🧪 New Biosensor for Drug-Receptor Activation Developed by IIT-Kanpur

📍 Institution

Indian Institute of Technology (IIT) Kanpur

🔬 Research Breakthrough

Scientists at IIT-Kanpur have developed a nanobody-based biosensor that can detect how drugs activate G protein-coupled receptors (GPCRs) inside living cells.

GPCRs are a large family of receptors that play a vital role in transmitting signals in the body and are the target of nearly one-third of all modern medicines.

⚙️ How It Works

- **The biosensor uses nanobodies (tiny engineered antibody fragments) that bind specifically to activated GPCRs.**
- **It allows real-time detection of receptor activation without altering their natural function.**
- **Unlike older methods, this technique works directly in living cells and gives dynamic insights into how different drugs influence receptor signaling.**

💊 Importance for Medicine

- **Drug Discovery: Helps researchers test how new medicines interact with receptors more accurately.**
- **Personalized Medicine: Can reveal differences in receptor response among individuals, potentially guiding tailored therapies.**
- **Reduced Side-effects: By better understanding drug–receptor activity, scientists can design medicines that target receptors more selectively.**

📈 Potential Applications

- **Screening and evaluating new drugs for neurological, cardiovascular, and metabolic disorders.**
- **Studying diseases linked to faulty GPCR signaling.**
- **Expanding research in pharmacology and biotechnology.**

🗣️ Expert View

The IIT-Kanpur team emphasized that this sensor will accelerate both basic biological research and clinical drug development, helping India contribute significantly to the global pharmaceutical pipeline.