

Differentially expressed genes of octocoral, *Eleutherobia rubra* against heat stress and the local environment

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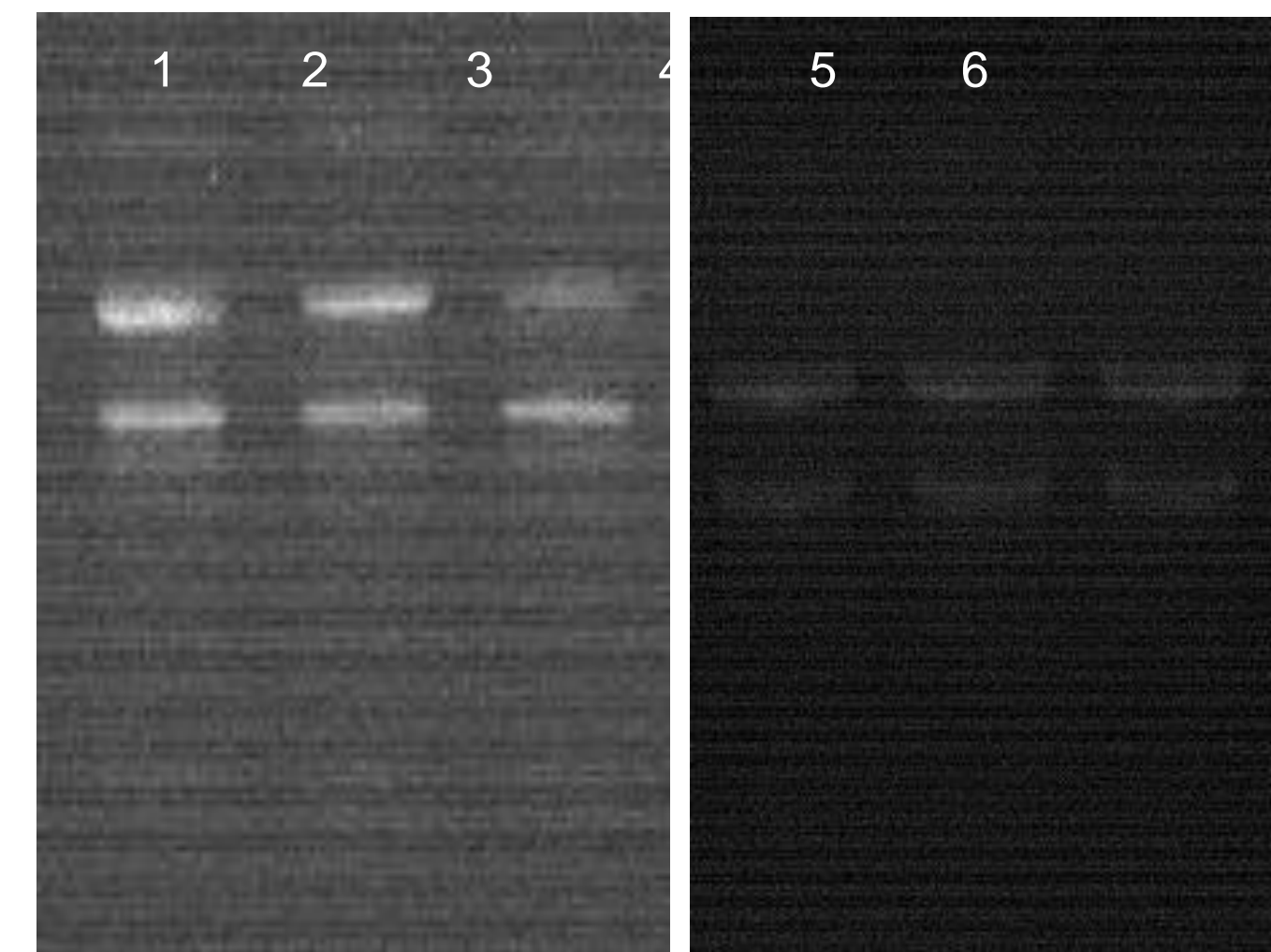
Abstract

