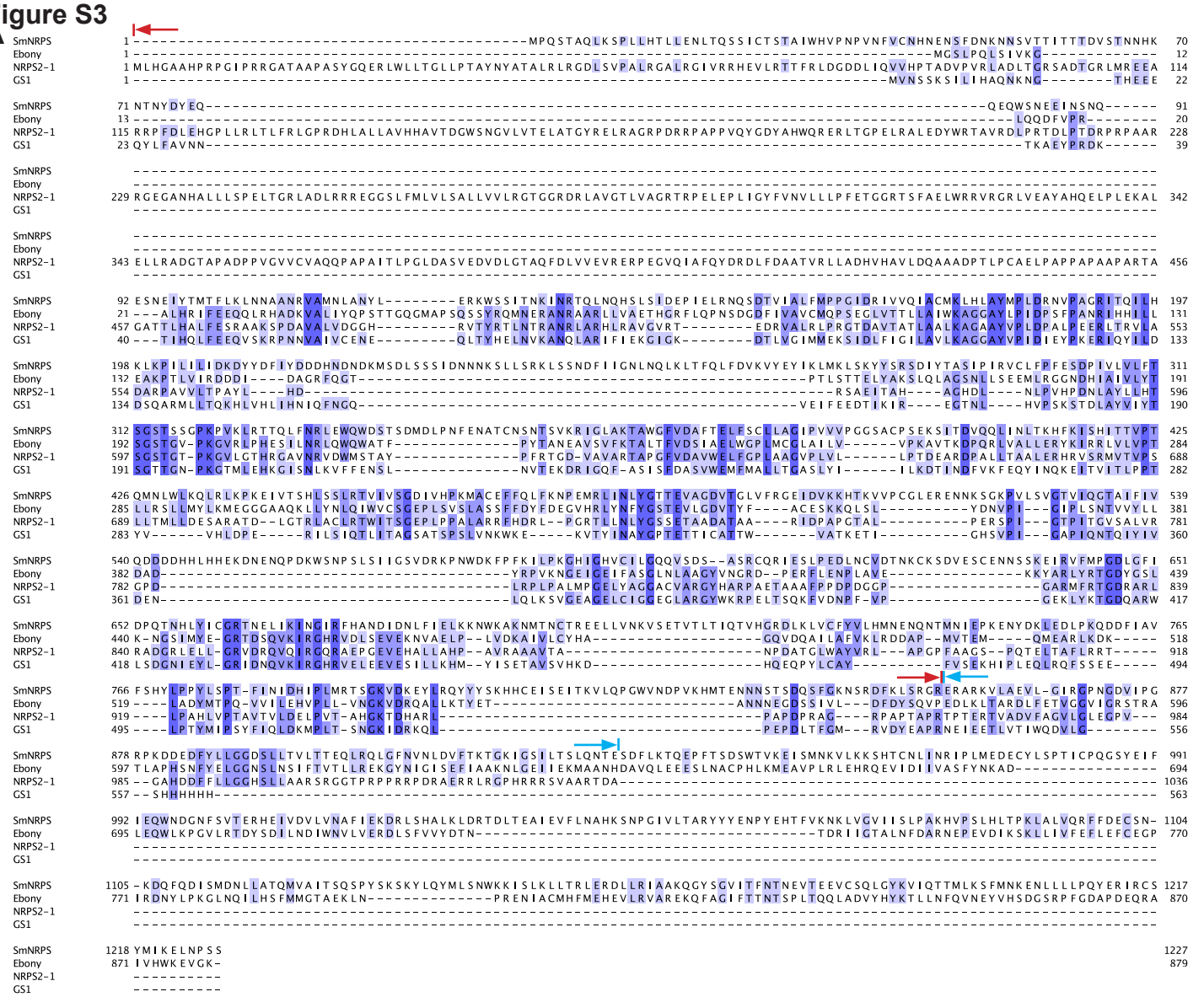
Figure S3

A

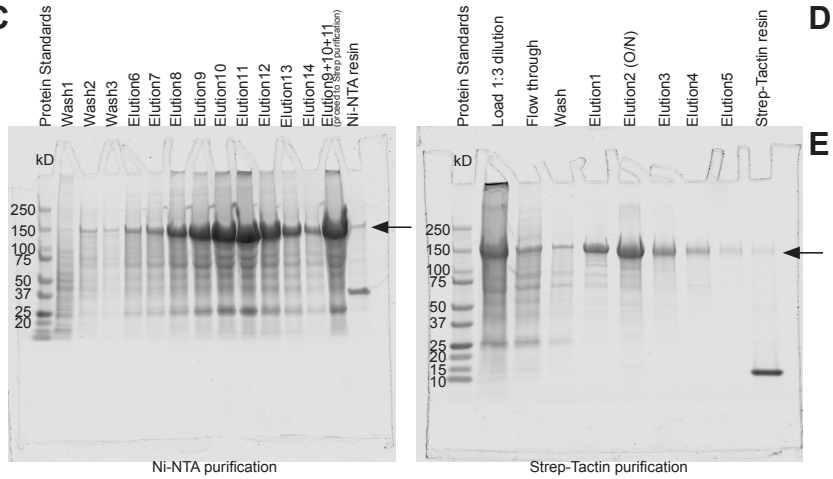


B

1. βAla + ATP $\xrightleftharpoons{\text{enzyme}}$ β-alanyl-AMP + PP_i
2. β-alanyl-AMP + enzyme $\rightleftharpoons$ β-alanyl-enzyme + AMP
3. β-alanyl-enzyme + amine $\rightleftharpoons$ β-alanyl-amine + Enzyme

SUM: βAla + amine $\xrightleftharpoons{\text{enzyme}}$ β-alanyl-amine + AMP+ PP_i

C

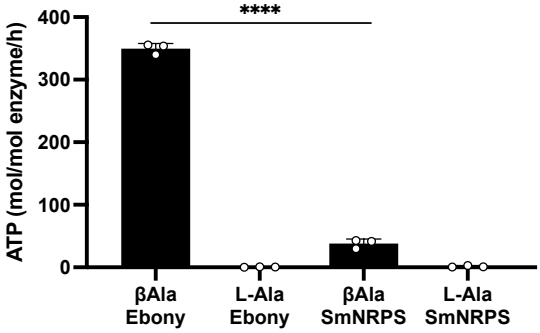


D

ATP-PP_i exchange assay:

βAla + [^{32}P] ATP $\xrightleftharpoons{\text{enzyme}}$ β-alanyl-AMP + [^{32}P]PP_i

E



F

Unloading assay:

[^{3}H]β-alanyl-enzyme + amine ⟶ [^{3}H]β-alanyl-amine + enzyme