

Cyborg Botany

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Cyborg Botany Latest News

Scientists across many institutions are exploring the cyborg botany field which transforms plants into living circuit boards.

About Cyborg Botany

- It is a hybrid system that **integrates living plants with electronic components**.
- It is an intersection of biology, materials science, and engineering.
- The word 'cyborg' itself comes from 'cybernetic organism', a concept long associated with science fiction.
- Its goal is to use **the biological processes of living plants** and merge them with artificial electronic functionality.
- **Working**
 - **Embedding Nanowires and Electronic Transistors:** These can be directly embedded into plant cell walls, where they can function as biosensors, picking up biochemical changes as they happen.

- **Polymers as living wires:** Certain conductive polymers such as PEDOT, a biodegradable, electrically conductive material, can act as living wires within plant tissue, carrying signals from the plant's cells to an external device.

- **Significance**

- Plants face two broad types of stress: **biotic stress**, such as pest infestations and disease, and **abiotic stress**, such as drought and extreme temperatures.
- If a sensor embedded in a crop plant **could flag a moisture deficit** or a disease signal days or weeks before the physical symptoms appear.
- **Farmers could intervene early** by applying water and nutrients or treatments only where and when they are needed.

Source: TH

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