Recently major impacts of climate change including, uprising seawater temperature and ocean acidification, might have accelerated the process of destruction on coral ecosystem worldwide. Soft coral ecosystem in South Sea of Korea is one of the coral communities affected by global warming strongly because the fast warming Kuroshio Current arrives Korean peninsula from the origin of the northern Philippines. In this research, we studied the physiological aspect and transcriptional responses of the coral, *Eleutherobia rubra* using the heat exposure experiment. We collected corals and extracted RNA after heat stress experiments. For the heat stress experiment, we exposed corals to temperature (26 °C) for 24h and hybridized those RNAs with that of control group (18°C) on the Oligo chip. As the results, we identified several groups of genes which transcription changed compared with control group. Antioxidant genes, ubiquitin-related genes, calcium ion-responsive genes, genome-related genes, and telomerase-related genes were explored in heat exposed coral groups and we compared those gene expressions in spring and summer and also in different locality with various latitudes.



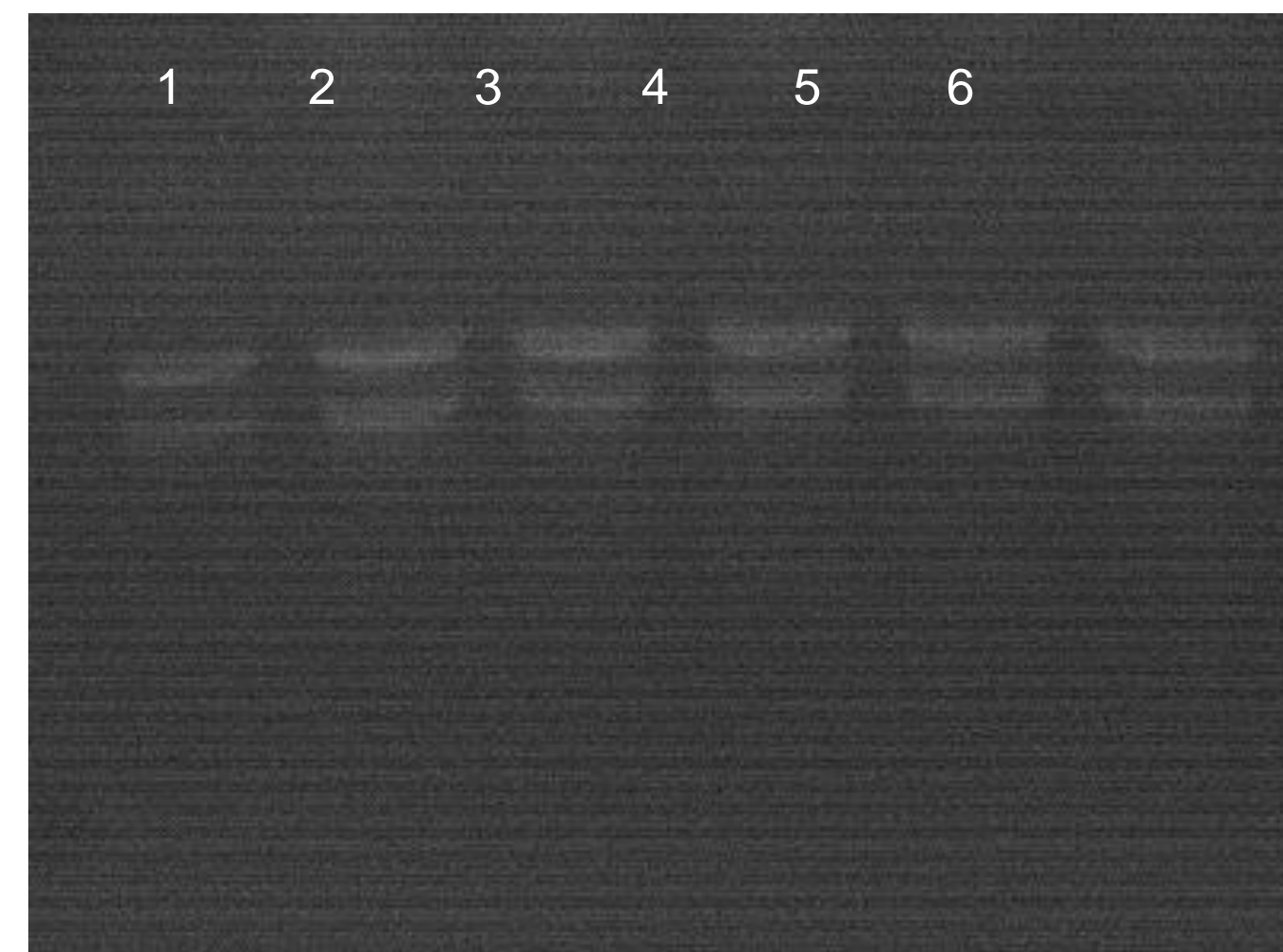
Figure 1. *Eleutherobia rubra*

Results



NO.	Sample	농도 (ug/μl)	260/280
1	Con1	459.5	1.90
2	Con2	271.2	1.92
3	Con3	192.6	1.89
4	26C-1	979	2.06
5	26C-2	921	1.99
6	26C-3	873	1.99

Figure 4. The denaturing formaldehyde agarose gel analysis of total RNA after heat shock stress for 24 hr



NO.	Sample	농도 (ng/μl)	260/280	260/230
1	5-1	600.7	1.9	2.4
2	5-2	952.4	2.0	2.5
3	5-3	926.6	2.0	2.5
4	8-1	983.6	2.0	2.5
5	8-2	936.0	1.9	2.5
6	8-3	1096.4	2.0	2.4

Figure 5. The denaturing formaldehyde agarose gel analysis of total RNA for Monthly

