

Performance of "Genopal™" DNA Chip Detection of trace amounts of gene

Reliability evaluation of expression analysis using spike experiment

Sample: Predetermined amounts (0.83-10 pg) of mRNA (yeast origin) were added to 5 µg of mouse (brain derived from female BALB/c mice) total RNA (control sample), as a spiked sample. Using this sample, aRNA was fluorescently-labeled with Alexa Fluor 647 (Invitrogen).

DNA chip: Mitsubishi Rayon's "Genopal™", arrayed with 39 probes corresponding to mouse genes.

Experiment: Control sample: aRNAs were synthesized from total RNA which was hybridized to Genopal™ chip A. Control + spiked sample: aRNAs were synthesized from total RNA adding predetermined amounts (0.83-10 pg) of mRNA (yeast origin) which were hybridized to Genopal™ chip B-E. For the fluorescence intensities obtained for each gene, the results obtained from the control sample (Chip A), and the results obtained from the control sample plus spiked sample (Chips B-E) were plotted vs. the x and y axes, respectively (Figure 1). In addition, the relationship between the amount of spiked sample added to the total RNA and the fluorescence intensities of spots corresponding to the spiked sample is shown in Figure 2.

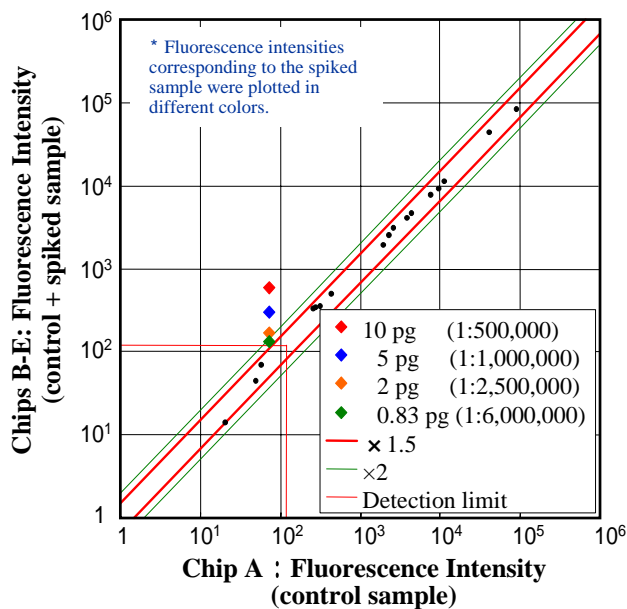


Figure 1. Fluorescence intensity of the Genopal™ chip, using a spiked sample.

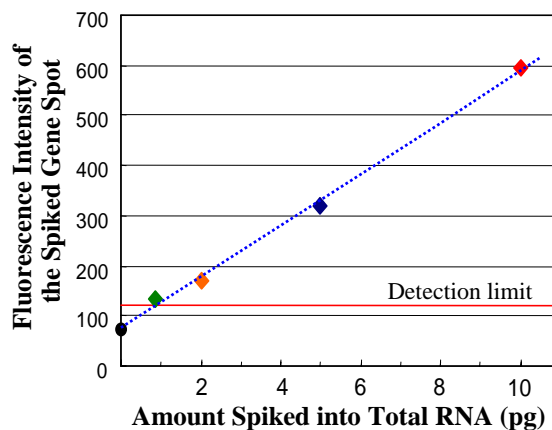


Figure 2. Relationship between the spike amount and fluorescence intensity.

Conclusion:

Detection of trace amounts of sample (0.8 pg of mRNA) contained in 5 µg of total RNA can be demonstrated. The relative sensitivity was 1:6,000,000 (one in 6,000,000 copies can be detected). Fluorescence intensity corresponding to the spiked sample reflects the spike amounts, demonstrating a high reliability for analysis results at the low expression levels.

For further inquiries:

Mitsubishi Rayon Co., Ltd.

New Business Planning Division, Genome Group
1-6-41, Konan, Minato-ku, Tokyo 108-8506, Japan
Email: genome@mrc.co.jp

DNA Chip
Genopal™