Document 0739

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A potentially safer whooping cough vaccine made by novel genetic engineering techniques q:i-h-h a:e-h a_for:e-i v:e-i n:x n:x v:e-i-p-u p:e-u-i a:e-p a:e-p n:x
 The team reported they managed to induce bacteria to produce a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by the bacterium that causes whooping cough a non-toxic version of the poisons produced by th
(ARG1)
 The reactions stem from the fact that the vaccine contains multiple copies of the whole Bordetella pertussis bacterium , which causes whooping cough q:i-h-h n:x v_from:e-i-i _ q:i-h-h n:x v:e-i-p a:e-p n_of:x-i _ q:i-h-h a:e-p named:x-c n:x n:x _ v:e-i-p n:x n:x
                                                                                                                                                                                                                                                                                          ARG3
                            BV ARG BV
                                                   bacterium produces a toxin that , if used as a vaccine , can induce immunity to whooping cough n:x v:e-i-p q:i-h-h n:x _ x:e-h-h v_as:e-i-p-i _ q:i-h-h n:x _ v_modal:e-h v:e-i-p n:x p:e-u-i n:x
                                                   y , the toxin is also poisonous .
_ q:i-h-h n:x _ a:e-h a:e-p _
The Italian-led scientific team said they had succeeded in getting bacteria to produce a non-toxic version of the pertussis toxin , which could be used as a safe vaccine q:i-h-h v:e-i-p a:e-p n_of:x-i v_to:e-i-h-i pron:x v_in:e-i-i v_cause:e-i-i-h n:x v:e-i-p q:i-h-h a:e-p n_of:x-i v_to:e-i-h n:x n:x v_se-i-p-i q:i-h-h a-for:e-p-i n:x
                                                                                                                                                                                     en able to pluck the five genes that produced the toxin out of the pertussis bacterium a:e-i-h _ v:e-i-p q:i-h-h card:i-i-c n:x _ v:e-i-p q:i-h-h n:x p:e-u-i p:e-u-i q:i-h-h n:x n:x
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          le BV poss
                                                                                      t although it took all five genes to produce the toxin , only one was responsible for the toxin 's virulence x:e-h-h pron:x v:e-i-p-u q:i-h-h card:i-i-c n:x x:e-h-h v:e-i-p q:i-h-h n:x _ _ _ _ card:i-i-c _ a_for:e-p-i _ q:i-h-h n:x _ n:x
 The researchers said they did this , but the toxin did n't induce immunity to whooping cough . q:i-h-h n_of:x-i v_to:e-i-h-i pron:x v:e-i-p x:x _ q:i-h-h n:x _ neg:e-h v:e-i-p n:x p:e-u-i n:x n:x _ n:x _ ...
                                                                                                                                                                                 ____and_c
                                                                                                                                                                         (compound)
The scientists then took the five toxin genes and triggered a mutation in the one gene that caused virulence of the cardi-i-c n:x n:x ve-i-p q:i-h-h n:x p:e-u-i q:i-h-h card:i-i-c n:x ve-i-p n:x ve-
 Then , using a new technique ( called homologous recombination ) for introducing genes into cells , they transferred all five genes to bacteria closely related to the pertussis organism a:e-h _ v:e-i-p q:i-h-h a:e-p n:x _ v_name:e-i-i-i a:e-p n:x _ v_name:e-i-i-i a:e-p n:x _ v_to:e-i-p n:x _ p:e-u-i v_to:e-i-p n:x _ p:e-u-i v_to:e-i-p n:x _ p:o-u-i v_to:e-i-p n:x _ p:o
   These bacterial "cousins" ordinarily do n't make the toxin q_dem:i-h-h are-p _ n_of:x-i _ are-e _ neg:e-h v:e-i-p-u q:i-h-h n:x
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