Materials & Methods

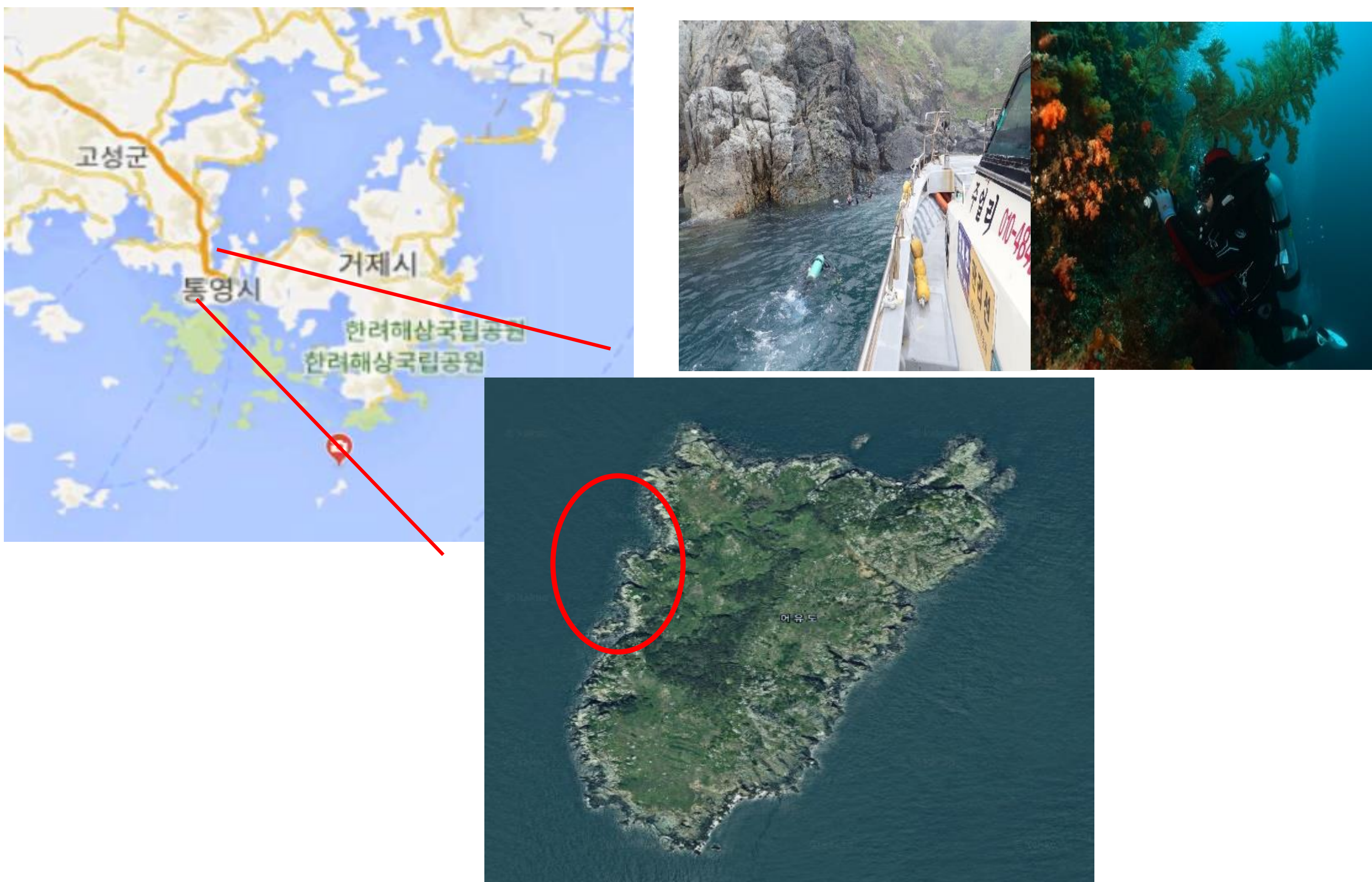


Figure 2. Sampling sites eru island in Korea

