% of all gastric cancers are estimated to be HER-2 positive. From a US perspective, the American Cancer Society forecasted there to be around 26,500 new cases of gastric cancer diagnosed in 2023, translating to between 3,975 and 5300 cases of HER-2 positive gastric cancers in the US per year.

Non-Small Cell Lung Cancer (NSCLC) [PD1-Vaxx]:
Lung cancer is widely acknowledged as the second most common and deadly cancer, with around 2.2m cases diagnosed annually worldwide. Around 81% of all lunger cancer cases are categorised as non-small cell lung cancer (NSCLC), translating to around 1.78m of NSCLC diagnosed each year.

Colorectal cancer (PD1-Vaxx)), also known as bowel cancer, is the third most common cancer, with a worldwide annual incidence of over 1.2 million cases and a mortality rate of approximately 50%. About 80% of patients with colon cancer have localised and resectable disease at diagnosis. In 2018, there were 15,610 new cases of bowel cancer diagnosed in Australia (8,490 males and 7,120 females). In 2022, an estimated 15,713 new cases of bowel cancer were diagnosed in Australia (8,300 males and 7,413 females). It is estimated that a person has a 1 in 19 (or 5.2%) risk of being diagnosed with bowel cancer by the age of 85 (1 in 18 or 5.6% for males and 1 in 21 or 4.8% for females).

Metastatic or Advanced Solid Tumours (MAST) [Vaxinia]
Bile Tract Cancer is considered a relatively rare form of cancer, and its prevalence varies greatly across regions, with the highest incidence reported amongst Asia, with an incidence as high as 85 per 100,000 people in Thailand, and as low as 0.40 per 100,000 people in Canada. While it is difficult to find statistics on the global prevalence of bile duct cancer, the American Cancer Society estimates that around 8,000 people are diagnosed with bile duct cancer in the US each year. Considering Europe has a slightly higher prevalence that the US (range between 2.00-3.59/100,000 compared to 2.33-2.35/100,000), we estimate the number of people diagnosed with bile duct cancer in Europe to be around 12,500 per year. It is estimated that XX% of all bile duct cancers are categorized as Metastatic or Advanced Solid Tumours.

Diffuse large B-cell lymphoma (DLBCL) [azer-cel] According to Imugene, around 18,000 patients are diagnosed with diffuse large B-cell lymphoma (DLBCL) across G8 countries each year. Autologous CD19 CAR T-cell therapy is being increasingly used for treating DLBCL, especially in patients whose cancer is refractory or has relapsed after standard treatments like chemotherapy, and this is expected to grow by 4X as auto CAR T drugs become the Standard of Care. Critically, between 60% and 65% of patients treated with Auto CD19 CAR T relapse, equating to a relapse/refractory market of around 11,000 patients for Imugene to target for treatment with azel-cel.

COMPETETIVE LANDSCAPE

HER2+ Gastric Cancer [HER-Vaxx]: Imugene's lead drug candidate HER-Vaxx faces competition from already approved HER2 directed gastric cancer mAbs (e.g Trastuzumab (Herceptin)) and ADC's (e.g fam-trastuzumab deruxtecan-nxki (Enhertu)). Multiple targeted therapies and immunotherapies are currently under clinical trial for advanced or metastatic gastric cancer, indicating competition in this particular disease area. Herceptin and Enhertu are major HER-2-directed therapeutics that are FDA approved. Even though HER-Vaxx exhibited robust efficacy and safety in the early stages of clinical development, the company's ability to fend off competition depends on its superior safety and comparative efficacy profile at a reasonable cost.

