

**German Center for Infection Research
Workshop: Bridging Topic Vaccines
Platforms and Innovation
March 5th, 2024 in Frankfurt/Main**

SUMMARY

Thematic focus of the Vaccine Bridging Topic Workshop was to discuss DZIF vaccine platforms and the state of development of innovative vaccine candidates in DZIF. It was of particular interest to identify common challenges and issues in the development of preventive and therapeutic vaccine products against infectious disease. In addition, the DZIF strategy regarding vaccine development was addressed. In the following paragraphs the main discussion points and take-aways are summarized.

How can we create value out of DZIFs vaccine portfolio?

DZIF's vaccine portfolio covers a variety of infectious diseases and vaccine technology platforms. Due to the participation of a number of different TTUs a wide range of vaccine development projects are undertaken in a variety of indications. To turn this versatility into a real competitive advantage and strength, it is proposed to more clearly define a common DZIF strategy in vaccine and immunotherapy development in infectious disease, with a clear focus on (i) promising projects and (ii) an appropriate balance between basic research and early product development. In particular it was felt important to more definitely anchor translational aspects also in the research activities carried out with basic funding within respective TTUs. It may be considered by the DZIF Board to organize involvement of or getting advice from the PDU when decisions within the TTUs are made on major TTU funding of projects. In such special cases, the PDU would offer to also centrally monitor the progress of such projects and be more closely involved in checking the achievement of deliverables and milestones of such projects. For Flex Fund funded projects this kind of PDU involvement is well established and has been proven successful.

A web-based virtual vaccine discussion platform established within DZIF that would allow better access to vaccine platforms and exchange information would also be helpful for principal investigators with specialized knowledge in a vaccine platform, an infectious disease/on a pathogen to collaborate on vaccine or immunotherapy developments.

A definition of risk/value criteria may be helpful to define and adjust objectives and to prioritize projects accordingly. Important factors for project prioritization should be an unmet medical need and the potential for either industry partnering or public funding from non-DZIF sources (Wellcome Trust, B&M Gates etc.). Furthermore, DZIF's vaccine platforms should be benchmarked in a systematic way: some platforms may benefit from a non-clinical comparison of their characteristics, some may have to be optimized. In any case, the best vaccine platform for a preventive or therapeutic vaccine and its respective target infectious disease should be chosen based on objective criteria.

To further develop the vaccine platforms available in DZIF's TTUs and at the same time advance current product developments, additional external funding must be raised (public-private partnership, BMBF, Venture capital). With respect to outbreak scenarios (Disease X) the parallel development of more than one vaccine or immunotherapy product and platform in DZIF may be beneficial to be better prepared for future pandemics and for potential set-backs during product development. Such parallel developments should be coordinated by a designated team. TPMO/PDU involvement should be assured.

How can the bridging topic vaccines (BT-V) group have an impact on the strategy?

If agreed to by the DZIF Board, the BT-V group may be well suited to develop a proposal for the DZIF board regarding the above mentioned suggestions. Nevertheless, BT-V will make sure that in TTU's

translational aspects are considered strongly enough. A closer involvement and support by PDU may be beneficial.

How can we increase the attractiveness towards industry?

The attractiveness for industry of DZIF vaccine and immunotherapy development projects would be significantly increased by generating phase II data or by founding spin-off companies. This may allow to gather more persuasive data packages and to facilitate the investing process for potential industrial partners. As a first start PDU offers to organize a meeting between DZIF PIs and industry/venture capital providers in order to explore in more detail the expectations of industry on vaccine and immunotherapy candidate products and the respective data. This would most certainly increase the probability of any industry investments in DZIF candidate product developments. It is evident that in most cases, easy targets are likely to have been already addressed by industry already. It was suggested that DZIF should focus on niches where a competitive, technical or scientific advantage of DZIF developments is given and has been substantiated.

What are additional points to work on?

To further develop the vaccine portfolio, DZIF may want to strengthen the expertise on vaccine adjuvants and test their safety and efficacy in combination with particular vaccine and/or immunotherapy candidate products in non-clinical and clinical studies. For example, mucosal adjuvants were deemed urgently needed.

Furthermore, animal models substantially contribute to the clinical development path of product candidates and can be of value by themselves, if well established, validated and offered for use by companies. In some cases the suitability as well as the limitations of particular mouse models should be determined and more predictive models may have to be developed. It was suggested to develop share tools for immunomodelling and other specific know-how and to establish a respective central repository. In this context it was also mentioned to explore the impact of Artificial Intelligence on vaccine development in DZIF.

Additional issues that come up regularly during early product development are challenges/limitations of GMP manufacturing and respective contracts with providers. This needs to be further explored in order to possibly find common solutions.

