

高度好熱菌における新規低分子 RNA の検索

Identification of small non-coding RNAs in *Thermus thermophilus*○河合剛太^{1,2}, 伊藤寛啓¹, 島田彬人¹, 倉光成紀^{2,3}, 三瓶巖一^{2,4}, 別所義隆²○Gota Kawai^{1,2}, Nobuharu Ito¹, Akito Shimada¹,Seiki Kuramitsu^{2,3}, Gen-ichi Sampei^{2,4}, Yoshitaka Bessho²

(1 千葉工大・工, 2 理研・播磨研, 3 阪大・院理, 4 電通大・院情報理工)

(1 Chiba Inst. Tech., 2 RIKEN Harima Inst, 3 Osaka Univ., 4 Univ. of Electro-Commun.)

e-mail: gkawai@sea.it-chiba.ac.jp

An extreme thermophile *Thermus thermophilus* HB8 (*Tt*) contains about 2,200 ORFs, which covers 94% of the genome. On the other hand, 6% of genome is not assigned neither ORF nor ncRNA, and unknown RNA can still be found in such region. RNA can be found even in the non-coding regions where the corresponding regions of the opposite strands code ORF. For example, the gene of M1 RNA is overlapped with ORF in *Tt* genome (Fig. 1).

In order to find novel small non-coding RNA (ncRNA), we are analyzing the expression profile of *Tt* genome by using the *T. thermophilus* HB8 GeneChip custom array [1-3]. In the present study, we analyzed expression in *Tt* cells in the early log phase.

Thirty regions with high expression and independent of upstream or downstream ORF were selected (1st selection). By the further analysis of the found regions (2nd selection), expressions of both of antisense and sense strands were observed for several ORFs. Furthermore, expressions of possible CRISPR regions were also observed. By the second selection, 7 candidates for small ncRNA were obtained. Fig. 2 shows the expression of one of the 7 candidates. The region is located in the middle of long non-coding regions and is spanned to 57 residues (two probes). Further analyses including secondary structure analysis as and gene disruption analysis are in progress.

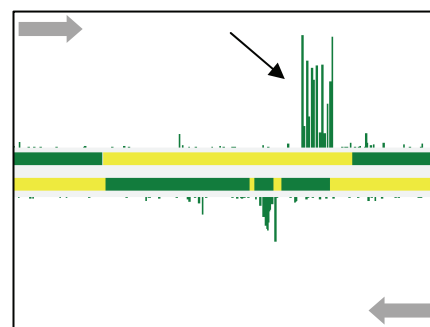


Fig. 1. Expression of M1 RNA.

Upper and lower parts show expression from the forward and reverse strands, respectively, as shown by thick and grey arrows. The horizontal green bar indicates ORF. The expression of M1 RNA is indicated by the thin and black arrow.

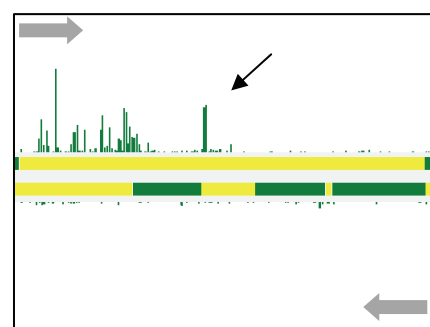


Fig. 2. A candidate of small ncRNA.

The expression of small ncRNA candidate is indicated by the thin and black arrow.

[1] Ito et al., The 8th RNA meeting (Japan) (2006).

[2] Ito et al., The 5th annual meeting of the whole cell project of *T. thermophilus* HB8 (2006).

[3] Kawai et al., The 12th RNA meeting (Japan) (2010).