NSCLC and Coloractal Cancer [PD1-Vaxx]: Immune Checkpoint Inhibitors dominate the landscape recording billions of dollars in sales worldwide. However development of resistance to PD1 inhibitors has contributed to just an response rate of only 20-30% responding to the monotherapy. PD-1 Vaxx is potentially a cost-effective, potent, and novel approach toward inhibiting the PD1/PD-L1 signaling pathway, thus triggering anti-cancer effects similar to those observed with blockbuster monoclonal antibodies such as Keytruda® and Opdivo® - which are both in the top 10 drugs by revenue worldwide. By the time PD-1 Vaxx gets FDA approval and is commercialized (estimated: 2028), the blockbuster monoclonals would have lost their exclusivity or would be on the verge of losing their exclusivity, leading to the entrance of lowcost biosimilars. The pricing of PD-1 Vaxx will also play a major role in its ability to capture increased market share.

Colorectal Cancer [VAXINIA]: Oncolytic virotherapy is an emerging area in cancer treatment, where viruses are used to selectively infect and kill cancer cells. Imugene's VAXINIA, developed for the treatment of solid tumors like colorectal cancer, competes in a field that includes various other oncolytic viruses at different stages of clinical development. Competitors include Reolysin (pelareorep), an oncolytic reovirus by Oncolytics Biotech, and T-VEC (talimogene laherparepvec) by Amgen, which is currently the only FDA-approved oncolytic virus for melanoma but is also being explored in other cancers. The competitive edge for VAXINIA would depend on demonstrating enhanced efficacy, safety profiles, and potentially synergistic effects with other cancer therapies.

Solid Tumors [onCARlytics]: onCARlytics represents a novel therapeutic class combining oncolytic virus and CAR T-cell therapy strategies, targeting CD19 expressed on cancer cells. This platform faces competition from traditional CAR T-cell therapies that are already approved for certain hematological cancers, such as tisagenlecleucel (Kymriah) and axicabtagene ciloleucel (Yescarta), as well as from emerging bispecific antibodies and small molecule inhibitors targeting similar pathways. The development of resistance to existing therapies and issues related to the cost and complexity of CAR T-cell treatments could provide an opportunity for a more efficacious and easier-to-administer oncolytic virotherapy like onCARlytics.

Diffuse large B-cell lymphoma (DLBCL) [azer-cel]: The DLBCL market has a diverse pipeline, with the emergence of novel classes such as CD20 targeting bi-specific antibodies such as Epcoritamab-bysp [Epkinly] approved in May 2023 and glofitamab-gxbm [Columvi] approved in June2023 in the third-line setting, whereas uptake of autologous CD-19 targeted CART-T's is expected in the earlier lines.

KEY STRENGTHS

- **Innovative Immunotherapy Pipeline**: Imugene's focus on immunotherapies represents a strength, especially in the context of advancements in cancer treatment. Immunotherapies have shown promise in leveraging the body's immune system to target and destroy cancer cells.
- **Clinical Trials and Research**: The company's engagement in clinical trials indicates a commitment to advancing its therapeutic candidates through rigorous testing. Positive trial outcomes can contribute to the credibility and potential success of Imugene's products.
- **Experienced Management Team**: The presence of an experienced and knowledgeable management team is crucial in the biopharmaceutical industry. Leadership with expertise in drug development, regulatory affairs, and commercialization can positively impact a company's success.
- **Strategic Partnerships**: Collaborations and partnerships with other pharmaceutical companies or research institutions can provide Imugene with additional resources, expertise, and opportunities for development.
- **Focus on Unmet Medical Needs**: If Imugene's pipeline addresses unmet medical needs or offers improvements over existing treatments, it could create a competitive advantage and enhance the company's market position.

KEY RISKS

- **Financial Challenges**: Biopharmaceutical development is capital-intensive, and companies often face financial challenges. Imugene's financial health, including its ability to secure funding for research and development, can be a potential weakness.
- **Clinical Trial Risks**: The outcome of clinical trials is uncertain, and there's always a risk of unexpected results, safety concerns, or regulatory issues. Negative trial outcomes can impact the prospects of Imugene's drug candidates.
- **Market Competition**: The biopharmaceutical industry is highly competitive, and Imugene may face competition from established pharmaceutical companies and emerging biotech firms. Competition can impact market share and the ability to bring products to market successfully.
- **Regulatory Approval Challenges**: The regulatory approval process for new drugs can be complex and lengthy. Delays or regulatory hurdles may affect the timeline for bringing products to market.
- **Dilution due to funding risk:** While Imugene has a relatively broad portfolio, its most advanced assets are atleast 2 years away from commercialisation, raising the likelihood that the company will need to raise funds and dilute existing shareholders in the interim (unless Company undertakes other funding alternatives).

