

P027 ZEBRA as a new delivery system for therapeutic proteins
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The specific protein delivery across the cell membrane represents one of the most promising strategies for treating infectious disease and cancers. Recently, a high number of new delivery systems including protein transductions domains (PTDs) have been identified for their ability to deliver a large variety of active therapeutic biomolecules. A new cell-penetrating protein named EB1/Zta (ZEBRA) has been characterized for its ability to translocate into lymphoid cells. ZEBRA is a transcription factor involved in the Epstein-Barr virus (EBV) lytic program. We have evaluated the transduction properties of the ZEBRA protein by identifying the minimal domain required for the delivery of cargoes. Therefore, we designed different truncated forms of ZEBRA and analyzed them for their capability to be internalized into normal and cancer cell lines. These minimal domains (MDs) contain combinations of activation, DNA-binding and dimerization domains. Furthermore, the DNA-binding activity of these recombinant constructs has been tested *in vitro* by EMSA, demonstrating that these proteins are fully active as transcription factors. By fusing the minimal domains of ZEBRA to the reporter protein GFP, we additionally characterized their transduction capability. The best candidate was further analyzed in terms of stability of internalized cargo and its uptake kinetics. In summary, we describe a new protein transduction domain which has an extensive potential for further therapeutic applications.