



## **Nanomedicine to Drive the Next Generation of Precision Medicine and Personalised Healthcare: Dr. Jitendra Singh**

**India's indigenous research carries global potential: says Union Minister Dr Jitendra Singh at World Congress on "Nanomedicine"**

**Dr. Jitendra Singh: DBT Supporting 210 Nanomedicine R&D Projects with ₹174 Crore**

**Oral Insulin Nanoparticles, Nanobots for Breast Cancer Reflect India's Growing Nanomedicine Capabilities: Dr. Jitendra Singh**

**India Building a Robust Nanomedicine Ecosystem Spanning Research, Innovation, Start-ups and Regulation, Says Dr. Jitendra Singh**

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Union Minister of State (Independent Charge) for Science & Technology and Earth Sciences and MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh today said that Nanomedicine will drive the next generation of precision Medicine and personalised Healthcare, adding that India's indigenous research carries global potential.

Speaking at the inaugural function of the World Congress on Nanomedicine 2026 at Vigyan Bhawan, New Delhi, Dr. Jitendra Singh described nanomedicine as one of the most transformative developments in medical practice, with the potential to make healthcare increasingly precise and personalised by working at the nanometre scale. He said the future of medicine would increasingly involve individualised treatment based on a patient's genetic profile, lifestyle, dietary habits and environmental factors, with nanotechnology offering new possibilities for precision at the cellular level.

The World Congress on Nanomedicine 2026, hosted by the Institute of Nano Medical Sciences (INMS), Faculty of Medical Sciences, University of Delhi, is bringing together over 2,000 participants, including eminent scientists and young researchers, to discuss emerging advances and applications in nanomedicine. Nobel Laureate Prof. Roger D. Kornberg, Nobel Laureate and Stanford University, USA, is the Chairperson of the Congress, while Prof. T.M.S. Chang, McGill University, Canada, is the Honorary

President. Prof. Yogesh Singh, Vice-Chancellor, University of Delhi; Prof. G.P. Talwar; Prof. Gobardhan Das, Member, NITI Aayog; Prof. Ramesh Chandra; and Prof. Indrajit Roy were among the distinguished participants present at the inaugural session.

Dr. Jitendra Singh explained that nanomedicine involves the application of nanotechnology in medicine, working with structures at the scale of one-billionth of a metre. He said that as medicine moves towards precision healthcare, patients suffering from the same disease may increasingly require different treatment approaches depending on their genetic profile, lifestyle, dietary habits and environmental factors. Nanotechnology, by enabling interventions at the cellular level, can play an important role in making such treatment more precise.

The Minister said nanomedicine will also have significance beyond healthcare, with its applications expected to influence the cost-effectiveness of health processes and contribute to the wider economy. He referred to the growing global interest in nanomedicine as an indication of the scale of opportunity emerging in this field.

Dr. Jitendra Singh also cautioned against excessive dependence on technology in medical practice. He said that while technologies such as Artificial Intelligence and nanotechnology are opening new possibilities, they must complement the clinical sense of doctors rather than compromise it. The challenge, he said, is to synergise advanced technology with the human and clinical dimensions of medicine.

Calling for reinventing medical teaching in response to rapid technological changes, Dr. Jitendra Singh recalled that medical education traditionally placed strong emphasis on diagnosing patients through careful observation and physical examination. He said these foundational clinical skills should continue to remain relevant even as technological tools become increasingly sophisticated.

Giving details of the Government's support for nanomedicine research, Dr. Jitendra Singh said the Department of Biotechnology is supporting 210 R&D projects in nanomedicine with financial support of ₹174 crore. The projects cover targeted drug delivery, cancer nanomedicine, infectious-disease nanomedicine, nucleic-acid and vaccine delivery, nano-diagnostics and imaging, regenerative medicine and wound healing, as well as nanotoxicology and regulatory science.

Among the promising research areas, the Minister referred to oral insulin nanoparticles and nanobots for breast cancer, besides precision nanoinjection and targeted breast cancer nanomedicine. He recalled that earlier efforts towards oral insulin faced challenges related to absorption and digestive enzymes, and said advances in nanotechnology could provide new possibilities for addressing such challenges.

Dr. Jitendra Singh said India's nanomedicine ecosystem is expanding beyond laboratory research, with government support extending to StartUps, infrastructure, technology development and regulatory facilitation. Through BIRAC, emerging biotechnology enterprises can access support through programmes including Biotechnology Ignition Grant (BIG), Promoting Academic Research Conversion to Enterprise (PACE), Small Business Innovation Research Initiative (SBIRI) and Biotechnology Industry Partnership Programme (BIPP), helping translate research into enterprise and products.

He further said India has established a regulatory framework for nanopharmaceuticals through guidelines jointly developed by DBT, ICMR and CDSCO, providing a framework for evaluating the safety, quality and efficacy of nanopharmaceutical products.

Dr. Jitendra Singh said India is already into this relatively new area of medicine and has the scientific and institutional capabilities to contribute to the development of future healthcare solutions. He said the country's expanding research base, government support and growing industry engagement provide a foundation for India to move from adoption of emerging technologies towards developing solutions of its own.

Prof. Roger D. Kornberg, Nobel Laureate and Stanford University, described nanomedicine as a young and rapidly evolving field with significant potential for the future of healthcare. He said nanomedicine offers the promise of precision, delivering the right amount of treatment to the right place at the right time, while improving effectiveness and reducing toxicity, with applications spanning drug delivery, diagnosis, imaging and regenerative medicine.

The World Congress on Nanomedicine 2026 is being organised under the umbrella of the International Society of Nano Medical Sciences (ISNS) and International Society for Nano Medicine (ISNM) and provides a platform for scientists, researchers, students and industry to exchange knowledge, build collaborations and engage with emerging developments in nanomedicine.





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