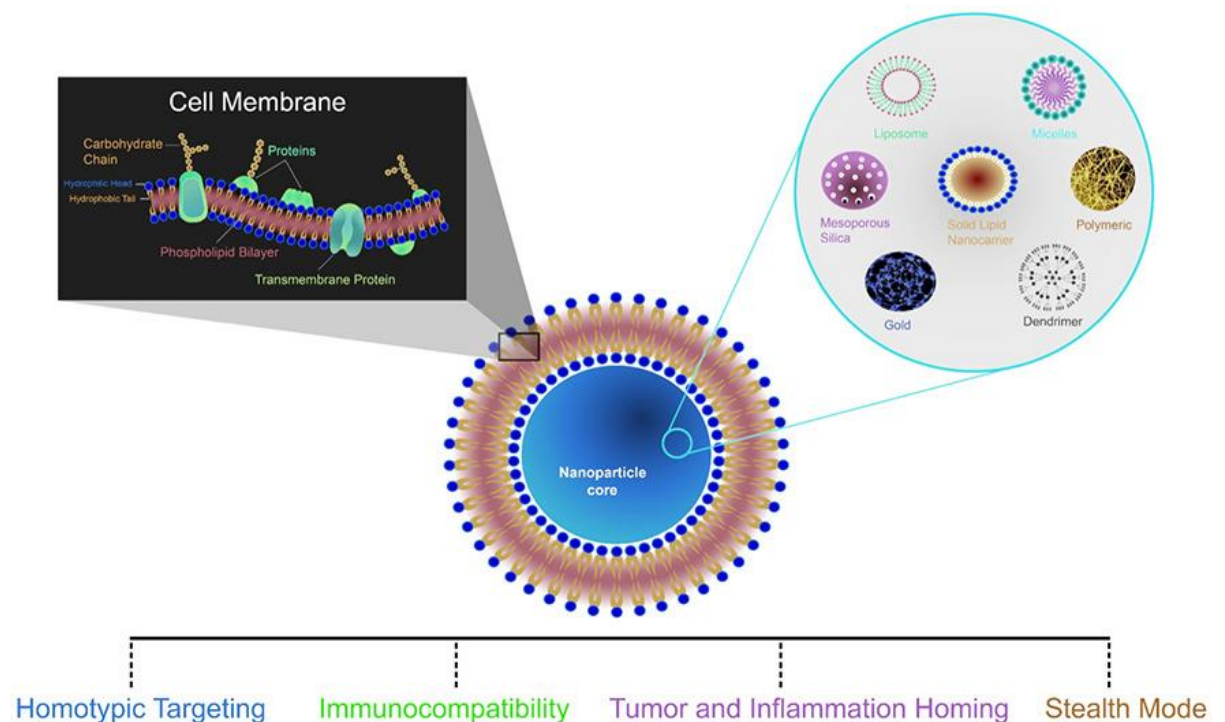


DBT-ILS works on cell membrane coated nanocarriers for targeted therapy

New Delhi, Oct 16: Targeted therapy approaches have become the core of modern translational science offering solutions to the various problems of conventional drug delivery systems.

Traditional methods of delivering drugs and therapeutics faced issues of solubility, sustained release, not enough amounts getting through the diseased site, for e.g a tumor. Various formulations of liposomes, polymers, dendrimers, etc have succeeded and made their way for clinical trials trying to enhance the pharmacokinetic and biodistribution of the drug.



Many stealth coatings that include hydrophilic polymers (PEG, chitosan, polyacrylamides, etc) can act as a covering around nanoparticle that can shield the surface from aggregation, opsonization and evade immune system, thus considered in 'generally recognized as safe (GRAS)' category.

Several polymers such as poly- 2- oxazoline, polyethylene oxide, PEG-based surfactant (polysorbate-80), and zwitterionic phospholipids have also been tested for their antifouling properties. However, the polymer coating approach requires labor-intensive procedures and conjugation chemistries that often fail in in-vivo models. Besides, due to immunogenicity and allergic reactions evoked by several polymer coated nanoparticles, there is an urge to find alternate biomimicking materials that can prove better as shielding agents which paved the way for cell membrane coated nanoparticles to come into the limelight.

These particles consist of a nanoparticle inner core covered by cell membrane that can be implicated in targeted drug delivery approaches, photothermal therapy, diagnosis or imaging making it a powerful theranostic tool.

The group of Dr Mamoni Dash at DBT-institute of Life Science (DBT-ILS) is working towards developing such particles and investigating their targeting potential. Some of their research initiatives are shared in a recently published article in the Journal of Controlled Release (<https://doi.org/10.1016/j.jconrel.2020.09.012>).

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