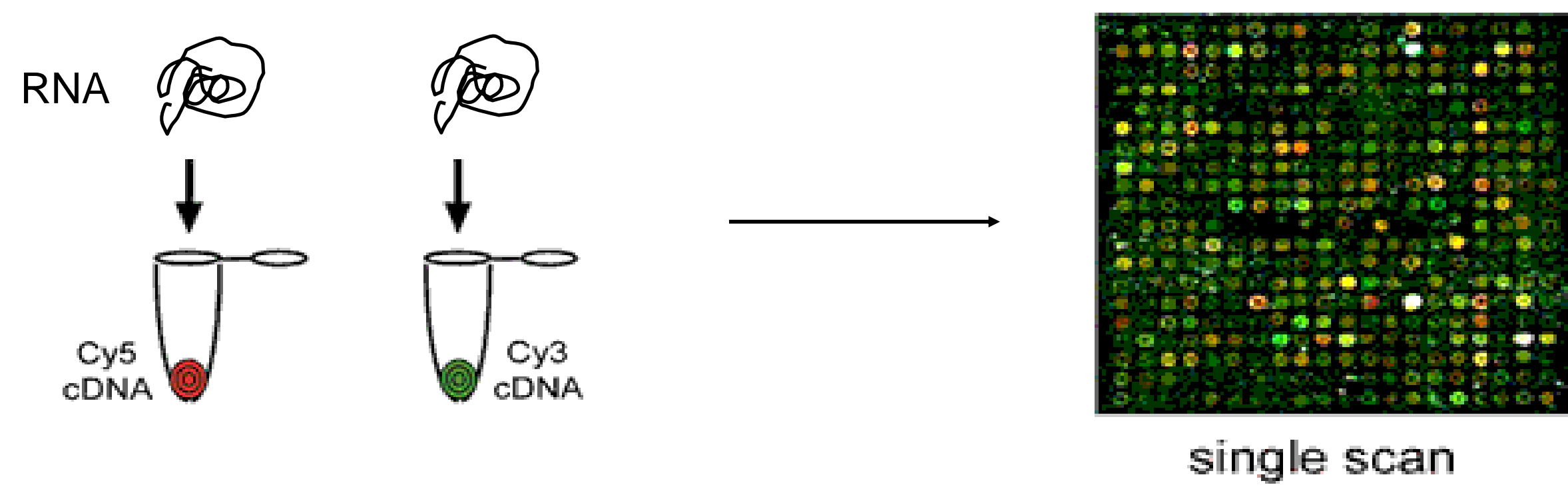


Figure 3. Measuring relative gene expression by using DNA microarrays.

