Two's company: studying interspecies relationships with dual RNA-seq.

Wolf T, Kämmer P, Brunke S, Linde J (2018) Two's company: studying interspecies relationships with dual RNA-seq. *Curr Opin Microbiol* 42, 7-12. (Review)

Details



Abstract

Organisms do not exist isolated from each other, but constantly interact. Cells can sense the presence of interaction partners by a range of receptors and, via complex regulatory networks, specifically react by changing the expression of many of their genes. Technological advances in next-generation sequencing over the recent years now allow us to apply RNA sequencing to two species at the same time (dual RNA-seq), and thus to directly study the gene expression of two interacting species without the need to physically separate cells or RNA. In this review, we give an overview over the latest studies in interspecies interactions made possible by dual RNA-seq, ranging from pathogenic to symbiotic relationships. We summarize state-of-the-art experimental techniques, bioinformatic data analysis and data interpretation, while also highlighting potential problems and pitfalls starting from the selection of meaningful time points and number of reads to matters of rRNA depletion. A short outlook on new trends in the field of dual RNA-seq concludes

this review, looking at sequencing of non-coding RNAs during host-pathogen interactions and the prediction of molecular interspecies interactions networks.

Involved units

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doi: 10.1016/j.mib.2017.09.001

PMID: 28957710