

Unknown insertion site of transgenic marker: Identification of the chromosome and approximate position on chromosome

Depending on the method used to generate transgenic animals, the genomic position of the transgenic locus might be unknown. Identifying the integration site is labour-intensive and time-consuming. Using the GVG GM genotyping platform, the chromosome with the transgenic marker can be detected easily and the appropriate position on the chromosome can be postulated.

Method

- Complete STR genotyping of animals of one generation with the GVG GMstandard STR panel (usually 10–15 target-positive animals of the N2 or N3 generation)
- Identification of informative STR loci
- Comparative analysis of each chromosome
- Identification of genomic regions lacking crossing over
- Identification of individuals best suited for further breeding

Standard marker panel with 246 STR loci

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.

- About 50% can distinguish between different substrains
- About 85% can distinguish between different inbred strains

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

- Genotyping results within 10 working days
- Analysis data in customer-friendly tabular form (see examples overleaf)

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

Example

Tabular data of genotyping results for chromosomes 9 and 10 in nine animals. STR markers are arranged according to their chromosomal position beginning from the centromere (on top) to the distal part. All chromosomes were examined for the presence of green-marked genomic regions (successfully backcrossed parts of genomic DNA due to crossing-over events). Red-marked STR loci are still heterozygous, consisting of donor and recipient DNA.

			animal	1	2	3	4	5	6	7	8	9
1	D95201	Chr9	14.69	14 / 14	13 / 14	13 / 14	13 / 14	13 / 13	13 / 14	13 / 14	13 / 14	14 / 14
2	D95204	Chr9	21.45	18 / 18	15 / 18	15 / 18	15 / 18	15 / 18	18 / 18	15 / 18	15 / 18	18 / 18
3	D95211	Chr9	37.19	19 / 19	19 / 19	18 / 19	18 / 19	18 / 19	18 / 18	18 / 19	18 / 19	18 / 18
4	D95213	Chr9	37.53	18.2 / 23	18.2 / 23	18.2 / 23	18.2 / 23	18.2 / 23	23 / 23	18.2 / 23	23 / 23	23 / 23
5	D95218	Chr9	46.44	18 / 19	18 / 19	18 / 19	18 / 19	18 / 19	18 / 18	18 / 19	18 / 18	18 / 18
6	D95219	Chr9	47.17	22.2 / 25.2	22.2 / 25.2	22.2 / 25.2	22.2 / 25.2	22.2 / 25.2	25.2 / 25.2	22.2 / 25.2	25.2 / 25.2	25.2 / 26.2
7	D95304	Chr9	64.81	12 / 21	12 / 21	12 / 21	12 / 21	12 / 21	12 / 12	12 / 21	12 / 12	12 / 21
8	D95308	Chr9	69.95	17.3 / 21	17.3 / 21	17.3 / 21	17.3 / 20	17.3 / 21	21 / 21	21 / 21	21 / 21	17.3 / 21
9	D95312	Chr9	80.21	15 / 19	19 / 19	15 / 19	15 / 19	15 / 19	19 / 19	19 / 19	19 / 19	15 / 19
10	D95323	Chr9	100.58	19 / 24	24 / 24	19 / 24	19 / 24	19 / 24	18 / 24	24 / 24	19 / 24	19 / 24
11	D95410	Chr9	107.86	13 / 14	13 / 13	13 / 14	13 / 14	13 / 14	13 / 14	13 / 13	13 / 14	13 / 14
12	D95516	Chr9	108.96	14 / 18	15 / 18	14 / 18	14 / 18	14 / 18	14 / 18	18 / 18	14 / 18	14 / 18
13	D95511	Chr9	108.96	20 / 21	20 / 20	20 / 21	20 / 21	20 / 21	20 / 21	20 / 20	21 / 21	20 / 21

All chromosomes without target:

Each STR-locus is marked green at least one time. (green fields of No 1, 2 and 6 or 7, 8 and 9 do cover complete chrom. 9)

1	D105205	Chr10	12.91	20 / 20	3 / 20	20 / 20	20 / 20	3 / 20	3 / 20	3 / 20	3 / 20	19 / 20
2	D105213	Chr10	28.11	20 / 21	15 / 20	20 / 21	20 / 21	15 / 20	15 / 20	15 / 20	15 / 20	20 / 20
3	D105247	Chr10	42.91	13 / 13	13 / 14	13 / 13	13 / 13	13 / 14	13 / 14	13 / 14	13 / 14	13 / 14
4	D105218	Chr10	43.39	23.2 / 23.2	23.2 / 24.2	23.2 / 23.2	23.2 / 23.2	23.2 / 23.2	23.2 / 23.2	23.2 / 23.2	23.2 / 24.2	23.2 / 24.2
5	D105257	Chr10	53.78	43 / 43	42 / 43	43 / 43	43 / 43	43 / 43	43 / 43	43 / 43	42 / 43	42 / 43
6	D105304	Chr10	65.19	23.2 / 24.2	23.2 / 24.2	23.2 / 23.2	23.2 / 23.2	23.2 / 24.2	23.2 / 24.2	23.2 / 24.2	23.2 / 24.2	23.2 / 24.2
7	D105391	Chr10	104.79	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2
8	D105344	Chr10	115.16	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22
9	D105351	Chr10	121.31	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20

Chromosome with target:

Red fields for all animals. Target-position is the distal part of chrom. 10

1	D105205	Chr10	12.91	20 / 20	3 / 20	20 / 20	20 / 20	3 / 20	3 / 20	3 / 20	3 / 20	19 / 20
2	D105213	Chr10	28.11	20 / 21	15 / 20	20 / 21	20 / 21	15 / 20	15 / 20	15 / 20	15 / 20	20 / 20
3	D105247	Chr10	42.91	13 / 13	13 / 14	13 / 13	13 / 13	13 / 14	13 / 14	13 / 14	13 / 14	13 / 14
4	D105218	Chr10	43.39	23.2 / 23.2	23.2 / 24.2	23.2 / 23.2	23.2 / 23.2	23.2 / 23.2	23.2 / 23.2	23.2 / 23.2	23.2 / 24.2	23.2 / 24.2
5	D105257	Chr10	53.78	43 / 43	42 / 43	43 / 43	43 / 43	43 / 43	43 / 43	43 / 43	42 / 43	42 / 43
6	D105304	Chr10	65.19	23.2 / 24.2	23.2 / 24.2	23.2 / 23.2	23.2 / 23.2	23.2 / 24.2	23.2 / 24.2	23.2 / 24.2	23.2 / 24.2	23.2 / 24.2
7	D105391	Chr10	104.79	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2	34.3 / 38.2
8	D105344	Chr10	115.16	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22	21 / 22
9	D105351	Chr10	121.31	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20	15 / 20

Nos. 3 and 4 with the closest point of crossing over are recommended for further breeding