Results

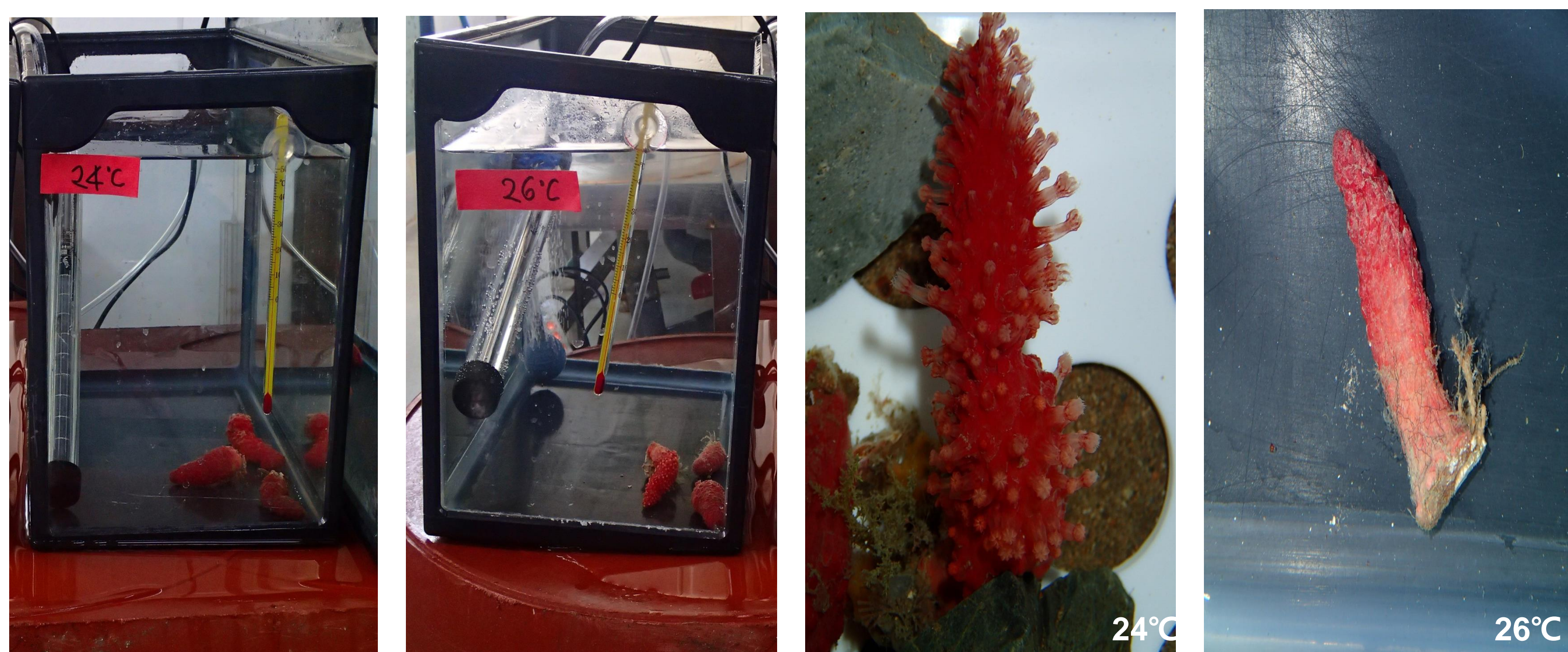


Figure 3. Experimental design of soft corals exposure to heat stress in laboratory.

