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An E2-substituted chimeric pestivirus with DIVA vaccine properties

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An advantage of the use of chimeric pestiviruses as modified live vaccines against classical swine fever (CSF) resides in their capacity to be manipulated to achieve the characteristics desired for safe and efficacious DIVA vaccines. We have recently generated a new chimeric virus, Riems26_E2gif engineered specifically for this purpose. The E2-substituted Riems26_E2gif was derived by homologues recombination of the complete E2 protein encoding genome region from Border disease strain Gifhorn into a bacterial artificial chromosome (BAC) harbouring the genome of the CSFV vaccine strain C-Riems. The virulence, immunogenicity and vaccine properties of Riems26_E2gif were tested in a vaccine-challenge experiment in pigs. Riems26_E2gif vaccinated pigs could be differentiated from infected pigs using a CSFV-E2 specific ELISA. Following challenge infection with highly virulent CSFV strain Koslov, all vaccinated pigs were protected. This new chimeric pestivirus represents a C-strain based DIVA vaccine candidate that can be differentiated based on CSFV E2 specific antibodies.

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