



MIND QUEST LECTURES IN ANTHEM



MindQuest is a forum for people of all ages. We present and discuss on an occasional basis, subjects that increase our awareness about and understanding of the dynamic world around us - be it about science, culture, economy, or social issues.

Tech Slam

BIOLOGIC TRASISTORS

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Researchers at Linköping University have created **artificial organic neurons and synapses that can integrate with natural biological systems**

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When the transistors **detect concentrations of ions** with certain charges, **they switch, producing a signal that can then be picked up by other elements of the transistors systems**

Biological neurons operate on these same ion signals

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The new artificial neurons were organic electrochemical circuits printed onto thin plastic film form the basis of transistors.



BIOLOGIC TRASISTORS

So, what did they use that for:

Sending an electrical impulse from the artificial neurons* to a Venus Flytrap . . . and it triggered it to close the trap

*) $< 0.6 \text{ V}$

The future:

Integrating artificial circuitry with biological neurons

Nocebo effect

Clinical trials

Normal

- Test group Participants get active ingredient (drug) —> pos. effect
- Control group Participants get inactive ingredient —> no effect

Clinical trials

Normal

- Test group Participants get active ingredient (drug) —> pos. effect
- Control group Participants get inactive ingredient —> no effect

Sometimes

- Test group Participants get active ingredient (drug) —> pos. effect
- Control group Participants get inactive ingredient —> **positive** effect

Placebo effect

Clinical trials

Normal

- Test group Participants get active ingredient (drug) —> pos. effect
- Control group Participants get *inactive* ingredient —> no effect

Other times

- Test group Participants get active ingredient (drug) —> pos. effect
- Control group Participants get *inactive* ingredient —> **side** effects

Nocebo effect