Gerrit Borchard: Formulation development of SARS-CoV-2 S pDNA vaccines

During the lockdown two academic groups in Geneva (Switzerland) and Bangkok (Thailand) have been focusing on the development of formulation and testing of Sars-CoV-2-DNA vaccines. Studies included liposomal formulation development, physicochemical characterization, stability testing, in vitro assays, pre-clinical testing in a mouse model, and translation of the manufacturing process to midsize microfluidic device. In vivo results showed relevant immune responses. This work may be seen as a contribution to increase the armament of vaccines against the pandemic, and an opportunity to improve global equity in vaccine availability.

Eoise Nee: Single Cell prospectives on vaccine adjuvant mechanisms

Adjuvants remain a core component in modern vaccine design, In both mRNA and protein subunit vaccines. However, their implementation continues to outpace understanding of the mechanisms underlying their function. This is in turn confounded by a lack of understanding of which cell types are targeted by different vaccines. This review integrates single cell sequencing data from uninflamed human lymph nodes to map out the distribution of proteins implicated in adjuvant function to identify target cells in humans and mice.

Ihsan Gursel: VLP Vaccine Development efforts against COVID-19

Multiple highly effective COVID-19 vaccines have recently been approved for human use along with numerous candidates under clinical development. Continued emergence of new variants providing escape from existing neutralizing antibodies of the vaccinees raises concerns on anti-spike-specific protection. Targeting of other SARS-CoV-2 structural protein antigens, (i.e. membrane, nucleocapsid and envelope) in addition to spike could broaden S-dependent protection of vaccine potency. Herein, we describe the preclinical and phase I clinical development of a virus like particle (VLP) vaccine expressing the Hexaproline prefusion stabilized spike in addition to N, M and E proteins. The VLPs were adsorbed to alhydrogel (alum) and adjuvanted with a K-type CpG ODN to boost both the humoral and cellular (TH1 cells and CTL) immunity.

Carmen Alvarez-Dominguez: Nanoparticles in vaccine formulations for emerging pathogens

Emerging bacterial pathogens causing opportunistic infections in the elderly and immunocompromised fellows such as HIV or cancer patients in Spain belong to the genera *Mycobacterium ssp.* (tuberculosis, avium or *marinum*) or *Listeria monocytogenes.* Cutaneous and meningitis infections are common co-morbidities these bacterial pathogens caused that are main concerns in adults. Our group has prepared a gold-nanoparticle vaccine platform using a short 1-15 peptide of a common virulence factor called glyceraldehyde-3-phosphate-dehydrogenase (GAPDH). We have good results of cross-protection against mycobacteria and *Listeria* in mice models. We search for adjuvants to prepare the pre-clinical analysis using blood cells of patients and to establish solid collaborations and applied for EU future calls.

Stephanie Longet: Preclinical models to validate COVID-19 vaccines

Preclinical models are essential to validate COVID-19 vaccine safety and efficacy but also to assess vaccine-associated enhanced disease. This talk will describe mouse, ferret, hamster and Non-Human Primate models of SARS-CoV-2 infection. Their benefits, challenges and improvements will be discussed.

Celine Lemoine: VFI Adjuvants in response to COVID-19 pandemic

For the ENOVA webinar the Vaccine Formulation Institute will highlight the relevance of open-access adjuvant technologies for global health and in response to emerging pathogens. We will present various adjuvant technologies that are in development or already available on an open-access basis. These adjuvant technologies have been formulated and evaluated in the context of COVID-19, but also other infectious diseases

Ana Falcon: CrisBio©: A new platform for emerging pathogens vaccine production. Highly pathogenic Influenza vaccine data

Algenex is a technology company developing versatile, scalable and cost effective technologies for recombinant biologics production using proprietary technologies Top-Bac® and CrisBio® based on Baculovirus vector expression systems (BVES) and insect pupae. CrisBio® is a bioreactor free system for the rapid and efficient production of subunit vaccines and have recently received first regulatory validation (EMA).
The CrisBio®'s capabilities in pandemic or emergency situations of producing a new subunit vaccine in less than 12 weeks was demonstrated using the potential pandemic HPAIV influenza H7N1 strain influenza HA protein. CrisBio® allows a highly efficient production yield (4 vaccine doses were obtained per infected pupa (40ug/dose)).
The HA antigen produced in CrisBio® achieved 100% protection against HPAIV H7N1 in chickens. The same antigen induced hemagglutination inhibition antibodies against a human H7N9 virus.

Ed Lavelle: Vaccine attitudes and rollout in Ireland

I'll give a brief overview of the COVID19 vaccination programme in Ireland. This will include details on the vaccines currently in use, which cohorts they are given to and rates of coverage.

Brankica Filipic: Vaccine attitudes and rollout in Serbia

Serbia as a small Balkan country has specific approach to COVID-19 vaccination program. The country has vaccines from four different suppliers: Pfizer/Biontech (USA/Germany), Oxford-AstraZeneca (UK), Sinopharm (China) and Sputnik V (Russia) and citizens can freely choose which vaccine they wish to receive. This talk will provide and insight into strategies for encouraging vaccine acceptance and uptake in Serbia.

Slavcho Mrenoshki: Vaccine attitudes and rollout in Macedonia and Italy

The presentation will compare the vaccine rollout and its impact on the the epidemiological situation in Italy and North Macedonia, providing details about the vaccine campaigns in both countries (e.g. vaccines brands used, distribution timelines, etc.).