Acknowledgment

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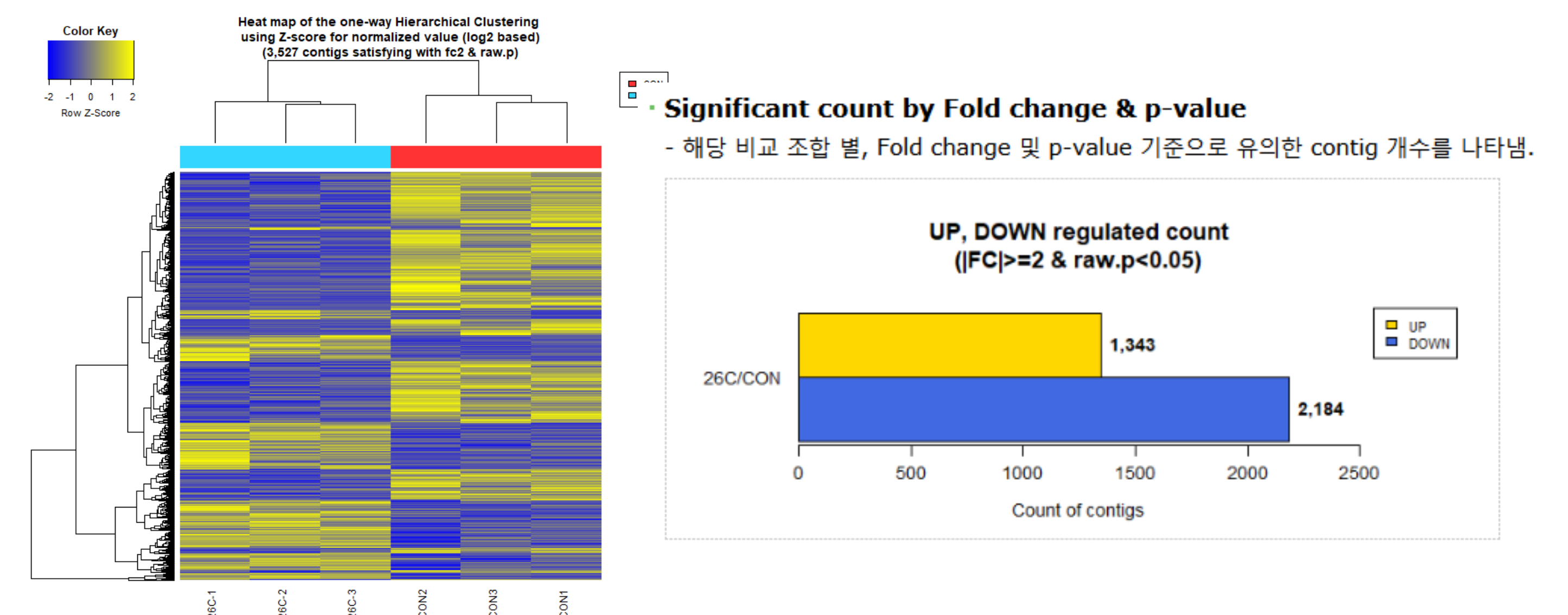


