Our Goal
Our goal for Primary Focus Immuno-oncology is to identify, develop and deliver treatments for patients through targeting multiple steps of the cancer immunity cycle simultaneously. Utilizing our in-house oncology expertise and in collaboration with our network of external partners, we are working to develop next-generation immuno-therapies, using new modalities and technologies, to benefit patients who do not respond to currently available cancer immuno-therapies.

Background
Currently only approximately 20% of cancers respond to existing immuno-oncology treatments. By activating and enhancing the immune system in new and multiple ways, we can reinvigorate its ability to discover, disarm and destroy more cancers in more patients. At Astellas, Primary Focus Immuno-oncology is one of the priority investment areas in our research and development strategy.

Strategic Approach
We are allocating significant, sustained investment in multi-functional modality research across the cancer immunity cycle:

- **FOCUS**
  Focusing on urgently advancing innovation for patients with few or limited treatment options, we are investing significantly to enhance our capabilities, skills and infrastructure.

- **ENRICH**
  Leveraging our novel, multi-functional platform technologies to build a diverse pipeline.

- **EXPAND**
  Engaging with the scientific community to expand our pipeline through partnering, collaborations and acquisitions.

Our platform technologies currently in clinical development include:

- Immune checkpoint inhibitors with novel mechanisms of action
- An immuno-stimulating, gene-loading oncolytic virus
- An artificial adjuvant vector cells platform (aAVC) technology
**Early-stage Pipeline**

Our early-stage pipeline is built to trigger anti-tumor immune response by stimulating multiple immune functions at the same time.

**Spotlight: Adoptive Cell Therapy**

Xyphos’ Advanced Cellular Control through Engineered Ligands (ACCEL™) technology platform has the potential to create controllable and versatile cell therapy treatments for hematological and solid tumors. The platform addresses the limitations of traditional chimeric antigen receptor (CAR) immuno-therapies by enabling flexible, sequential and multiplex targeting, in addition to dose control of CAR-T cells. This innovative technology, convertibleCAR®, will allow us to develop new and potentially better ways to find, modulate and destroy targeted cancer cells throughout the body. The lead convertibleCAR® candidate is currently in pre-clinical development, scheduled for a first-in-human study in 2021.

**Current Status†**

Through strategic external collaborations and acquisitions, we have established a robust and competitive immuno-oncology pipeline, with multiple assets in clinical stage:

<table>
<thead>
<tr>
<th>Compound</th>
<th>Modality/mechanism</th>
<th>Origin/partner</th>
<th>Target tumor</th>
<th>Current stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASP8374</td>
<td>Anti-TIGIT antibody</td>
<td>Potenza Therapeutics</td>
<td>(To be determined)</td>
<td>Pre-clinical/research</td>
</tr>
<tr>
<td>ASP1948</td>
<td>Anti-NRP1 antibody</td>
<td>Potenza Therapeutics</td>
<td>(To be determined)</td>
<td>Pre-clinical/research</td>
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<tr>
<td>ASP1951</td>
<td>GITR agonistic antibody</td>
<td>Potenza Therapeutics</td>
<td>(To be determined)</td>
<td>Pre-clinical/research</td>
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<tr>
<td>ASP9801</td>
<td>Oncolytic virus carrying IL-7 and IL-12</td>
<td>Rottmann University</td>
<td>(To be determined)</td>
<td>Pre-clinical/research</td>
</tr>
<tr>
<td>ASP7517</td>
<td>WT1 loaded artificial adjuvant vector cell (aAVC)</td>
<td>RIKEN® **</td>
<td>Acute myeloid leukemia, myelodysplastic syndrome (as the first targets)</td>
<td>Clinical phase 1</td>
</tr>
<tr>
<td>ASP2802</td>
<td>CD20 convertibleCAR-T</td>
<td>Xyphos</td>
<td>Refractory B-cell malignancies</td>
<td>(Not disclosed yet)</td>
</tr>
<tr>
<td>(Not disclosed)</td>
<td>Other tumor antigens loaded aAVCs</td>
<td>RIKEN® **</td>
<td>(Not disclosed yet)</td>
<td>(Not disclosed yet)</td>
</tr>
<tr>
<td>(Not disclosed)</td>
<td>Bispecific antibodies</td>
<td>Xencor **</td>
<td>(Not disclosed yet)</td>
<td>(Not disclosed yet)</td>
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<tr>
<td>(Not disclosed)</td>
<td>Bispecific antibodies</td>
<td>CYTOMX</td>
<td>(Not disclosed yet)</td>
<td>(Not disclosed yet)</td>
</tr>
</tbody>
</table>

**REFERENCES**


In this material, statements made with respect to current plans, estimates, strategies and beliefs and other statements that are not historical facts are forward-looking statements about the future performance of Astellas Pharma. These statements are based on management’s current assumptions and beliefs in light of the information currently available to it and involve known and unknown risks and uncertainties. A number of factors could cause actual results to differ materially from those discussed in the forward-looking statements. Such factors include, but are not limited to: (i) changes in general economic conditions and in laws and regulations, relating to pharmaceutical markets, (ii) currency exchange rate fluctuations, (iii) delays in new product launches, (iv) the inability of Astellas to continue to effectively research and develop products accepted by customers in highly competitive markets, and (v) infringements of Astellas’ intellectual property rights by third parties. Information about pharmaceutical products (including products currently in development) which is included in this material is not intended to constitute an advertisement or medical advice.

† Accurate as of June 2020, * Acquired (current programs classified as ‘in-house’), ** Programs developed under joint research.

The Cancer Immunity Cycle

1. Priming and activation
2. Cancer antigen presentation
3. Acquired immune system
4. Innate immune system
5. Trafficking of T cells to tumors
6. Infiltration of T cells into tumors
7. Recognition of cancer cells by T cells
8. Killing of cancer cells

aAVC: Artificial adjuvant vector cells, CAR-T: Chimeric antigen receptor T, TCR: T cell receptor, NK: Natural killer cell

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