

In 2019 Lin et al. developed a novel viromimetic nanoparticle–based vaccine coupled with an immunologic stimulator of interferon genes agonist adjuvant against MERS–CoV [32]. Results indicated that vaccination with AuNP–adjuvanted protein elicited strong IgG response but, in contrast to a Toll–like receptor agonist–adjuvanted vaccine, did not result in induction of protective antibodies and decreasing eosinophilic infiltration. A strong and constant humoral and CD4+ T–cell response was also detected in the studied mice immunized with the virus–like NP vaccine compared with free RBD antigen admixed with either free cyclic diguanylate monophosphate or MF59 (AddaVax), an adjuvant for influenza vaccines that has been utilized clinically (see Figure 1B–C). As shown in Figure 1, a hollow polymeric nanocarriers coated with receptor binding domain (RBD) antigens were prepared followed by loading with cyclic diguanylate monophosphate as an emerging class of stimulator of interferon genes agonist adjuvant. Lin et al. reported that the virus–like NPs induced durable cellular and humoral immune responses. C57BL/6 mice were then immunized with the developed vaccine.