

Indian Scientist

Tej Pal Singh



(BORN IN 1944)

Imagine being able to look inside the microscopic machinery of your body to fight diseases. That's the world of **Professor Tej Pal Singh**, an Indian biophysicist who is a global leader in figuring out the **3D structures of proteins**—the tiny workhorses that run your cells!

Born in 1944, Dr. Singh's academic journey took him from the Indian Institute of Science to a fellowship with Nobel Laureate Robert Huber in Germany.

His Superpowers: Structure and Design

Dr. Singh's main mission has been **structural biology**, which means mapping the exact shape of proteins. Why does shape matter? Because a protein's shape determines its function, and a faulty shape causes disease!

- **Solving Protein Puzzles:** He determined the 3D structures of over 610 proteins, including key players like **Lactoferrin** and **Lactoperoxidase**. These structures are like architectural blueprints that he has shared globally through the **Protein Data Bank (PDB)**.
- **Designing Smart Peptides:** He didn't stop at just mapping existing molecules; he created new ones! He developed **synthetic peptides** (small protein fragments) that can act as targeted drugs. These custom-designed molecules are now being used to create new treatments for major diseases like **Tuberculosis, Cancer, and Inflammation**.
- **Hunting Disease Biomarkers:** At AIIMS, he launched a program in **Clinical Proteomics** to find specific proteins that appear when a person is sick. These proteins act as **biomarkers**—like a disease's signature—paving the way for personalized medicine.

Legacy and Recognition

Dr. Singh's dedication to science has earned him top honors, including the **G.N. Ramachandran Gold Medal (2006)** and the **JC Bose Memorial Award (2005)**. He holds the unique distinction of being the first Indian to receive all six major **Ramachandran awards!** Having mentored over 83 Ph.D. students, Professor Singh has built a lasting legacy by shaping the future of biophysics and drug discovery in India.