

Technology Offer

Frog Prince: A highly active Transposon System for insertional mutagenesis and gene-trapping in Vertebrates

Reference Number
TO 03-00125

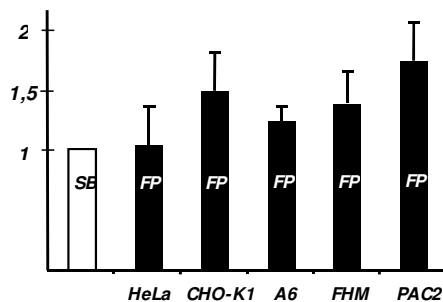
The Challenge

Transposable elements are gene delivery vehicles whose integration into chromosomes provide the basis for long-term expression of transgenes in cells and organisms. They are valuable and widely used tools for insertional mutagenesis and germ-line transgenesis in **invertebrate** systems such as flies and worms.

"Sleeping Beauty" (SB) is currently the most active and useful transposon system in **vertebrates**. It shows transposition activity in a wide range of vertebrate cells and is well known in the scientific community as a molecular tool for vertebrate genetics and genome manipulations. As SB is not commercially available, there is a strong demand for an efficiently working transposon system, supplied on a commercial basis.

The Technology

A novel transposon system called "Frog Prince" (FP) has been created, characterized by two main advantages over SB that have to be highlighted:



Relative transpositional activity of Frog Prince (FP) in comparison to Sleeping Beauty (SB). FP shows higher activity in all different cell lines, e.g. 70% higher activity in zebrafish cells (HeLa, human; CHO-K1, hamster; A6, X. laevis; FHM, fathead minnow; PAC2, zebrafish).

First, FP catalyses efficient cut-and-paste transposition in major vertebrate taxa like fish, amphibians and in mammalian cell lines with a higher transposition efficiency than SB (Fig. 1). In zebrafish cells FP shows an even 70% higher activity than SB. Second, FP shows high-efficiency gene-trapping activity. Around 30% of all transposition events take place in introns of expressed genes. To our knowledge, such high gene trapping frequencies can not be obtained with other vector systems.

Commercial Opportunity

FP provides a valuable research tool to be developed and commercialised:

- commercially available transposon system for vertebrates
- efficient expression vector for vertebrate transgenesis
- an excellent vector for gene-trapping and insertional mutagenesis
- vector for generating stable siRNA cell lines or animals
- system for generation of expression, cDNA, and RNAi libraries

Patent situation

A priority claiming German application and a PCT application are pending.

Further Reading

Miskey et al., Nucleic Acids Research, 2003, Vol.31, No. 23, pp 6873-6881

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