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A novel suicide gene-armed oncolytic virus for enhanced treatment of liver cancer

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Background

Oncolytic viruses (OVs) constitute a novel biological approach in cancer therapy which can be combined perfectly with immune checkpoint inhibitors (ICIs), further enhancing/potentiating anti-tumoral immune responses. OVs have the principal ability to directly kill all kinds of tumors; however, all first generation OVs exhibit a widespread lack in tumor cell permissivity, being a major cause for futility of current viro-therapeutic approaches. To overcome this limitation, we provide a second generation measles vaccine-based OV (TMV-018) being armed with a potent suicide gene which simply is activated by addition of the pro-drug 5-fluorocytosin (5-FC). Thus, the oncolysis threshold can be overcome now enabling OVs to initiate a strong anti-tumoral immune response which then is enhanced/potentiated by ICIs.

Technology

Researchers at University Tübingen and at Max Planck Institute for Biochemistry have developed the innovative suicide gene-armed second generation oncolytic virus TMV-018 that significantly overcomes oncolysis thresholds being instrumental to increase response rates to ICIs.

Key Advantages:

- **Enhanced Oncolytic Effectiveness**: The suicide gene enhances oncolytic efficacy, even in cases of primary tumor cell non-permissivities to OVs, as demonstrated e.g. by near complete destruction of cancer patient derived tumor organoids by TMV-018 + 5-FC.
- **Safety**: Or preclinical data show that TMV-018 is well tolerated in rhesus macaques, with no adverse effects observed in organs, blood parameters, and liver enzymes.

Current Status:

- **Preclinical development**, including toxicity studies, has been **completed**.
- A first **GMP lot** has been produced and is fully characterized.
- A First-in-Human **Phase I/II clinical trial will be initiated in Q2 2024**.

Patent Family and Publications

International Patent Application No. PCT/EP2011/004200, extended and granted in **Europe**, **Japan**, **Mexico** and **United States**. A list of selected **publications** is available at this link.

Opportunity

We are open to discuss **license agreements** to accelerate the integration of this promising second generation oncolytic virus into clinical practice.