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(54) Title: A NEW, NON-SPECIFIC THERMOLABILE NUCLEASE ACTIVE AT LOW TEMPERATURE, IN WIDE PH RANGE AND HIGH CONCENTRATION IN SALTS

(57) Abstract: The subject matter of this invention is a new thermolabile PPR nuclease or its enzymatically active fragment exhibiting high catalyst activity in difficult reaction conditions (particularly high concentrations of salts and other additives commonly used in the processes of the purification of proteins and viruses, low temperatures and wide range of pH), where the nuclease sequence is SEQ.2 or a sequence that shares at least 40% of its identity. The subject matter of the invention is also the gene encoding PPR nuclease or its enzymatically active fragment; a particle of nucleic acid encoding the PPR nuclease or its enzymatically active fragment; expression plasmid including the sequence of the PPR encoding gene; recombinant strains of Escherichia coli JM109(DE3) pD454-PPR-AmpR and E. coli ArcticExpress (DE3) pD454-PPR-AmpR; the method of PPR nuclease protein production, application of PPR nuclease in processes of purification of recombinant proteins of significantly lower DNA content. As well as for decontamination of reactive reagents and mixtures for PCR, qPCR, RT-PCR, RT-qPCR, RCA, LAMP and NGS in order to obtain higher sensitivity and specificity of relevant genetic analyses; application of the PPR nuclease in processes of virus vector purification (particularly lentiviruses [LV], adenoviruses [AV, AAV] and retroviruses [RV] used in modern gene and cell therapies (chimeric antigen receptor [CAR] T-cell immunotherapy)); application of the PPR nuclease in exosome purification processes for therapeutic or diagnostic purposes; application of the PPR nuclease in processes of recombinant protein purification, particularly enzymes, antibodies, vaccination antigens, products used in cell therapies and other therapeutic proteins.



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