FINANCIAL OVERVIEW & CAPITAL STRUCTURE

FINANCIAL RESULTS

Full Year Results – FY24

On the 30th of August 2024, Imugene released their annual report for FY24.

For the year ending 30 June 2024, Imugene reported a net loss of $149.68m, representing a 295% increase compared to the previous corresponding period (FY23: $37.91m). The significant increase in loss is largely attributed to the escalation in clinical trial and research activities, particularly in research and development expenses and associated costs of expanding their pipeline. Employment and consulting costs amounted to $30.31m, contributing to the growing operational expenses. Additionally, the loss included a non-cash accounting loss on the disposal of property and equipment of $11.26m.

Following a successful $35m placement and $18.2m share purchase plan (SPP), net assets decreased to $118.25m (30 June 2023: $189.63m). As of 30 June 2024, Imugene held cash reserves of $93.11m (30 June 2023: $153.15m), reflecting the financial outflows associated with increased development efforts and acquisitions.

CAPITAL STRUCTURE

Quoted Securities		
IMU	Ordinary Fully Paid	7,437,250,222
IMUOE	Option Expiring 31-Aug-2026	737,734,384
Unquoted Securities		
IMUAAJ	Option Expiring 18-Sep-2026 EX: $0.188	3,875,000
IMUAAK	Option Expiring 30-Sep-2026 EX $0.24	14,000,000
IMUAZ	Option Expiring 23-Dec-2024 EX $0.45	311,075
IMUAAF	Option Expiring 31-Mar-2026 EX $0.33	200,000,001
IMUAAD	Option Expiring 30-Jun-2026 EX $0.18	1,500,000
IMUAAE	Option Expiring 01-Jul-2026 EX $0.188	1,540,000
IMUAY	Option Expiring 30-Apr-2025 EX $0.19	45,000,000
IMUAAL	Option Expiring 03-Jan-2027 EX $0.142	773,534
IMUAAM	Option Expiring 09-Jan-2027 EX $0.154	804,461
IMUAAG	Option Expiring 30-Jun-2026 EX $0.306	38,015,538
IMUAAH	Option Expiring 29-Sep-2026 EX $0.184	1,700,000
IMUAAI	Option Expiring 14-Dec-2026 EX $0.40	3,000,000
IMUAAB	Option Expiring 01-Feb-2026 EX $0.45	2,000,000
IMUAAA	Option Expiring 01-Feb-2026 EX $0.40	1,000,000
IMUAAN	Restricted Stock Units	133,860,745
IMUAAO	Performance Rights Award	34,527,385
IMUAAP	Option Expiring 13-Sep-2028 EX $0.067	18,000,000
IMUAAQ	Option Expiring 13-Sep-2028 EX $0.091	12,000,000

VALUATION AND METHODOLOGY

Imugene is currently developing 5 core clinical-stage immunotherapy assets across its 4 platform technologies, with a strategy to target atleast 12 separate indications. While Imugen's pool of clinical assets is diverse, this also makes it a challenging company to value, particularly due to the fact that its portfolio includes some novel therapies and that the assets are at varying stages of the clinical development process. Based on this, we have valued Imugene using the "sum-of-parts" valuation method, and have primarily focused on the development and commercialisation of Imugene's high-priority clinical-stage assets, comprising of its CF33 oncolytic virotherapies (VAXINIA & onCARlytics) and two B-cell vaccine candidates PD1-Vaxx and Her-Vaxx.

