

# Conservation of small regulatory RNAs in *Vibrio parahaemolyticus*: Possible role of RNA-OUT encoded by the pathogenicity island (VPal-7) of pandemic strains

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Small regulatory RNAs (sRNAs) are molecules that play an important role in the regulation of gene expression. sRNAs in bacteria can affect important processes, such as metabolism and virulence. Previous studies showed a significant role of sRNAs in the *Vibrio* species, but knowledge about *Vibrio parahaemolyticus* is limited. Here, we examined the conservation of sRNAs between *V. parahaemolyticus* and other human *Vibrio* species, in addition to investigating the conservation between *V. parahaemolyticus* strains differing in pandemic origin. Our results showed that only 7% of sRNAs were conserved between *V. parahaemolyticus* and other species, but 88% of sRNAs were highly conserved within species. Nonetheless, two sRNAs coding to RNA-OUT, a component of the Tn10/IS10 system, were exclusively present in pandemic strains. Subsequent analysis showed that both RNA-OUT were located in pathogenicity island-7 and would interact with transposase VPA1379, according to the model of pairing of IS10-encoded antisense RNAs. According to the location of RNA-OUT/VPA1379, we also investigated if they were expressed during infection. We

observed that the transcriptional level of VPA1379 was significantly increased, while RNA-OUT was decreased at three hours post-infection. We suggest that IS10 transcription increases in pandemic strains during infection, probably to favor IS10 transposition and improve their fitness when they are facing adverse conditions. © 2019 by the authors.

Antisense

IS10

RNA-OUT

SRNA

Svpa1401.1

Svpa1453.1

Transposase

Vibrio parahaemolyticus

VPA1379

bacterial RNA

complementary RNA

transfer RNA

transposase

untranslated RNA

Article

bacterial metabolism

bacterial strain

bacterial virulence

gene expression regulation

genetic conservation

genetic transcription

nonhuman

pandemic

pathogenicity island

regulatory mechanism

Vibrio

Vibrio cholerae

Vibrio parahaemolyticus

Caco-2 cell line

conserved sequence

genetics

genomic island

human

metabolism

pathogenicity

Vibrio parahaemolyticus

Caco-2 Cells

Conserved Sequence

Genomic Islands

Humans

RNA, Untranslated

Transposases

Vibrio parahaemolyticus