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PapMV nanoparticles open the breath of the immune response to the trivalent inactivated flu vaccine

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Centre de Recherche en Infectiologie, Pavillon CHUL, Laval University, Canada Commercial seasonal flu vaccines induce production of antibodies directed mostly towards hemaglutinin (HA). Because HA changes rapidly in the circulating virus, the protection remains partial. Several conserved viral proteins, e.g., nucleocapsid (NP) and matrix proteins (M1), are present in the vaccine, but are not immunogenic. To improve the protection provided by these vaccines, we used nanoparticles made of the coat protein of a plant virus (papaya mosaic virus; PapMV) as an adjuvant. Immunization of mice and ferrets with the adjuvanted formulation increased the magnitude and breadth of the humoral response to NP and to highly conserved regions of HA. They also triggered a cellular mediated immune response to NP and M1, and long-lasting protection in animals challenged with a heterosubtypic influenza strain (WSN/33). Thus, seasonal flu vaccine adjuvanted with PapMV nanoparticles could induce universal protection to influenza, which is a major advancement when facing a pandemic.

Biography

Denis Leclerc has completedhisPh.D in 1994 fromUniversity of Toronto, Canada and postdoctoral studiesfromheFridriech Miescher Institute, Basel, Switzerland. He is the director of the laboratory in MolecularVirologysinceJune 2000 and has published more than 45 papers in reputedjournals in the field of virus assembly and vaccine development.