IBAB
Institute of Bioinformatics and Applied Biotechnology

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Document 2:
Justification for the nomination:
It is my pleasure to nominate Dr. M. Owais for the coveted 'Sun Pharma Research Award-2019' in the category of Pharmaceutical Sciences. Dr. Owais has significantly contributed to the area of targeted drug delivery. He has recently developed an effective drug formulation for treatment of COVID-19 disease. The program was sponsored by Ministry of AYUSH and found to be successful in treatment of moderate COVID-19 infection in clinical set up. In spite of tremendous scope of nanoparticle-based delivery systems, their successful application is limited due to their major uptake by the reticulo-endothelial system and lack of availability of simple procedures for specific targeted delivery. The main emphasis of Dr Owais research group has therefore been on addressing some of these problems. He is the first one to demonstrate the fusogenic properties of lipids derived from lower organisms, such as edible yeast and bacteria, and also to correlate the lipid distribution with the evolutionary trend in living cells. Further, he has shown that liposomes prepared from these lipids are capable of delivering siRNA as well as related anticancer agents to the cytosol of the cancer cells. Thus-synthesized fusogenic liposome can also deliver macromolecules such as DNA and protein antigens to the cytosol of the target cells and thereby helps in activation of both CD4+ T helper and CD8+ T cytotoxic cells. Also, he has demonstrated that exosomes as well as in-side-out erythrocyte vesicles-based carriers can deliver encapsulated antigen to the cytoplasm of the target cells and evoke strong cell mediated immunity in the host. In addition, he demonstrated that nanoparticle mediated targeting (mannose/anti-DC-SIGN antibody based) of RD9 gene products of Mycobacterium sps to dendritic cells favors Th1 phenotype of elicited CD4+ T lymphocytes against tuberculosis, thereby helps to cut down the antigen dose by several folds. Besides, he developed DNA nanoparticles (SOD/IL-18) and L7/L12 ribosomal protein bearing vaccines against experimental brucellosis and escheriosome based subunit vaccines against experimental malaria and leishmaniasis.

(C. M. Gupta) 28/9/2021