Figure 6 . DEG profiling of *E. rubra* exposed to heat stress

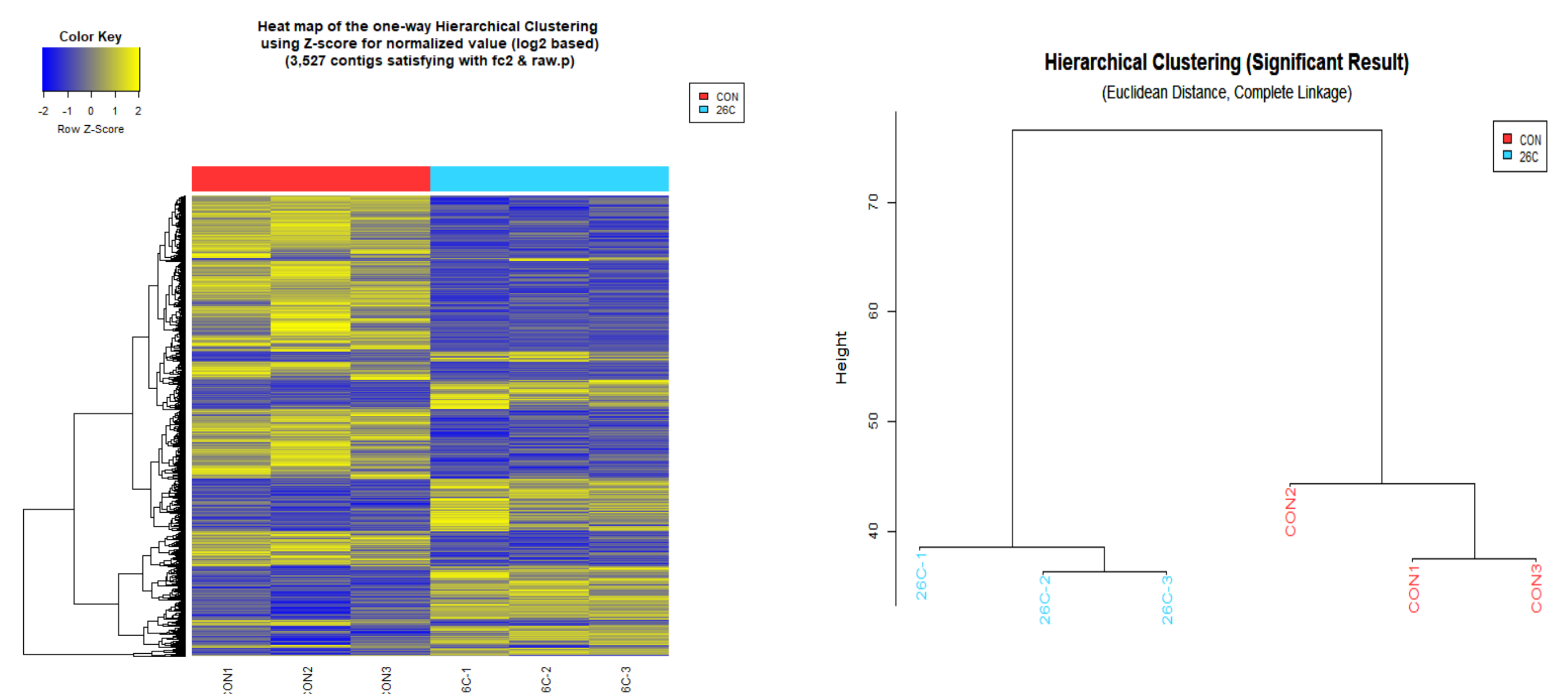


Figure 7 . DEG profiling and clustering of control vs. heat exposed group

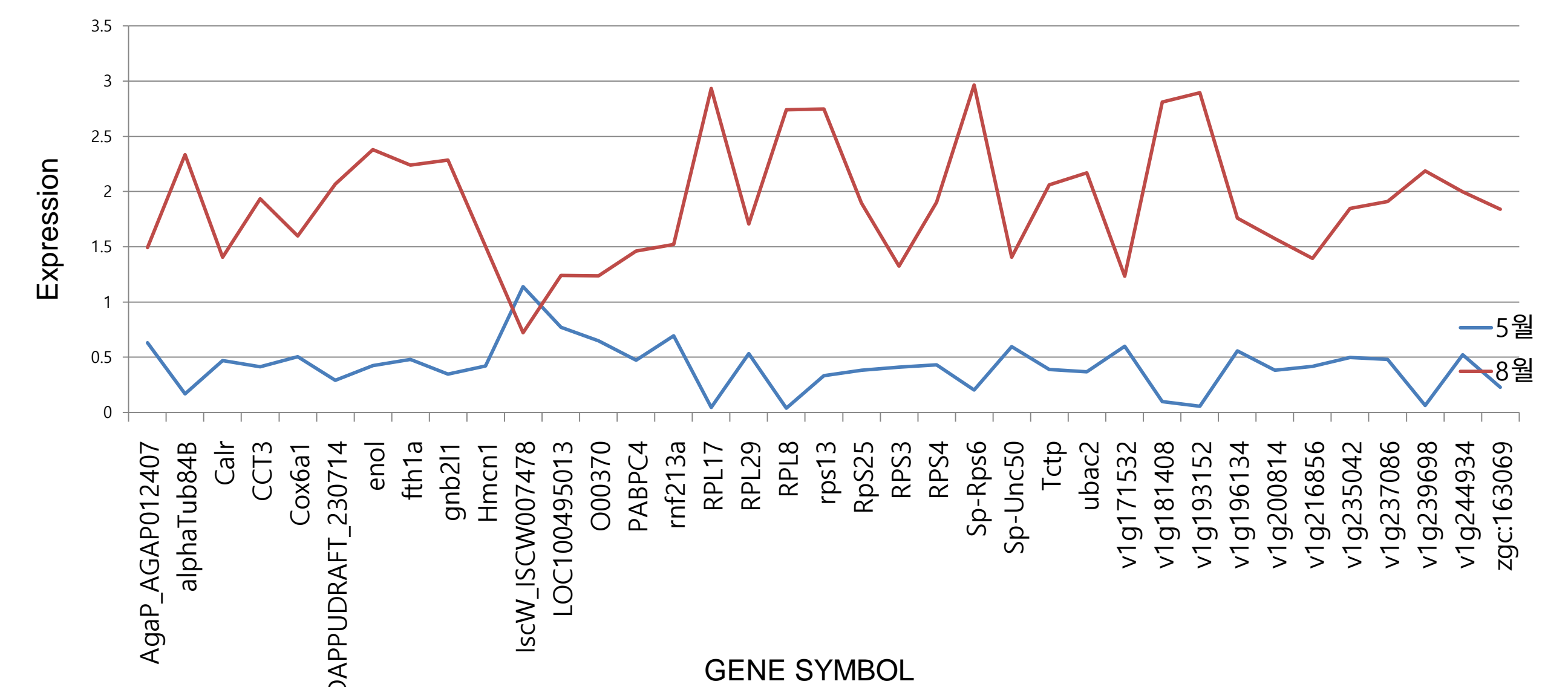


