



DEPARTMENT  
OF PHARMACEUTICAL SCIENCES

# Seminars on Drug Sciences (SDS)

Lecture of

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## **Clinical translation of an mRNA cancer vaccine adjuvanted with alpha-galactosylceramide**

As demonstrated by the success of Comirnaty (BNT162b2) and Spikevax (mRNA-1273) during the COVID-19 pandemic, mRNA-based vaccines have established themselves as next-generation vaccines. A next frontier is to develop mRNA vaccines as treatment for cancer, where first candidates have entered late-stage clinical testing.

In our lab, we have developed an adjuvanted mRNA vaccine platform by including the glycolipid alpha-galactosylceramide ( $\alpha$ GC) in lipid nanoparticles (LNPs).  $\alpha$ GC exerts its adjuvant activity by functioning as a glycolipid antigen for invariant natural killer T (iNKT) cells. By harnessing these iNKT cells, we found that cellular immune responses to mRNA vaccines can be empowered, in addition to a broadened activation of the innate immune system.

In this lecture, I will tell more about our journey of translating our mRNA vaccine platform from research findings into a candidate vaccine for first-in-human clinical testing. This clinical translation process so far comprised the optimization of the vaccine and the establishment of a GMP-compliant production system, followed by the preclinical toxicity evaluation of our mRNA vaccine candidate and the clinical study design for Phase I clinical testing in non-small cell lung cancer patients.

**Wednesday, May 22, 2024**

17:15 - 18:15

Lecture Hall 1, Pharmacenter, Klingelbergstrasse, 50, Basel

Host: Prof. P. Luciani

University of Bern



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