

# Global Vaccines & Vaccination Summit & B2B

November 01-02, 2017 | Toronto, Canada

## Nanoparticle-based mucosal vaccine adjuvant vectors against pandemic influenza infection

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A vaccine against pandemic influenza infection is much warranted. However, the formulation and design of such a vaccine is much debated. We have developed a fusion protein that carries the M2e-peptide that gives strong antibody and CD4 T cell responses. The immune response to the fusion protein CTA1-3M2e-DD provides heterosubtypic protection and it stimulates long term memory. To expand on the possibility to develop a stable and effective mucosal vaccine we have combined the fusion protein with nanoparticles and have achieved a very potent formulation. This way we can improve targeting of nanoparticles to dendritic cells, which results in very low reactogenicity, low antigen dose requirement and effective immunomodulation. Furthermore, we have successfully incorporated recombinant HA in these nanoparticles, opening up for additional combinations with flu-relevant proteins to be incorporated in this immunoenhancing nanoparticle complex.

Thus, we have designed a versatile candidate vaccine against pandemic flu, which is an adjuvanted vaccine formulation with the conserved M2e peptide and the CTA1-DD immunoenhancing element. The combined CTA1-3M2e-DD/HA/nanoparticle vaccine candidate is highly effective in mice and provides strong heterosubtypic protection.

### Speaker Biography

Valentina Bernasconi is 27 years old Italian PhD student currently living in Goteborg, Sweden. She got a Bachelor and a Master degree in Medical Biotechnology at Vita-Salute San Raffaele University, Italy, where she worked on a thesis on poxviral vectors as universal influenza vaccines. After graduation she moved to The Netherlands to work as a research assistant on Ebola vaccine based on adenoviral vectors. she have then been awarded a Marie Curie Action fellowship to support my PhD studies and she moved to Sweden, where she is currently working on the development of a subcomponent universal mucosal vaccine against influenza virus infection based on nanoparticles formulation.

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