Figure 8. Results of applying biomarkers May and August in eru island

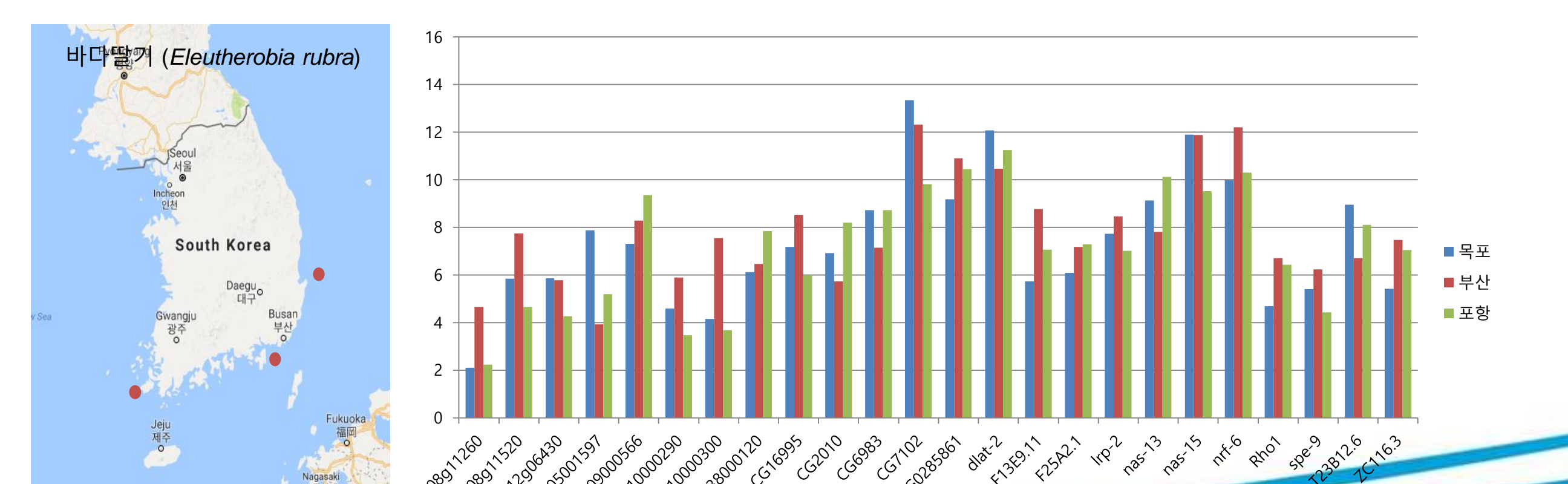


Figure 9 Results of applying biomarkers (DEG) to regional collection groups