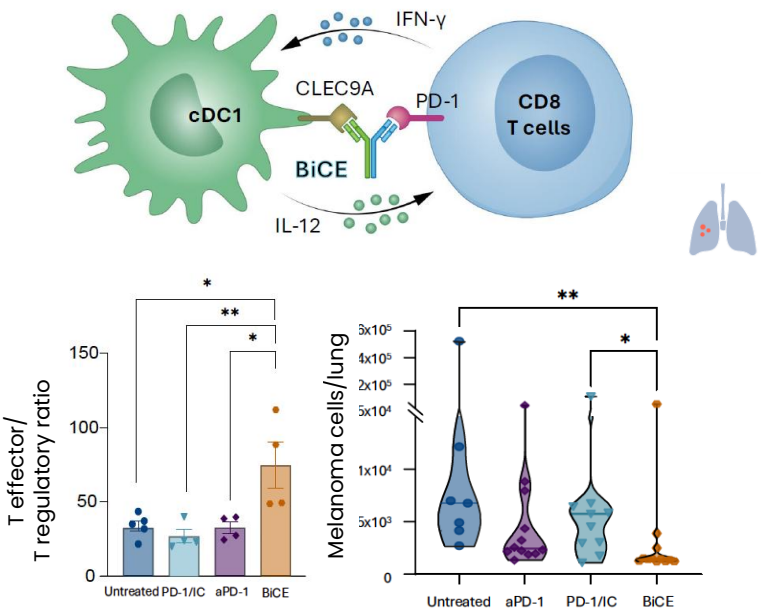
Bispecific Immune Synapse Engagers for Oncology and Autoimmunity

Therapeutics

Reference Number: **2176** \ Principal Investigator: **Dr. Rony Dahan & Prof. Ido Amit** \ Patent Status: **EP4402173**

Dysfunctional immune circuits underlie many diseases, including cancer and autoimmunity. Current immunotherapies often target a single pathway or cell type, limiting their efficacy. We built a powerful proprietary discovery platform, based on AI-driven multiomics analysis of human clinical samples, to map and reprogram dysfunctional immune circuits. This approach enables the engineering of bispecific immune cell engagers (BiCEs), a revolutionary drug platform that engages physical interactions between two types of immune cells to reignite functional immune networks.
Our lead BiCE bridges PD-1+ T cells and Clec9A+ type 1 conventional dendritic cells (cDC1) to activate a critical cDC1–T cell interaction essential for potent anti-tumor activity. BiCE induces remarkable efficacy in anti-PD-1 unresponsive tumors, through a unique MoA compared to traditional immune checkpoint inhibitors.



PD-1/CLEC9A BiCE restores immune cell balance to support anti-tumor activity, superior to aPD-1, across multiple aggressive cancer types

APPLICATIONS

- Treatment of anti-PD-1 refractory solid tumors, including breast, colorectal, lung, and melanoma cancers
- Treatment of autoimmune diseases, including multiple sclerosis and rheumatoid arthritis

DEVELOPMENT STAGE

- PD-1/CLEC9A BiCE induced immune reprogramming and potent anti-tumor activity in mouse models
- PD-1/CLEC9A pathways validated in human tumors
- Suppressive BiCEs, based on human validated targets, show immune reprogramming and efficacy in rheumatoid arthritis and multiple sclerosis mouse models

DIFFERENTIATION

Top-down approach guided by deep unbiased data analysis of clinical samples

Rational targeting of immune circuits to enable therapeutic immune modulation across diverse indications

Immune activation in cancer or suppression in autoimmunity, depending on the circuit targeting

REFERENCES

- Shapir Itai et al. Cell. 2024