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M2SR, a single replication universal flu vaccine

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Influenza (flu) virus causes a respiratory disease resulting in over 200,000 hospitalizations and ~36,000 deaths per year in the US Flu vaccines have remained virtually unchanged for decades. Despite the annual update of the three hemagglutinin (HA) vaccine antigens to match the circulating influenza strain, current vaccine efficacy is estimated to be ~60% across the population as a whole and much less for the elderly. Flu vaccine protection is sub-optimal and substantially lower than for most routinely recommended vaccines. The low efficacy rates are due primarily to the relatively poor immune response provided by both inactivated and live vaccines. There is an urgent need for highly protective flu vaccines that provide broad-spectrum immunity across all segments of the population. FluGen has developed a new vaccine, M2SR (Single Replication) which exploits the best features of both inactivated and live attenuated influenza vaccines. Like the inactivated vaccine, it elicits a strong humoral response against the major neutralizing antigen, the HA. Similar to the live attenuated influenza vaccine, it is administered intra-nasally to mimic a natural infection and induce broad-spectrum immunity including mucosal and cell-mediated responses. The novelty of M2SR is that the vaccine virus presents multiple antigen targets to the immune system like a wild-type virus and activates the immune system without production of progeny virus. We have shown that the M2SR vaccine provides broad-spectrum, long-lasting cross-protection against multiple influenza subtypes including H5N1 in mice and ferrets.

Biography

Pamuk Bilsel completed her PhD and is a Chief Scientific Officer at FluGen, Inc., USA. Prior to joining FluGen in 2008, she was at Pharmexa-Epimmune where she developed DNA vaccines against influenza and malaria. At Pentamer Pharmaceuticals, a San Diego start-up, she worked on subunit vaccines using virus-like particle technology.

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