A

\[ \text{WT} \rightarrow \Delta \text{flaA} \rightarrow \Delta \text{pilU} \rightarrow \Delta \text{pilT} \rightarrow \Delta \text{pilTU} \rightarrow \Delta \text{pilTU}, \ Tn \text{pilT} \rightarrow \Delta \text{pilTU}, \ Tn \text{pilU} \rightarrow \Delta \text{pilTU}, \ Tn \text{pilU} \rightarrow \Delta \text{pilTU}, \ Tn \text{pilT} \rightarrow \Delta \text{pilTU} \]

\[ \text{PilT NTD(1-101)-PilU CTD(100-368)} \]

\[ = \text{PilT}^\text{N-PilU}^\text{C} \]

\[ \text{PilU NTD(1-99)-PilT CTD(102-345)} \]

\[ = \text{PilU}^\text{N-PilT}^\text{C} \]

B

DNA-uptake pilus function

C

MSHA pilus function