

Colloqui della Classe di Scienze

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Sala Stemmi | Palazzo della Carovana
Scuola Normale Superiore
Piazza dei Cavalieri, 7 - PISA

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Exploitation of nanoparticle-protein corona for emerging therapeutic and diagnostic applications

ABSTRACT:

Despite the advances in biomedical applications of nanoparticles and numerous publications, few nanoparticles have made it to clinical trials and even fewer have reached clinical practice. This wide gap between bench discoveries and clinical applications is mainly because of our limited understanding of the biological identity of nanoparticles. In biological environments (e.g. blood, saliva, interstitial fluids etc.), nanoparticles are coated by a 'protein corona', critically affecting their synthetic identity and physiological response. In this talk, we highlight the emerging applications of protein corona towards its use in therapeutics and diagnostics. In particular, special emphasis is given to the exploitation of protein corona for targeted delivery of nanomaterials and early cancer detection. By highlighting such recent applications of protein corona, we hope to demonstrate that this bio-entity has the potential to determine the future success of nanoparticles in biomedicine beyond their currently envisioned purposes.

Giulio Caracciolo, Omid C. Farokhzad, Morteza Mahmoudi. Biological Identity of Nanoparticles In Vivo: Clinical Implications of the Protein Corona. Trends in Biotechnology, Volume 35, Issue 3, 1 March 2017, Pages 257-264.

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