

New framework for more effective vaccine vectors

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Despite the development of new technologies for successful vaccination against contagious diseases and cancer, there is a lack of standard operation procedures (SOPs) and cross-comparison. European scientists built the framework for the systematic production, validation and comparison of effective vaccine vectors.

Prophylactic and therapeutic vaccines against contagious diseases and cancer have been developed recently based on recombinant [viral vectors](#) and virus-like particles. These vaccines exhibited effectiveness and specificity that makes them promising weapons against many diseases. Despite the potential of this technology, there is still a lack of a standardised strategy for their cost-effective production and evaluation.

In order to promote the establishment of a robust platform for the development and evaluation of recombinant vaccines, the European Union funded the project 'Ration design and standardized evaluation of novel genetic vaccines' (Compuvac). The primary objective was the development of novel vaccines based on gold standard antigens and standardised procedures for their evaluation of efficacy and safety.

The data produced by the partners were stored, processed and presented in an interactive bioinformatics platform which was established by Compuvac. Furthermore, the procedures developed within Compuvac were validated through the development of a vaccine against [hepatitis C virus](#) (HCV).

A variety of vaccine vectors were engineered and tested in different model systems. The results were systematically validated for their quality and stored in the [decision support system](#) for novel genetic vaccine development process (GEVADSS) database with a standardised report of each vaccine vector tested. Consequently, an automatic multi-parametric analysis and comparison of the performance of the different vectors was performed.

This analysis led to the successful design of a HCV [vaccine candidate](#). The data and the conclusion of these analyses are represented in the online publication of the interactive database that can now be used by the scientific community to comparatively assess future vaccines.

Compuvac scientists managed to achieve a satisfying level of standardisation with relatively low intra- and interlaboratory variations. The achieved standardisation was essential for the comparison of vaccine vectors across different laboratories. The validated SOPs are available to the scientific community through the Compuvac website.

The collective efforts of Compuvac partners led to the successful

implementation and release of a user-friendly software platform for vaccine vector development and evaluation complete with a database, GEVADSS. The results of the evaluation of more than 100 vectors expressing the same antigens are a unique source of information for the scientific community.

The pioneering achievements of the Compuvac consortium successfully introduced systems immunology in the field of vaccination. The database GEVADSS is an excellent tool which is amenable to further development and application to different fields.

Provided by CORDIS

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