Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Vaccine 35 (2017) 5435–5436

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Editorial

Introduction

Infectious diseases remain one of the leading causes of death and disability worldwide. Despite remarkable advances in vaccine development over the last century, the ease of world travel and increased global interdependence have added complexity to the fight against these diseases. With the aim of providing a forum to discuss the challenges facing vaccine development, Fraunhofer USA Center for Molecular Biotechnology, in cooperation with the International Alliance for Biological Standardization, organize an annual conference "New Technologies, New Vaccines", dating back to 2006. This conference addresses new substrates and methodologies for the production and assessment of vaccines, and new approaches to overcome hurdles in vaccine research and development. The manuscripts collected in this special issue reflect advances in the field of vaccinology that were presented at the eleventh conference in this series, held at the Hotel du Pont Conference Center in Wilmington, Delaware from March 20th to 23rd, 2016. The conference attracted over 120 attendees working on various aspects of vaccine development and regulation, including representatives from governmental research laboratories, regulatory agencies, academia and the pharmaceutical and biotechnology industries. Topics addressed included emerging and re-emerging infectious diseases, mosquito transmitted infectious diseases, antibody vaccines, systems biology approaches to vaccines, lead candidate identification, *ex vivo* systems for vaccine assessment, potency assays, novel vaccines and technologies, formulations and vaccine delivery, adjuvants, and regulatory issues.

The manuscripts collected together here begin with a paper by Maslow [1] of GeneOne Life Science on approaches for vaccine discovery and advancement to combat emerging virulent infectious diseases, as exemplified by Ebola virus, Middle East Respiratory Syndrome coronavirus and Zika virus. This is followed by a manuscript from Gregory Poland and colleagues of the Mayo Clinic [2] assessing whether immunoglobulin heavy and light chain genotypes of subjects affect humoral immunity induced by measles vaccination.

An example of a vaccine design strategy is presented in a manuscript by Lanar and colleagues [3] of the Walter Reed Army Institute of Research, who describe the development of a self-assembling protein nanoparticle vaccine candidate to combat malaria and report on its efficacy in combination with US Army liposome formulation adjuvants. Antibody approaches to combat infectious diseases are represented by a manuscript from Dessain and colleagues [4] of the Lankenau Institute for Medical Research, who describe human monoclonal antibodies that can neutralize multiple serotypes of poliovirus and may be applicable to eliminating pathogenic strains derived from the oral attenuated vaccine.

Formulation development is critical for improving vaccine stability without compromising efficacy. A manuscript from Jones and colleagues [5] of Fraunhofer USA and Capsugel describes the application of a spray dry approach to improve stability for a plant-produced subunit vaccine candidate targeting anthrax. An example of adjuvant formulation is provided by Volkin and colleagues [6] of the University of Kansas, who report on the development of a stabilizing formulation of a mutant version of *Escherichia coli* heat labile toxin.

As in prior years, assay development was a major topic of the conference. Peden and colleagues [7] of the Center for Biologics Evaluation and Research at the FDA reported on the development of a micro-neutralization assay for Ebolaviruses using a hybrid virus and reverse transcriptase quantitative PCR. This assay, that does not require infectious virus, should expedite the assessment of vaccine candidates. Dauner and colleagues [8] of Sanofi Pasteur presented work on the application of the human cell-based MIMIC® platform to assess age-related immunological responses to influenza vaccination. The use of modified DNA aptamers as an alternative to antibodies in vaccine potency assays is described in a manuscript by Trausch and colleagues [9] of Merck. Finally, a manuscript by Andrew Lewis and colleagues of the Center for Biologics Evaluation and Research at the FDA reports on potential miRNA biomarkers for VERO-cell tumorigenicity in a new African green monkey kidney cell line.

As can be seen from the manuscripts compiled in this special issue, the conference proved an excellent venue for presenting new work on vaccine development. The relatively small size of the conference, and attendance by a wide range of vaccine developers and regulatory personnel, make it an excellent setting for productive discussions on all aspects of vaccinology. Further meetings in this series are anticipated.

References

[1] Maslow J. Vaccine development for emerging virulent infectious diseases. Vaccine 2017;35(41):5437–43.
[2] Poland G. Immunoglobulin GM and KM genes and measles vaccine-induced humoral immunity. Vaccine 2017;35(41):5444–7.
[3] Seth L. Development of a self-assembling protein nanoparticle vaccine targeting plasmodium falciparum circumsporozoite protein delivered in three army liposome formulation adjuvants. Vaccine 2017;35(41):5448–54.
[4] Puligedda RD. Characterization of human monoclonal antibodies that neutralize multiple poliovirus serotypes. Vaccine 2017;35(41):5455–62.

http://dx.doi.org/10.1016/j.vaccine.2017.08.032

[5] Jones MR. Stability and pre-formulation development of a plant-produced anthrax vaccine candidate. Vaccine 2017;35(41):5463–70.
[6] Toprani VM. Development of a candidate stabilizing formulation for bulk storage of a Double Mutant Heat Labile Toxin (dmLT) protein based adjuvant. Vaccine 2017;35(41):5471–80.
[7] Peden K. Development of a micro-neutralization assay for ebolaviruses using a replication-competent vesicular stomatitis hybrid virus and a quantitative PCR readout. Vaccine 2017;35(41):5481–6.
[8] Dauner A. The in vitro MIMIC® platform reflects age-associated changes in immunological responses after influenza vaccination. Vaccine 2017;35(41):5487–94.
[9] Trausch JJ. Replacing antibodies with modified DNA aptamers in vaccine potency assays. Vaccine 2017;35(41):5495–502.

Stephen J. Streatfield *
Jerzy Karczewski
Vidadi Yusibov
Fraunhofer USA Center for Molecular Biotechnology, Newark, DE, USA
* Corresponding author.
E-mail address: Stephen.Streatfield@fhcmb.org (S.J. Streatfield)

Available online 18 August 2017