

Title (en)  
SINGLE PROTEIN PRODUCTION IN LIVING CELLS FACILITATED BY A MESSENGER RNA INTERFERASE

Title (de)  
EINZELPROTEINHERSTELLUNG IN LEBENDEN ZELLEN MITTELS MESSENGER-RNA-INTERFERASE

Title (fr)  
PRODUCTION D'UNE SEULE PROTEINE DANS DES CELLULES VIVANTES FACILITEE PAR UNE INTERFERASE D'ARN MESSAGER

Publication  
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Application  
**EP 05851377 A 20051104**

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Abstract (en)  
[origin: WO2006055292A2] The present invention describes a single-protein production (SPP) system in living E. coli cells that exploits the unique properties of an mRNA interferase, for example, MazF, a bacterial toxin that is a single stranded RNA- and ACA-specific endoribonuclease, which efficiently and selectively degrades all cellular mRNAs in vivo, resulting in a precipitous drop in total protein synthesis. Concomitant expression of MazF and a target gene engineered to encode an ACA-less mRNA results in sustained and high-level (up to 90%) target expression in the virtual absence of background cellular protein synthesis. Remarkably, target synthesis continues for at least 4 days, indicating that cells retain transcriptional and translational competence despite their growth arrest. SPP technology works well for yeast and human proteins, even a bacterial integral membrane protein. This novel system enables unparalleled signal to noise ratios that should dramatically simplify structural and functional studies of previously intractable but biologically important proteins.

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Citation (search report)  
• [AP] WO 2004113498 A2 20041229 - UNIV NEW JERSEY MED [US], et al  
• [XP] SUZUKI MOTOO ET AL: "Single protein production in living cells facilitated by an mRNA interferase", MOLECULAR CELL, CELL PRESS, CAMBRIDGE, MA, US, vol. 18, no. 2, 15 April 2005 (2005-04-15), pages 253 - 261, XP002545106, ISSN: 1097-2765, DOI: 10.1016/J.MOLCEL.2005.03.011  
• [I] CHRISTENSEN S K ET AL: "Toxin-antitoxin Loci as Stress-response-elements: ChpAK/MazF and ChpBK Cleave Translated RNAs and are Counteracted by tmRNA", JOURNAL OF MOLECULAR BIOLOGY, ACADEMIC PRESS, UNITED KINGDOM, vol. 332, no. 4, 26 September 2003 (2003-09-26), pages 809 - 819, XP004454294, ISSN: 0022-2836, DOI: 10.1016/S0022-2836(03)00922-7  
• See references of WO 2006055292A2

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