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Immune checkpoint blockade for cancer therapy: current progress and perspectives

Key words:

Immune checkpoint blockade; Cancer immunotherapy; Tumor immune evasion; Immune normalization

Review Summary

This review outlines the development and applications of ICBs, potential strategies for overcoming resistance, and future directions for ICB-based cancer immunotherapy.

T cell-based Immune Checkpoints

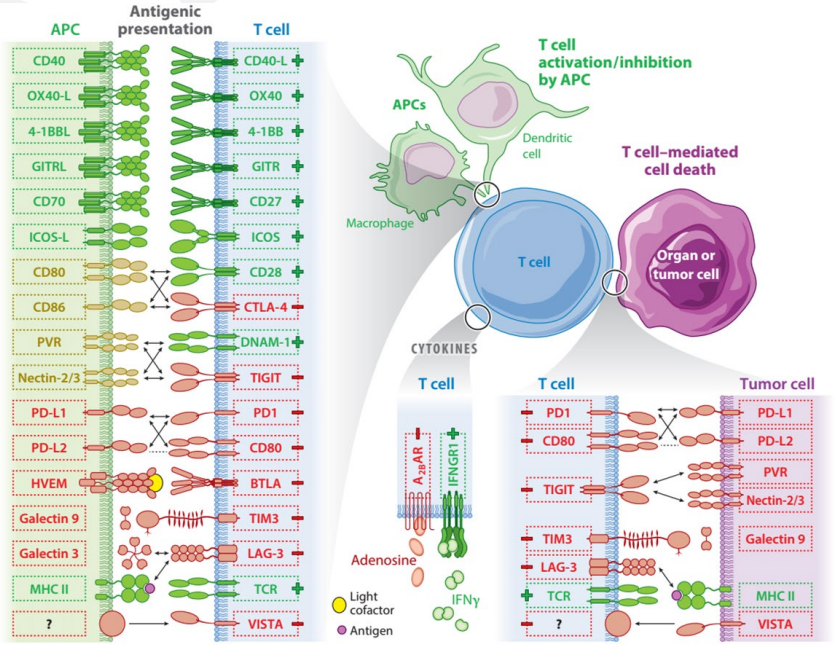
- CTLA-4
- PD-1
- B7 family:
  - -B7-H3
  - -B7-H4
  - -VISTA
- TIM3
- LAG-3
- TIGIT
- BTLA

Myeloid Immune Checkpoints

- The first class
- The second class
- The third class

Secreted Immune Checkpoint

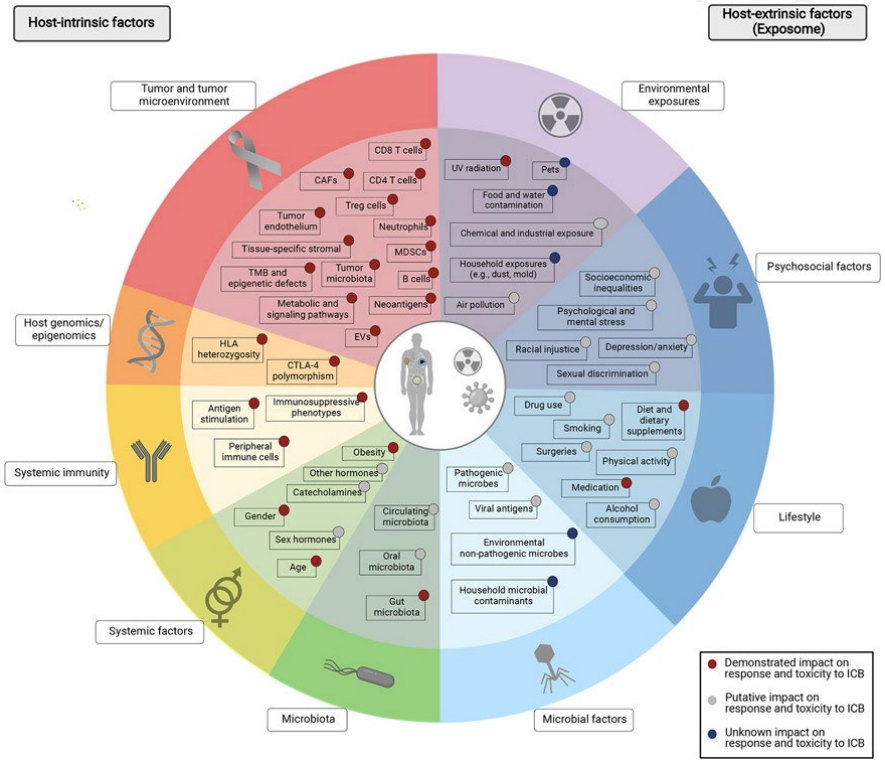
- IL-18



Pictures adapted from: Geraud A, Gougis P, Vozy A, et al. Clinical Pharmacology and Interplay of Immune Checkpoint Agents: A Yin-Yang Balance. *Annu Rev Pharmacol Toxicol*. 2021;61:85-112.

Review Summary

- **Mechanism, clinical trials and irAEs of different immune checkpoint blockade.**
- **The factors influencing resistance and the potential strategies to overcome resistance and irAEs and to promote efficacy of ICBs.**



Pictures adapted from:
Morad G, Helmink BA, Sharma P, Wargo JA. Hallmarks of response, resistance, and toxicity to immune checkpoint blockade [published correction appears in Cell. 2022 Feb 3;185(3):576]. *Cell*. 2021;184(21):5309-5337.

Review Summary

A series of comprehensive tables were generated to summarize the latest knowledge about immune checkpoints and their associated clinical trials.

Table 1 | **The number of clinical trials on commonly used immune checkpoint inhibitors.**

Table 2 | **Incidence of some common all-grades potential immune-related adverse events (irAEs) in advanced melanoma after the use of some specific ICIs.**

Table 3 | **Clinical trials on novel immune checkpoint inhibitors.**

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