CF33 Oncolytic Virotherapies

Valuing oncolytic virotherapies like Imugene's CF33, specifically the VAXINIA and onCARlytics assets, is complex due to multiple factors. These therapies are in early clinical stages, where significant scientific and regulatory uncertainties exist. While integration of oncolytic viruses with CAR T-cell technology in onCARlytics presents a novel approach that lacks extensive historical data, making it difficult to predict outcomes and market acceptance. As such, we have chosen to value these assets using comparative analysis, based on the comparable benchmark M&A transactions and publically listed company's.

VAXINIA

Imugene's VAXINIA, utilizing the CF33 oncolytic virus, is a pioneering asset in the field of oncolytic virotherapy aimed at treating cancer by selectively destroying cancer cells and stimulating an immune response. The valuation of such an early-stage asset needs to consider both the significant potential market and the inherent risks associated with development. While there have not been many comparable M&A transactions in recent times, there are multiple examples demonstrating the markets readiness to invest heavily in oncolytic virotherapies that show promise. Most notably, was Merck's acquisition of Viralytics for approximately US$394m in 2018, who at the time were undergoing Phase 1 and 2 clinical trials for its lead asset Cavatak. Additionally, Amgen's purchase of BioVex for up to US$1 billion in 2011, while they were conducting Phase 3 trials of Imlygic, highlights the significant valuations that oncolytic virus companies with advanced assets can achieve. In terms of market comparables, the Nasdaq-listed Replimune Group seems to be the most like-for-like comparable. Replimune Group which has a market cap of US$709m, are currently developing their lead asset RP1, a phase 2 oncolytc immunotherapy, which uses genetically modified herpes simplex virus type 1 (HSV-1) to kill cancer cells and express GM-CSF directly at the tumour site. We have valued VAXINIA based on comparative analysis, focusing on historical transactions and industry benchmarks, as well as the stage of clinical development. Based on these market dynamics and the clinical potential of Vaxinia, we believe VAXINIA could be reasonably worth around AUD$306m (US$205m), which we we think is sound when you consider that both comparative phase 2 assets noted above were valued at US$394m and US$709m respectively, and the fact that phase 2 assets are generally worth around 3 times more than phase 1 assets.

VAXINIA	Code	Type	Phase	USD$	Risked	AUD$
Viralytics		M&A (2018)	Phase 1 & 2	$394,000,000	$131,320,200	$195,667,098
Biovex		M&A (2011)	Phase 3	$1,000,000,000	$166,666,667	$248,333,333
ViraTherapeutics		M&A (2018)	Pre-clinical/Phase 1	$245,000,000	$81,666,667	$121,683,333
Replimune Group	REPL (NASDAQ)	Listed	Phase 2	$709,180,000	$236,393,333	$352,226,067
Average				**$782,726,667**	**$205,348,956**	**$305,969,944**

onCARlytics

Imugene's onCARlytics CF33-CD19 OV asset combines oncolytic virus and CAR T-cell technology to target CD19 on B-cell malignancies, presenting a novel approach to enhancing CAR T-cell therapy efficacy in solid tumors. The acquisitions of Viralytics and BioVex (both mentioned earlier) are also relevant here, however to reflect the substantial market interest in advanced CAR T-cell technologies, we highlight significant transactions such as Gilead Sciences' acquisition of Kite Pharma for approximately $11.9 billion in 2017, and Celgene's purchase of Juno Therapeutics for about $9 billion in 2018, to illustrate the high valuations and investments within this sector. In terms of listed market comparables, NASDAQ-listed Allogene Therapeutics has a market cap of US$556m and is developing cema-cel (ALLO-501A), an anti-CD19 AlloCAR T therapy currently in Phase 2 clinical trials. While additionally, Autolus Therapeutics, which has a market cap of US$1.05b and is developing their lead Phase 2 CAR-T cell therapy, obe-cel (among others) which has already met its primary endpoint in interim results, signicantly increasing the likelihood that it moves through to phase 3. We have valued onCARlytics based on comparative analysis, focusing on historical transactions and industry benchmarks, as well as the stage of clinical development. Based on these market dynamics and the clinical potential of onCARlytics, we believe Vaxinia could be reasonably worth around AUD$245m (US$164m), which we think is sound (if not conservative) when you consider that both comparative phase 2 assets noted above were valued at US$556m and US1.05m respectively, and the fact that phase 2 assets are generally worth around three times more than phase 1 assets, noting that Autolus' looks likely to progress to Phase 3.

