



AI-designed Proteins to Generate Immune Cells

[Source: TH](#)

Harvard scientists have used **AI-designed proteins** to generate large numbers of **immune cells**, boosting immunity against diseases like **cancer and viral infections**.

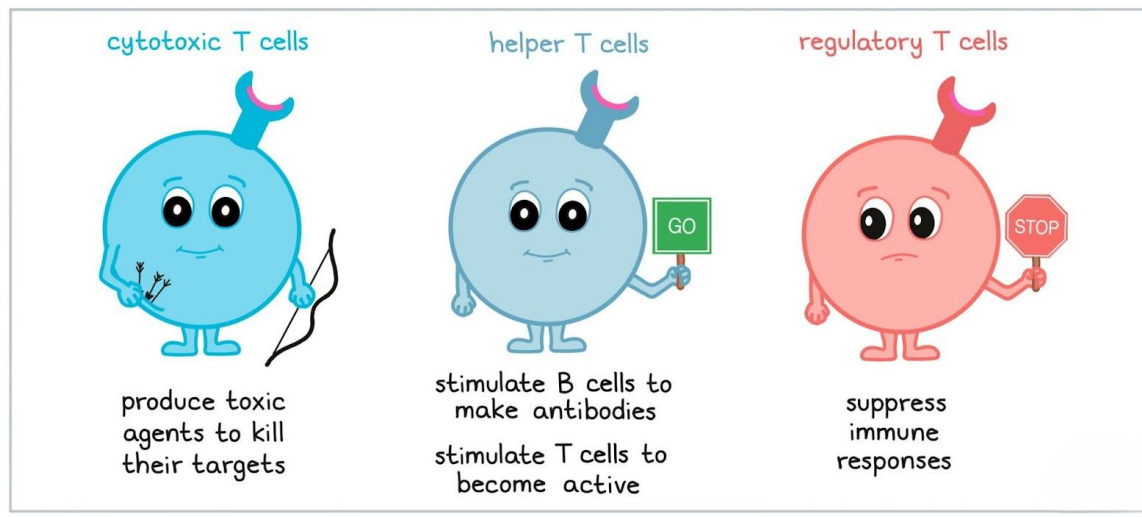
- They engineered a synthetic activator for the **Notch signalling pathway**, which is crucial for **transforming immune progenitors into T cells**.
- Notch signalling helps maintain tissue balance and stability in the body.
- **Progenitor cells** are intermediate cells between **stem cells** and **mature cells** that **divide** and **differentiate** into specific cell types, essential for **tissue development** and **regeneration**.

AI-designed Proteins

- **Mechanism:** Using **AI-based protein design techniques**, researchers engineered synthetic protein activators that are safe and effective for use within the human body.
 - **David Baker** was awarded the [2024 Nobel Prize in Chemistry](#) for his groundbreaking work in **computational protein design**, leveraging **AI-based techniques**.
- **Impact & Applications:**
 - Enabled **large-scale T cell production** in lab bioreactors, aiding [CAR-T therapies](#).
 - In **animal trials**, these proteins enhanced T cell response and promoted **long-lasting Memory T cells**, boosting **vaccine efficacy**.
 - Potential for future therapies, **targeted protein designs** could connect **T cells to cancer cells**, enhance **anti-tumor immunity**, and counter **tumor-induced immune suppression**.

T Cells:

- **T cells** are a type of **white blood cell (WBC)** essential to the **immune system**, responsible for **identifying and responding to pathogens**.



Read More: [CAR-T Cell Therapy](#)

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