Application note

GVG Diagnostics

Speed congenics using highly informative STR marker panels

Using multiplex PCR methods and technologies developed by GVG Genetic Monitoring we offer a new approach for speed congenics projects which is more flexible and more efficient for both targeted breeding and the transfer of transgenic characteristics to different mouse lines.

Method

Speed congenics (also MASP, marker assisted selection protocol) is used for the accelerated creation of genetically modified mouse lines (knockout, knockin or transgene) by sequential backcrossing of modified gene from donor to recipient. Offspring at each generation are genotyped using an STR marker panel (STR – short tandem repeat, microsatellite) of evenly distributed loci along the chromosomes. The individual with the highest level of recipient genomic DNA is identified and used to breed the next generation.

Defined STR loci with high mutation rates can be applied to distinguish not only between different strains, but also between substrains of the identical inbred strain. This allows speed congenics technology to be applied to new fields such as the monitoring of backcrossing between substrains of the same inbred strain or from a mixed genetic background to a pure substrain background.

Standard marker panel with 246 STR loci

For speed congenics projects GVG GM has developed a standard marker panel with 246 STR loci that is extremely flexible and can be applied to any combinations of inbred mouse strains or substrains.

- More than 200 STR loci with differing alleles between different inbred strains
- More than 120 STR loci with differing alleles between any substrain of C57BL/6J and C57BL/6N

Our service: Fast results, customer-friendly presentation of analysis data

- Results within 10 working days
- Analysis data in customer-friendly tabular form and as an easy-to interpret karyogram (see examples overleaf)

We'd be delighted to explain to you the details of our method, work with you to plan your speed congenics project, and put forward an attractive proposal. Just get in touch with us!

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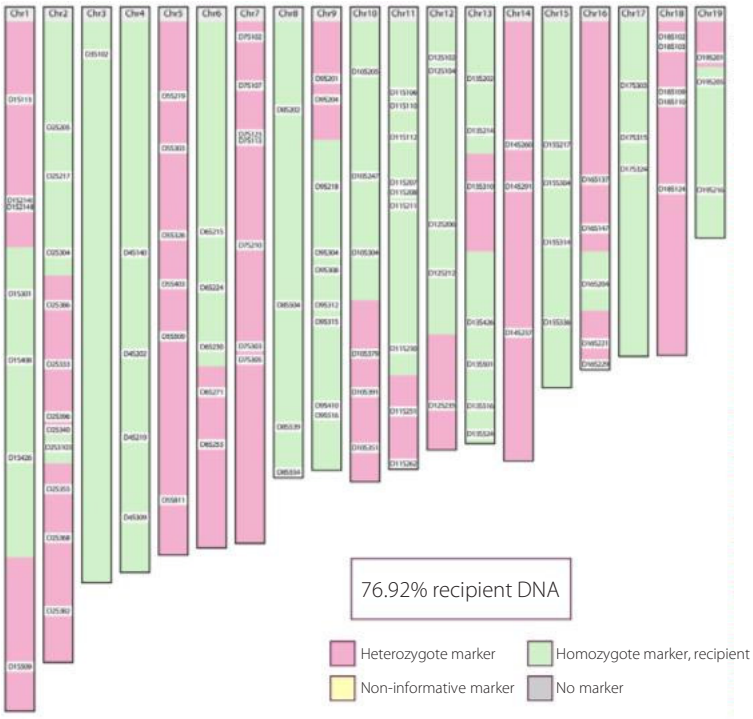
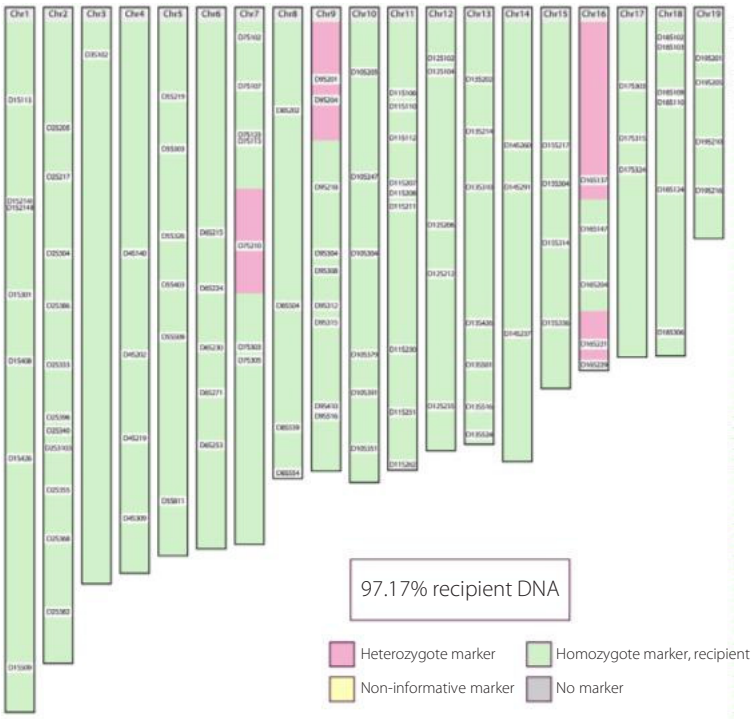
Example 1: Karyogram of the N2 generation



Backcrossing from a mixed C57/BL6 & 129 genetic background to C57BL/6JHsd.

Example 2: Karyogram of the N4 generation



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