



**REGIONAL CENTRE FOR BIOTECHNOLOGY**  
**Journal Club**

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**“Bacterial cytological profiling rapidly identifies the cellular pathways targeted by antibacterial molecules”  
PNAS, 110(40):16169-74 (2013 )**

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**Wednesday, 21<sup>st</sup> May, 2014 ,4.00 PM**  
**Seminar room**

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# Abstract

Identifying the mechanism of action for antibacterial compounds is essential for understanding how bacteria interact with one another and with other cell types and for antibiotic discovery efforts, but determining a compound's mechanism of action remains a serious challenge that limits both basic research and antibacterial discovery programs. Here, we show that bacterial cytological profiling (BCP) is a rapid and powerful approach for identifying the cellular pathway affected by antibacterial molecules. BCP can distinguish between inhibitors that affect different cellular pathways as well as different targets within the same pathway. We use BCP to demonstrate that spirohexenolide A, a spirotetronate that is active against methicillin-resistant *Staphylococcus aureus*, rapidly collapses the proton motive force. BCP offers a simple, one-step assay that can be broadly applied, solving the longstanding problem of how to rapidly determine the cellular target of thousands of compounds.

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