Todo LAB

[Development of oncolytic virus therapy]

Division of Innovative Cancer Therapy, The Institute of Medical Science

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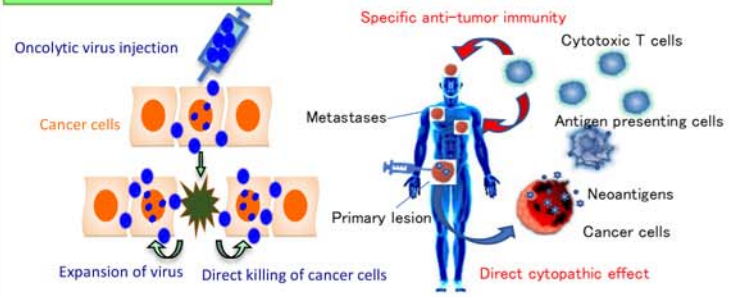
https://www.ims.u-tokyo.ac.jp/cancer/

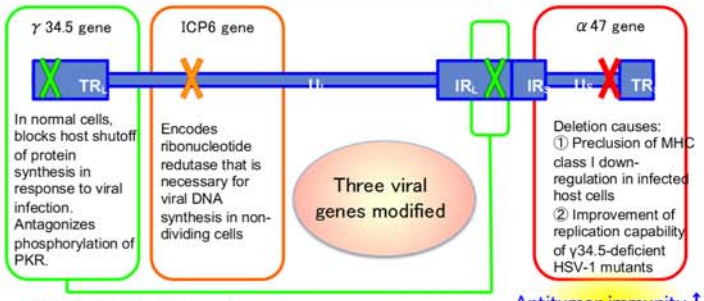
"Oncolytic virus therapy" is an innovative treatment for cancer which utilizes genetically engineered virus that replicates specifically in cancer cells without harming normal tissues. it is also effective for cancer stem cells that is intractable for conventional radiation or chemotherapy. We developed a third-generation oncolytic herpes simplex virus type1, G47Δ, by modifying three viral genes, which achieved robust antitumor effect with high safety features. Intratumoral administration with G47Δ also elicits systemic antitumor immunity and works as an efficient cancer vaccine. We have been dedicated to putting G47Δ into practical use as a new treatment modality that can eventually consist a new standard therapy for all solid cancer. G47Δ was approved as the first Japan-originated oncolytic virus drug in June 2021 for malignant glioma. Development of next-generation oncolytic virus therapy such as armed oncolytic viruses or combination therapy is now ongoing to achieve cancer cure.

Oncolytic virus therapy

"Eradicate cancer using virus"



The third-generation genetically engineered HSV-1, G47Δ



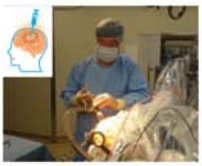
Antitumor immunity ↑

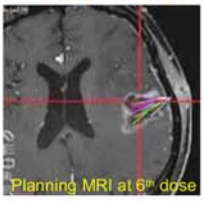
Replication in cancer cells ↑

Clinical trials of G47Δ

Significant efficacy with high safety features

Phase Ⅱ 2015-2020





Target disease : Residual / recurrent glioblastoma (malignant brain tumor)

Administration : Stereotactic, intratumoral administration

Repeated dosing, 4-week intervals, Maximum 6 doses.

Primary endpoint : 1-year survival rate after G47Δ initiation

Interim analysis in July 2018

92% (12/13) ⟷ 15% (A control value based on a meta-analysis)

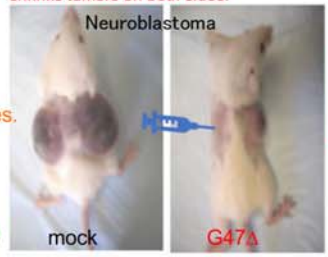
FINAL ANALYSIS

Teserpaturev (DELYTACT®)

Manufacturing and marketing approval (June 2021)

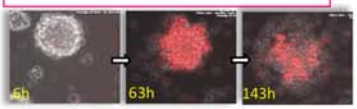
World's first approval for brain tumors

G47Δ administration to unilateral tumors shrinks tumors on both sides.

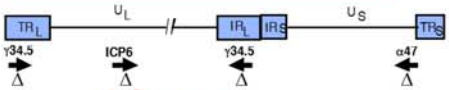


Features

- Robust anti-tumor effect
- High safety
- Effective for all solid cancers
- Also kills cancer stem cells
- Strongly induces anti-cancer immunity



Research for further development

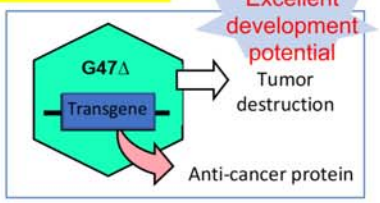


Immune stimulation

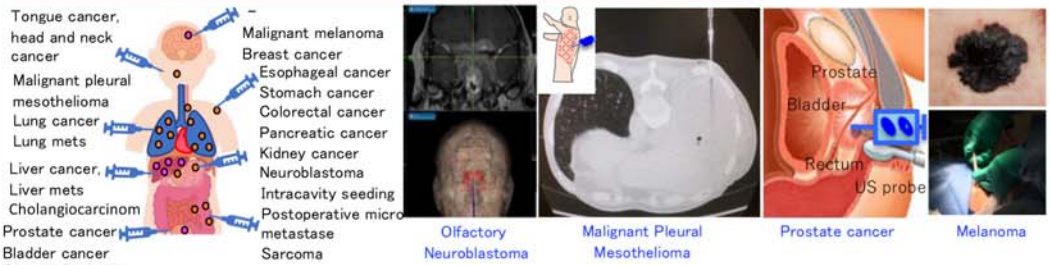
Anti-angiogenesis

Diagnostic markers

It is possible to integrate therapeutic genes into the G47Δ backbone utilizing an innovative system that we developed.



Clinical development of oncolytic virus therapy in Japan in progress



Oncolytic virus therapy will become a treatment option for all cancer