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Rakuten anti-cancer therapy candidate to activate immune system response

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Anti-PD1 and CD25 photoimmunotherapy combination treatment led to synergistic anti-cancer activity in target and distal tumors in animal models



Rakuten Medical, Inc. (RMI) a clinical-stage, global biotechnology company with offices in the U.S.,Japan, Taiwan, Germany and the Netherlands, developing precision-targeted cancer therapies based on Rakuten Medical's Illuminox™, its proprietary, anti-cancer treatment platform, introduced new preclinical data suggesting CD25 photoimmunotherapy (PIT) treatment, combined with an anti-PD1 therapy, may stimulate the immune system, and lead to a synergistic, anti-cancer activity in targeted tumors.

"These exciting data suggests that anti-CD25 photoimmunotherapy may alter the immune tumor environment and unlock the potential of combination immunotherapies for patients living with certain types of cancers for which there are few treatment options," said Miguel Garcia-Guzman, Ph.D., Vice Chairman and Chief Scientific Officer at Rakuten Medical. "We are committed to harnessing the full potential of the immune system through modulation of the cancer tumor environment, and these results support our clinical development program based on our anti-cancer treatment platform, Rakuten Medical's Illuminox."

The preclinical data were showcased during a poster presentation during the Society for Immunotherapy of Cancer (SITC) 34 th annual meeting:

"Intratumoral depletion of regulatory T-cells using CD25 targeted photoimmunotherapy elicits anti-cancer immune activity and synergizes with PD1 checkpoint blockade in immunocompetent mouse models." (Abstract P774), presented by Jerry J. Fong, Cancer Biology and Pharmacology, Rakuten Medical.

The poster discusses intratumoral depletion of regulatory T-cells (T_{regs}), a significant source of immune suppression, with an anti-CD25-IR700 conjugate therapy using PIT. Anti-cancer activity and subsequent immune responses following anti-CD25-IR700 PIT treatment, administered alone or in combination with anti-PD1 treatment, were evaluated in immunocompetent mouse models. Key highlights from the studies include:

- Rapid and significant reduction of intratumoral T_{regs}, eliciting significant anti-cancer activity
- An increase of non-exhausted T-cells following a single treatment, suggesting systemic activation and intratumoral recruitment of new CD8 T-cells from the periphery
- Significant enhancement of anti-cancer activity in vivo, as demonstrated by percentage of mice achieving complete responses (CRs) with combination treatment in comparison to animals receiving one treatment alone

- Durable increase of intratumoral CD8 T-cell/T_{reg} ratio
- Enhanced systemic adaptive immune responses and induced abscopal anti-cancer effects in a CD8 T-cell dependent manner
- Tumor-specific immune memory response as demonstrated by systemic tumor-antigen-specific cytotoxic lymphocytes expansion and prevention of new tumor growth in CR mice
- Combination treatment enhanced systemic adaptive immune responses and induced abscopal anti-cancer effects in a CD8 T-cell dependent manner