

DICE: dual-integrase cassette exchange

Stanford researchers have developed a system for precise genetic modification of human embryonic stem cells (ECs) and induced pluripotent stem cells (iPSCs). The system known as DICE (dual integrase cassette exchange) offers complete control over the content, orientation and copy number of gene insertion and is expected to have no size limits. The level of specificity of DICE is approximately 100 percent and correct integrants are obtained with a single transfection of a moderate number of cells. This robust system is particularly suited for construction of cell lines and transgenic organisms.

NOTE: The US patent application for this technology published on May 21, 2015. See below for a link to the published application.

Applications

- Genetic engineering
- Gene addition in animal, plant, and microbial cells
- Construction of transgenic organisms

Advantages

- Precise, efficient method for inserting genes at a preselected genomic location without a size limit
- Eliminates background events
- Little or no screening required
- Cost effective
- Time saving

Publications

- US Patent Application published on May 21, 2015, [Publication No. 2015 01450665 A1](#)
- F. Zhu, M. Gamboa, A.P. Farruggio, S. Hippenmeyer, B. Tasic, B. Schule, Y. Chen-Tsai and M.P. Calos. [DICE, an efficient system for iterative genomic editing in human pluripotent stem cells](#), *Nucleic Acids Research*, published December 4, 2013.

Patents

- Published Application: [20150140665](#)
- Published Application: [WO2015073703](#)
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