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Nanobiomaterials for Regenerative Medicine and Precision Diagnostics

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Nanobiomaterials are transforming regenerative medicine by enabling the development of highly sensitive diagnostic platforms and advanced tissue engineering strategies. This presentation explores recent advances in bioactive nanoparticles, nanostructured scaffolds, biosensors, and nanocomposite biomaterials for tissue regeneration, stem cell engineering, and early disease diagnosis. Innovations in biomimetic materials and nanofabrication have enhanced cellular interactions and therapeutic outcomes.

The session discusses applications in bone regeneration, cardiovascular tissue engineering, cancer diagnostics, wearable biosensors, and point-of-care technologies. Emerging artificial intelligence-guided biomaterial design and multifunctional nanoplateforms are accelerating clinical translation. Future perspectives include personalized regenerative therapies, smart implants, and next-generation nanodiagnostic systems.

Biography

Molly M. Stevens is Professor of Biomedical Materials and Regenerative Medicine at Imperial College London, United Kingdom. Her research focuses on nanobiomaterials, tissue engineering, biosensors, regenerative medicine, and nanotechnology for healthcare. She is internationally recognized for developing innovative biomaterials for clinical applications.