onCARlytics	Code	Type	Phase	USD$	Risked	AUD$
Viralytics		M&A (2018)	Phase 1 & 2	$394,000,000	$131,320,200	$195,667,098
Biovex		M&A (2011)	Phase 3	$1,000,000,000	$166,666,667	$248,333,333
Allogene Therapeutics Inc	ALLO (NASDAQ)	Listed	Phase 2	$556,240,000	$185,413,333	$276,265,867
Autolus Therapeutics	AUTL (NASDAQ)	Listed	Phase 2/Phase 3	$1,051,073,105	$175,178,851	$261,016,488
Average				**$750,328,276**	**$164,644,763**	**$245,320,696**

B-Cell Vaxines

Valuing B-cell vaccines is generally easier than valuing oncolytic virotherapies due to the more established history of vaccine development, which offers a clearer path to clinical validation and market approval. This is because vaccines have a wealth of historical efficacy and safety data, well-characterized regulatory pathways, and a more predictable market demand based on previous vaccine rollouts. This differs to oncolytic virotherapies, which while promising, are part of a newer, rapidly evolving field where long-term efficacy and market dynamics are less certain, making their valuation more speculative. As such, we have chosen to value Imugene's B-Cell vaccine therapies using the risk-adjusted net present value method (rNPV).

PD1-VAXX

We have valued Imugene's stage 1 clinical asset PD1-VAXX using the rNPV method over 10 years, assuming that Imugene will license out the asset in return for a 2% royalty, which is reasonable for a stage 1 clinical asset. It is estimated that around 3.4m people combined will be diagnosed with non-small cell lung cancer (2.2m) and colorectal cancer in 2024 and our model forecasts this number to grow to around 3.67m by the time the therapy is estimated to be approved in FY28. We have factored in a relatively conservative price of US$112,550 per treatment, noting that the commercialization timeframe for PD1-VAXX (estimated for 2028) is expected to coincide around the same time the blockbuster monoclonals will lose their exclusivity, leading to entrance of lower cost competitors. Considering that large market size, our model forecasts an market penetration of 1% in FY28, before a gradual increase to 5% in FY33. Our model also utilized a discount rate of 15% and probability of success of 10%, which is consistent for most phase 1 assets. Based on the above, we have valued Imugene's PD1-VAXX asset at around A$244.16m.

Term	10 Years
Current Market Size (patients)	3,400,000
Peak Market Penetration	5%
Pricing (USD$ at approval)	$106,090
Peak Revenue (USD$) - FY33	$26,508,520,507
Royalty Percentage	2%
Probabilty of Success	10%
Discount Rate	15%

HER-VAXX

We have valued Imugene's stage 2 clinical asset HER-VAXX using the rNPV method over 10 years, assuming that Imugene will license out the asset in return for a 5% royalty, which is reasonable for a stage 2 clinical asset. It is estimated that around 150,000 people combined will be diagnosed with gastric in 2024 and our model forecast this number to grow to around 156,050 people by the time HER-Vaxx is estimated to be approved in FY28. We have factored in sale price per patient of around US$156,060, which is conservative but inline with the prices of competing patented therapies. Considering that large market size, our model forecasts a market penetration of 1% in FY26, before a gradual increase to 8% in FY33. Our model also utilized a discount rate of 15% and probability of success of 30%, which is consistent for most phase 2 assets. Based on the above, we have valued Imugene's PD1-VAXX asset at around $232.38m.

