



Novel Approach For An Evolution Proof Influenza Vaccine

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Background

Our research group developed a technology called Immuno-Boost (iBoost), which aims at increasing targeted immune recognition of non- or low-immunogenic epitopes with the use of a conjugate vaccine. This approach seems perfectly suited for vaccination against the influenza surface glycoproteins, which may allow for safe and scalable production while improving vaccine immunogenicity

Aim

Development of an evolution-proof vaccine that targets both HA and NA using the iBoost technology

Methods & Results

Design of an iBoost-based vaccine against HA and/or NA

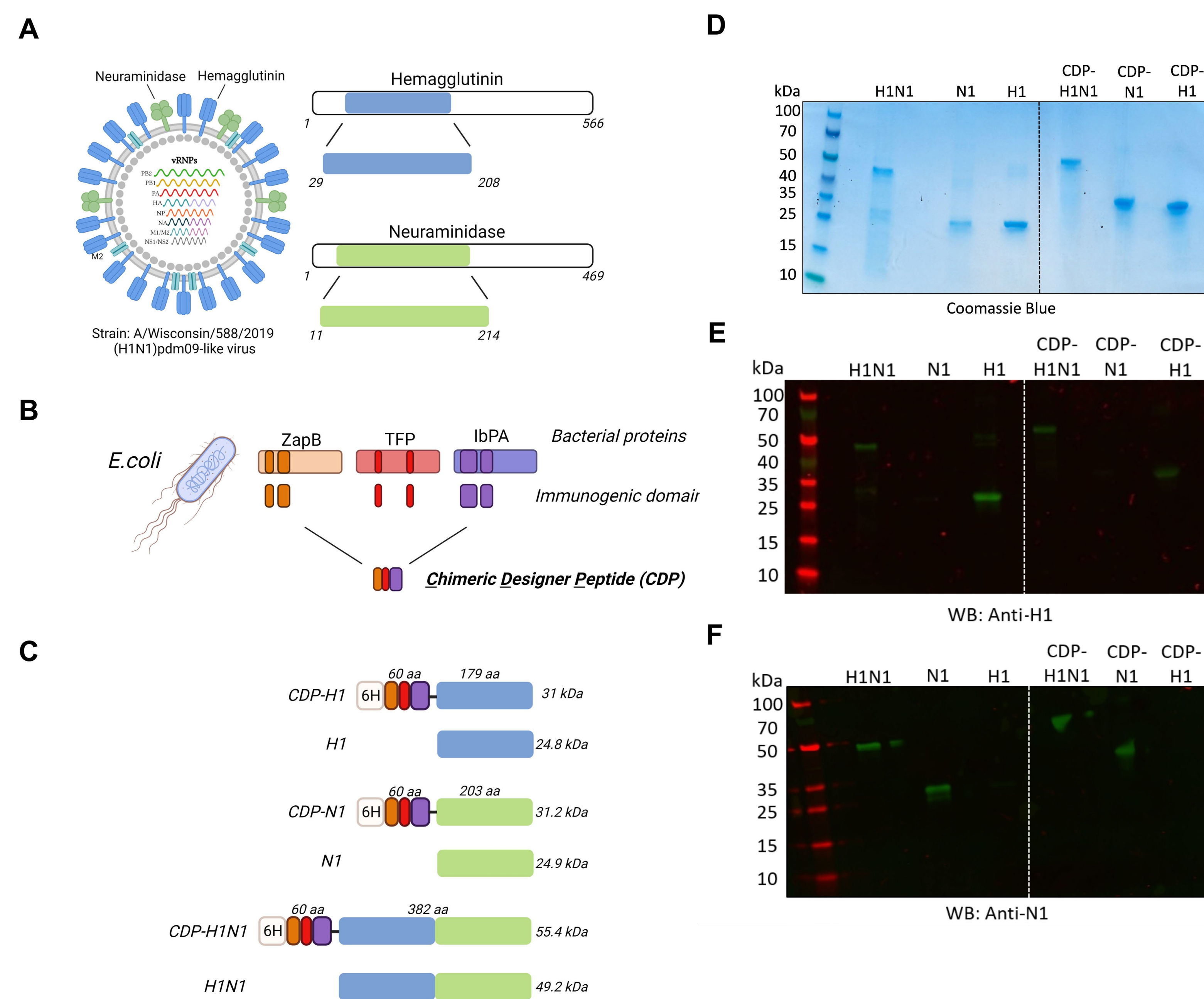


Figure 1: Constructs (C) were derived from the A/Wisconsin/67/2022 (H1N1) strain (A). These epitopes are then conjugated to CDP (B) and validated by SDS-page and Western Blot using commercial anti-H1 or anti-N1 antibodies (D-F)

