

# 3<sup>rd</sup> International Conference and Exhibition on **Clinical & Cellular Immunology**

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## Reinventing the gene vaccine: Non-viral delivery of mRNA

Sylvie Bertholet

Novartis Vaccines and Diagnostics, Italy

Novartis has developed the SAM<sup>®</sup> vaccine platform. This platform, now in pre-clinical development, is based on a synthetic, self-amplifying mRNA, delivered by a synthetic lipid nanoparticle (LNP). The broad utility of this novel vaccine technology has been demonstrated with genes encoding vaccine candidate antigens from several pathogens and was found to elicit broad and potent protective immune responses in multiple animal models. Immune responses are comparable to a viral technology, but without the inherent limitations of viral vectors. Furthermore, the recent combination of rapid and accurate cell-free gene synthesis and SAM vaccine technology allowed the generation of a pandemic H7N9 vaccine candidate in one week from posting of the gene sequence on the CDC website. If the SAM vaccine platform proves safe and effective in humans, fully synthetic vaccine technologies could provide unparalleled speed of response to stem the initial wave of outbreaks, with a vaccine candidate ready days after the discovery of a new virus.

### Biography

Sylvie Bertholet is currently head of *In Vivo* Immunology at Novartis Vaccines & Diagnostics (NVD) Italy, responsible for the immunological characterization of next generation *Staphylococcus aureus* and influenza vaccines. She has over 20 years of experience in infectious diseases and vaccine development. She received her PhD in Immunology from the University of Lausanne, Switzerland, and completed her Postdoctoral training at the University of Lausanne and at the National Institutes of Health in Bethesda, studying host-pathogen interactions. Prior to joining NVD, she held position at the Infectious Disease Research Institute in Seattle leading Tuberculosis, Pneumococcus and Leishmania vaccine development projects. She has authored more than 40 publications on infectious disease and vaccine-related topics.

[sylvie.bertholet@novartis.com](mailto:sylvie.bertholet@novartis.com)