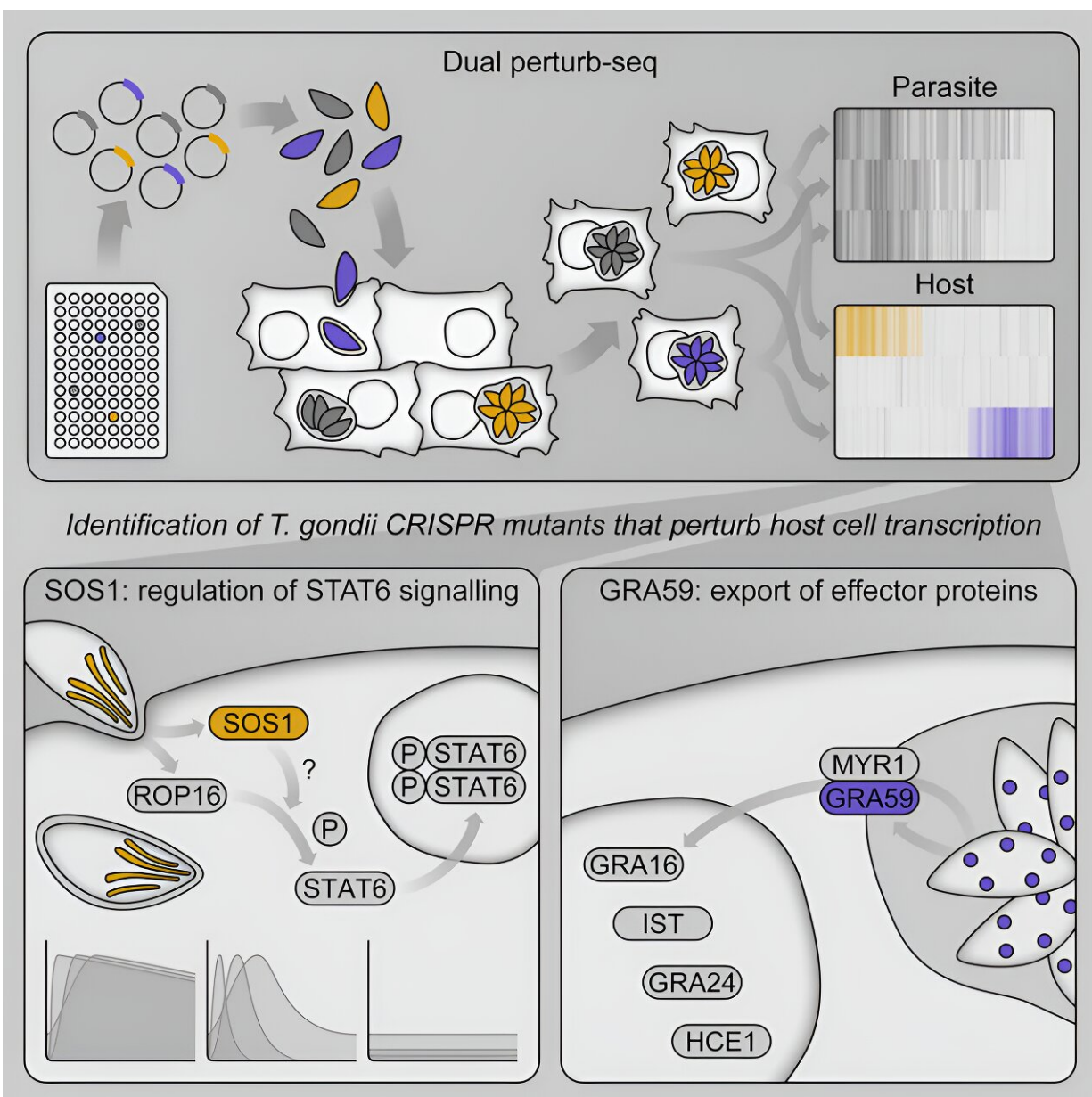


Novel method for high-throughput identification of *T. gondii* effector proteins that target host cell transcription

October 11 2023



Graphical Abstract. Credit: *Cell Host & Microbe* (2023). DOI: 10.1016/j.chom.2023.09.003

Toxoplasma infects a large part of the human population and animals. While most infections are harmless, the parasite poses a severe threat to the immunocompromised and during pregnancy. Toxoplasma is predicted to secrete over 200 proteins into the host cell, and most of these proteins' functions are unknown.

A recent study, published in the journal *Cell Host & Microbe*, allows researchers to describe a function for each protein in changing host cell transcription in [human cells](#) in a single experiment. Applying the new method, Dual Perturb-Seq, to *Toxoplasma gondii*, the research team identified and characterized novel effector proteins secreted by the parasite into the human host cells to change their behavior.

One of the major findings of this study is the identification of an effector, TgSOS1, which is required for changing a key host immune signaling pathway. This discovery highlights the parasite's pivotal role in reprogramming [host cell](#) transcription during infection and establishing persistent infection.

Moritz Treeck, corresponding author of the paper, expressed enthusiasm about the study's potential impact. "The dual perturb-see method not only provides a deeper understanding of host-microbe transcriptional interactions but also offers a versatile tool for investigating a wide range of pathogens. This breakthrough brings us one step closer to unraveling the complexities of infection and developing more effective strategies to combat [infectious diseases](#)."

In the following steps, the research team will expand the experiments to cells of other species to understand how the parasite can infect any warm-blooded animal and make it one of the most successful [parasites](#) on Earth.

More information: Simon Butterworth et al, High-throughput identification of *Toxoplasma gondii* effector proteins that target host cell transcription, *Cell Host & Microbe* (2023). [DOI: 10.1016/j.chom.2023.09.003](#)

Provided by Instituto Gulbenkian de Ciência

Citation: Novel method for high-throughput identification of *T. gondii* effector proteins that target host cell transcription (2023, October 11) retrieved 29 April 2024 from <https://phys.org/news/2023-10-method-high-throughput-identification-gondii-effector.html>

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