Conclusion

Using the iBoost platform for vaccination against HA and/or NA results in not only faster, but also stronger antibody responses compared to the unconjugated counterparts

Humoral responses *in vivo*

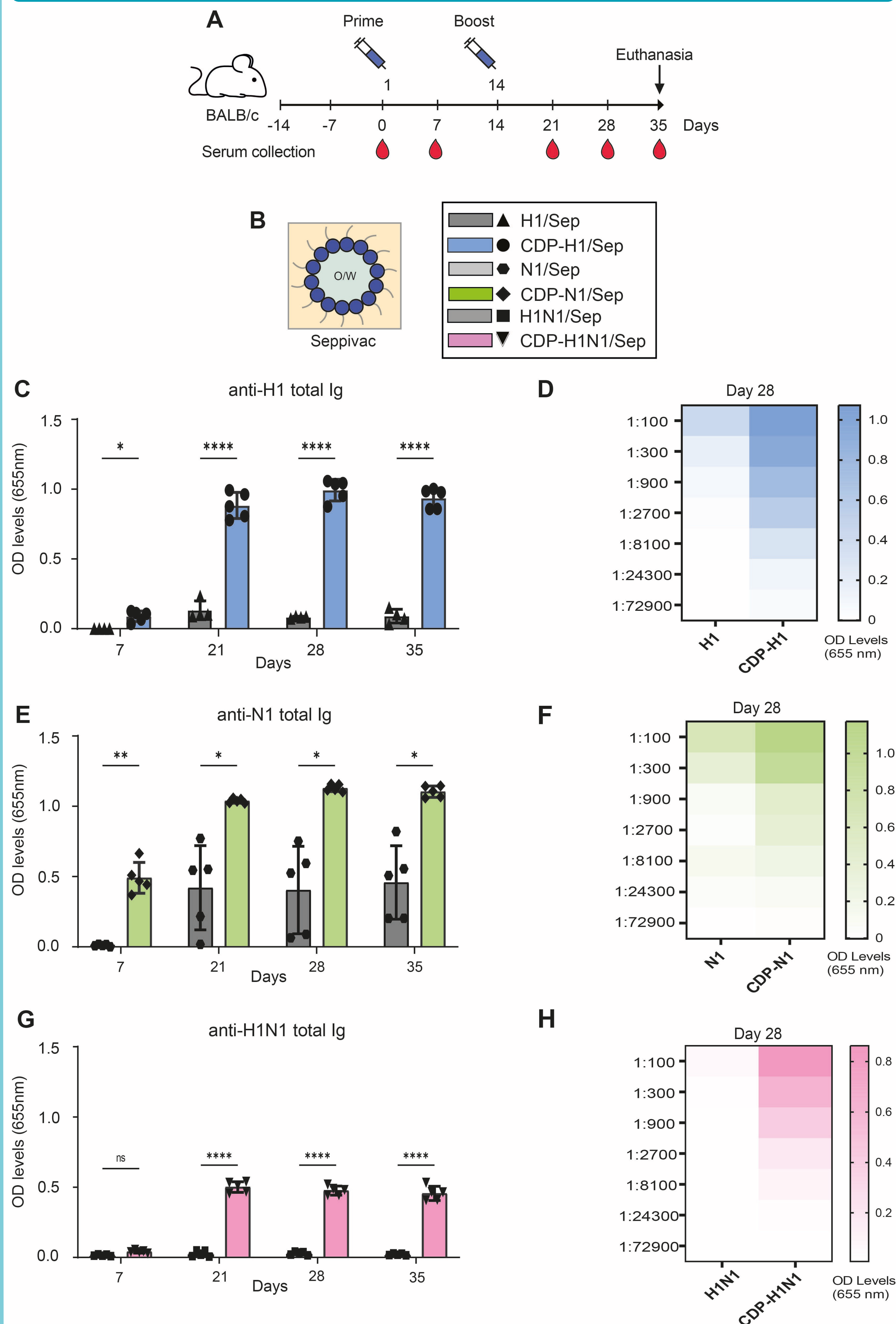


Figure 2: Seroconversion was detectable by day 21 for CDP-H1 (C) and CDP-H1N1 (G) and by day 7 for CDP-N1 (E). By day 28 (D, F, H) all immunized with the CDP conjugated vaccines elicited a stronger antibody response compared to H1, N1 or H1N1 alone

Future perspectives

The antibodies induced in this study most likely target major antigenic sites, which are susceptible to antigenic drift. Therefore, to identify suitable, conserved epitopes, we are developing a tailor-made computational pipeline taking into account multiple factors, such as surface exposure and residue-level mutability

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