

# Mechanism of action studies using systematic analysis platform

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## Abstract

Novel antibiotics with unprecedented mode of action (MoA) are urgently needed and so are new concepts for the discovery and analysis of antibacterial substances. Integral components of the drug development process are analysis of the MoA of antibiotics, as well as identification of the molecular target. Without this detailed knowledge, rational drug design is strongly hampered. We built up a comprehensive MoA platform, combining validated whole cell screenings and a biochemical assay platform that allows rapid identification of antibiotic mechanisms and targets on cellular levels. Initial screenings of substances and extract libraries in whole-cell based assays allow to identify bioactive compounds. Selected promoter-reporter fusions provide first indications on the metabolic pathway affected, whereas the biochemical analysis platform, comprising more than 60 individual *in vitro* enzyme activity tests, further allows the identification of the specific target and characterization of the compound-target interaction on a molecular level.