Term	10 Years
Current Market Size (patients)	150,000
Peak Market Penetration	8%
Pricing (USD$ at approval)	$175,049
Peak Revenue (USD$) - FY33	$3,087,462,977
Royalty Percentage	5%
Probabilty of Success	30%
Discount Rate	15%

Azer-cel

Azer-cel is the most recent addition to Imugene's portfolio of assets and the most unique due to the novel nature of the technology. It uses a genetically modified oncolytic virus, combined with sodium iodide symporter (hNIS) to selectively infect and kill cancer cells, which allows for the safe tracking of the virus and the infected tumor cells. While there isn't a direct like-for-like comparison for azer-cel, the two most comparable peers we found were Paris-based Cellectis SA, who have a market cap of US$169m and are developing multiple allogeneic CAR T-cell therapies, using gene-edited T-cell product to target CD19-positive leukemias and lymphomas, and NASDAQ-listed Poseida Therapeutics, who have a market cap of US$287m, and are developing multiple CAR-T therapies for the treatment of both blood and solid cancers. We believe these company's provide a good benchmark to value azer-cel, although we have discounted each, to account for the fact that they are each developing multiple phase 1 assets. On this basis, we have derived a valuation of A$170m for Imugene's azer-cel asset.

azer-cel	Code	Type	Phase	USD$	Risked	AUD$
Cellectis SA	CLLS (EURONEXT)	Listed	Phase 1 (multiple)	$169,900,000	$84,950,000	$126,575,500
Poseida Therapeutics	PSTX (NASDAQ)	Listed	Phase 1 (multiple)	$286,500,000	$143,250,000	$213,442,500
Average				**$114,100,000**	**$57,050,000**	**$170,009,000**

Imugene Valuation

Combining the indicative valuations of Imugene's 5 core clinical-stage assets, we have we have established a market value of $1.29 billion for Imugene. Based on this, we initiate our coverage of Imugene with a BUY recommendation, deriving a valuation of $0.17 per share, reflecting an implied return of 232% from current levels.

Imugene	Value
Vaxinia	$305,969,944
onCARlytics	$245,320,696
PD1-Vaxx	$244,164,627
HER-Vaxx	$232,377,527
azer-cel	$170,009,000
Cash (30-June-24)	$93,108,000
Valuation	**$1,290,949,794**
Total Shares	
Unrestricted	7,437,250,222
Restricted	133,860,745
	7,571,110,967
Valuation	**$0.17**

