National Cancer Center (NCC) Japan, NCC Seed Acceleration Program（NCC SAP）

Engineered Anti–CTLA-4 Antibody for Tumor Delivery: Toward Human Clinical Validation Within Two Years

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Vision

- We are creating a next-generation anti–CTLA-4 therapy engineered with a collagen-binding domain (CBD), with recurrent glioblastoma (rGBM) as the initial indication. By achieving tumor-selective delivery, we address the safety and efficacy limitations of conventional checkpoint inhibitors (CPI).
- This innovation not only provides a much-needed option for patients with rGBM but also establishes a versatile platform. The CBD technology can be extended to other cancer types and modalities, unlocking multiple therapeutic pipelines and broader market opportunities.

Marketability

- The initial indication is rGBM, where treatment options remain extremely limited and prognosis is poor. Achieving clinical PoC would unlock significant value.
- We plan to expand into CPI-approved tumors such as NSCLC, a rapidly growing market with best-in-class potential, supported by a roadmap from rGBM human PoC to Phase I basket trial across multiple tumor types enabling partnerships and licensing.

Innovation

- A novel approach that engineers CTLA-4 to act specifically within the tumor microenvironment.
- CBD-mediated collagen targeting allows selective accumulation in the tumor, balancing efficacy with safety.
- The technology can be extended to other immunotherapies and modalities, providing broad potential as a versatile platform.

Partnering

【 Expected partners 】

Pharmaceuticals・ Biotech/Drug Discovery Service・ CMO/CDMO/CRO/SMO ・ Venture capitals

【 Expectation 】

Out-licensing and co-development, Talent acquisition and leadership build-up, Series A financing

Research Outline

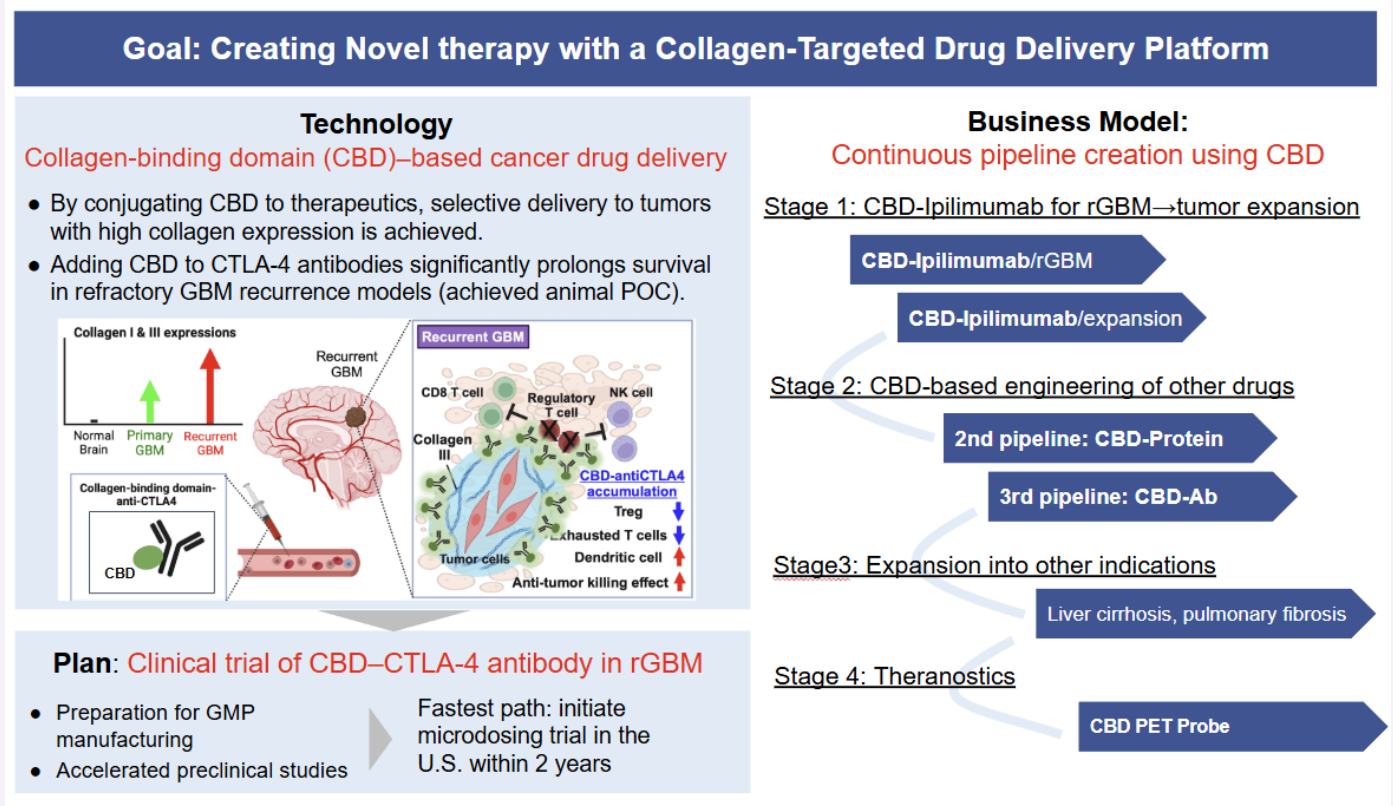
Key Words: #Engineered antibody, #Immuno-oncology, #Drug Delivery

Concept

- A von Willebrand factor (vWF)–derived CBD is fused to an anti–CTLA-4 antibody, enabling selective binding to tumor collagen. This design reduces systemic exposure and strengthens local immune responses.

Nonclinical Data

- In a rGBM model, treatment extended survival and achieved complete remission in some cases.
- The tumor immune microenvironment was favorably remodeled, supporting durable anti-tumor responses.
- Compared with conventional anti–CTLA-4 antibodies, systemic toxicity was markedly reduced, indicating an improved safety profile.



Research Plan

- Our initial focus is rGBM, with a microdose clinical study planned to establish human PoC.
- After establishing PoC, we plan to move into additional tumor types responsive to checkpoint inhibitors, expanding the scope of our therapy.

Reference

- Ishihara J, et al. Targeted antibody and cytokine cancer immunotherapies through collagen affinity. *Sci Transl Med*. 2019;11(487):eaau3259.