Emerging vaccine nanotechnology

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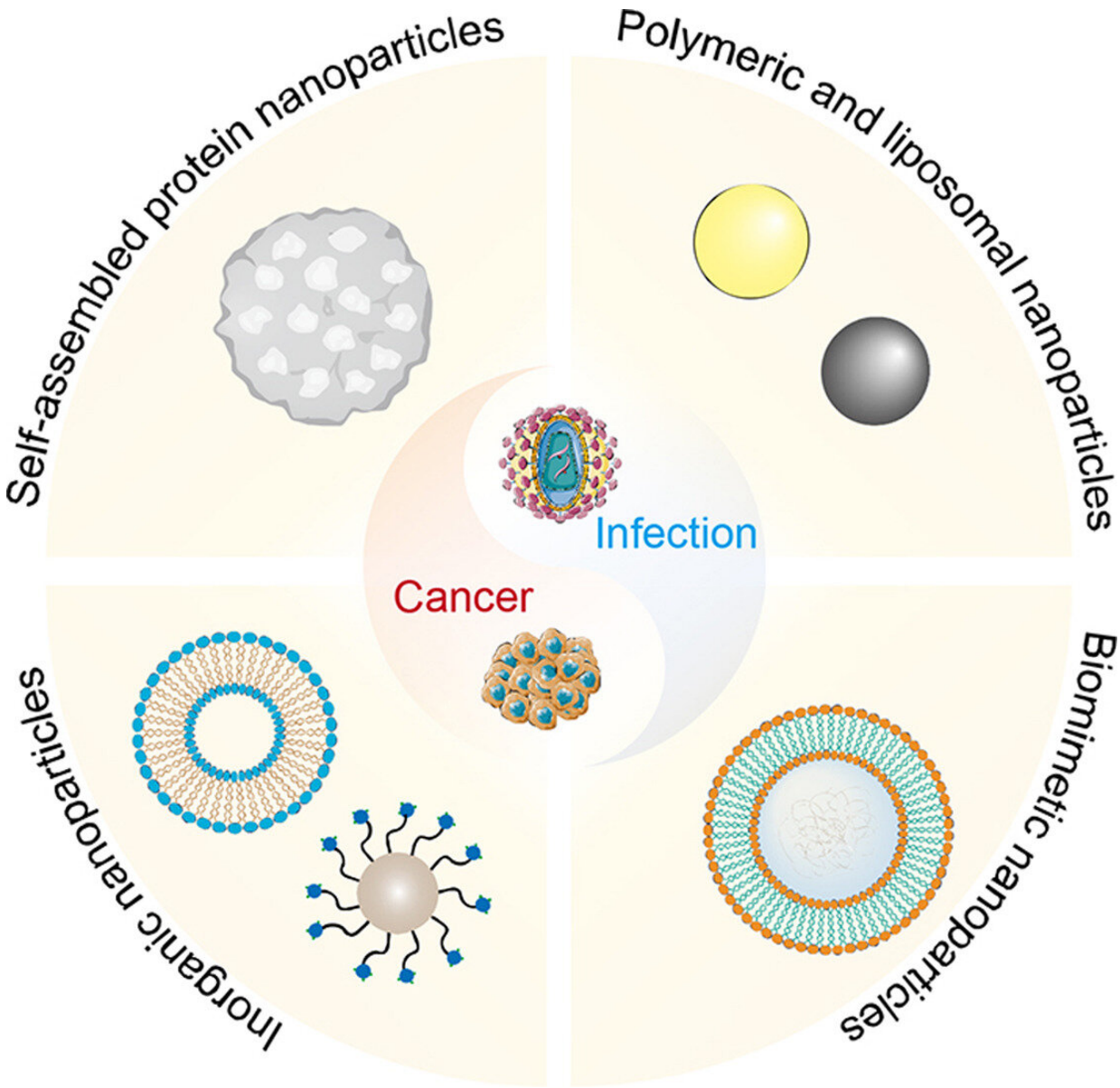

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In this new article publication from *Acta Pharmaceutica Sinica B*, researchers discuss emerging vaccine nanotechnology.

Looking retrospectively at the development of humanity, vaccination is an unprecedented medical landmark that saves lives by harnessing the human immune system. During the ongoing coronavirus disease 2019 (COVID-19) pandemic, vaccination is still the most effective defense modality.

The successful clinical application of the lipid nanoparticle-based Pfizer/BioNTech and Moderna mRNA COVID-19 vaccines highlights promising future of nanotechnology in vaccine development. Compared with conventional vaccines, nanovaccines are supposed to have advantages in lymph node accumulation, antigen assembly, and antigen presentation.

They also have unique pathogen biomimicry properties because of a well-organized combination of multiple immune factors. Beyond infectious diseases, vaccine nanotechnology also exhibits considerable potential for cancer treatment. The ultimate goal of cancer vaccines is to fully mobilize the potency of the immune system as a living therapeutic to recognize tumor antigens and eliminate tumor cells, and nanotechnologies have the requisite properties to realize this goal.

In this review, the authors summarize the recent advances in vaccine nanotechnology from infectious disease prevention to cancer immunotherapy and highlight the different types of materials, mechanisms, administration methods, as well as future perspectives.

More information: Chan Feng et al, Emerging vaccine nanotechnology: From defense against infection to sniping cancer, *Acta*

Pharmaceutica Sinica B (2022). DOI: 10.1016/j.apsb.2021.12.021