BOARD & MANAGEMENT – Non-Executive Director

Name & Position	Description
Leslie Chong CEO & Managing Director	Ms Chong has 24 years of oncology experience in Phase I – III of clinical program development, including leadership role involvement in two marketed oncology products. She was previously Senior Clinical Program Lead at Genentech, Inc., in San Francisco. Genentech is widely regarded as one of the world's most successful biotech companies with a strong oncology franchise including the best-selling breast cancer drug Herceptin.
Paul Hopper Executive Chairman	Mr. Hopper has over 25 years experience in the biotech, healthcare & life sciences sectors. Focused on start-up and rapid growth companies, he has served as either Founder, Chairman, non-executive director, or CEO of more than fifteen companies in the US, Australia and Asia. Previous and current Boards include Imugene, Radiopharm Theranostics, Chimeric Therapeutics, Viralytics, Prescient Therapeutics, Polynoma and Arovella Therapeutics. His experience covers extensive fund raising in US, Australia, Asia and Europe, and he has deep experience in corporate governance, risk and strategy. He also has many years experience in providing corporate advice and guidance, financial analysis and management of companies of differing sizes and financial circumstances.
Dr. Jakob Dupont Non-Executive Director	Dr. Jakob Dupont is a renowned expert in the fields of oncology, immunology, immune-oncology, and cell therapy. He has long-standing and deep experience in developing therapies and programs dedicated to addressing high unmet medical needs. Dr. Dupont serves as Global Head of Research & Development for Atara Biotherapeutics a leader in T cell therapy targeting cancer and autoimmune diseases. Dr. Dupont also serves on the Board of Directors for Apexigen Inc. and the Scientific Advisory Board for Ambrx Biopharma. Dr. Dupont has helped a number of companies advance to value creating events including 4 IPOs, a number of successful fund raisings, and 4 significant big pharma partnerships.
Dr Lesley Russell Non-Executive Director	Dr Lesley Russell has more than 25 years of international operational and leadership experience with a number of established and emerging pharmaceutical companies across multiple therapeutic areas including oncology and haematology. Her experience has been gained at a number of leading companies including, Amgen (NASDAQ: AMGN), Eli Lilly (NASDAQ: LLY), US Bioscience/Medimmune Oncology, Cephalon Inc (NASDAQ: CEPH), Teva Pharmacaeuticals (NASDAQ: TEVA), TetraLogic and Innocoll Holdings Plc. Dr Lesley Russell is currently a Non-executive Director of AMAG Pharmaceuticals (NASDAQ:AMAG), Enanta harmaceuticals (NASDAQ:ENTA) and Sojournix a privately held biotechnology company. Dr. Lesley Russell was a non-executive director of Endocyte Pharmaceuticals Inc until its acquisition by Novartis in December, 2018.
Dr Jens Eckstein Non-Executive Director	Dr Jens Eckstein is an established international venture investor and active mentor of life science entrepreneurs and start-up teams. Jens is currently Managing Partner of Apollo Ventures a venture firm focusing on age-related diseases and health span. Before joining Apollo he was president of SROne for eight years. SR One is the corporate venture capital arm of global pharmaceutical giant GlaxoSmithKline which invests in emerging life science companies pursuing innovative science with significant impact on medical care and patients.Dr Eckstein brings more than 15 years of venture capital funding of earlier-stage biopharmaceutical companies, technology transfer, operational and research management experience in drug discovery and biotechnology. He holds several issued patents and has authored over 25 scientific publications. He earned his Doctorate, summa cum laude, in Biological Chemistry in at the University of Konstanz and Harvard University
Kim Drapkin Non-Executive Director	Ms Drapkin has over 25 years of experience working with private and publicly traded biotechnology and pharmaceutical companies, including building and leading finance functions, raising capital, and leading strategic financial planning. In addition to Imugene, Ms. Drapkin currently serves on the board of directors at Acumen Pharmaceuticals (NASDAQ: ABOS) where she chairs the audit committee and is a member of the compensation committee. Most recently, Ms. Drapkin was CFO at Jounce Therapeutics since its inception, playing a key role in building Jounce's financial infrastructure. Prior to joining Jounce, Ms. Drapkin owned a financial consulting firm where she served as the interim chief financial officer for numerous early-stage biotechnology companies. Previously, Ms. Drapkin was chief financial officer at EPIX Pharmaceuticals. Prior to EPIX, Ms. Drapkin spent ten years in roles of increasing responsibility within the finance organization at Millennium Pharmaceuticals. Ms. Drapkin began her career in the technology and life sciences practice at PriceWaterhouseCoopers LLP. Ms. Drapkin holds a B.S. in accounting from Babson College.

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Disclosure of Interests

Lodge directors, consultants and advisers currently hold <1% shares in the Company and may buy or sell the shares from time to time. Lodge has earned and will continue to earn broking commissions by acting for individual clients that are buying or selling their shares in company.

The Company currently is, or in the past 12 months was, a client of Lodge Partner's affiliated company and authorised representative Lodge Corporate Pty Ltd. During this period, Lodge Corporate provided investment banking services to the company. In the past 12 months, Lodge Corporate have received compensation for Investment Banking services from the company.

Analyst Verification

We have prepared this research report accurately and that any financial forecasts and recommendations that are expressed are solely our own personal opinions. In addition, I certify that no part of my compensation is or will be directly or indirectly tied to the specific recommendation or financial forecasts expressed in this report. We do not currently own any shares in the Company.

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