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## Mechanistic studies on clinically important beta-lactamases and their rapid detection

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M echanistic studies on clinically important beta-lactamases and their rapid detection: Since the discovery of penicillin in 1928,  $\beta$ -lactams have long been used in treating bacterial infections and have dramatically increased the life expectancy of human beings. However, the overuse of antibiotics has also caused rapid emergence of antibiotic-resistant bacteria that are difficult or impossible to defeat. The major mechanism of  $\beta$ -lactam resistance is the acquisition of genes encoding  $\beta$ -lactamases by the bacteria. These enzymes catalyze the hydrolysis of the amide bond in the  $\beta$ -lactam rings, rendering the antibiotics incapable to kill bacterial cells. To date, over one thousand  $\beta$ -lactamases have been identified that can degrade  $\beta$ -lactam antibiotics. Of these bacterial enzymes, carbapenemases are a large class of  $\beta$ -lactamases that can inactivate antibiotics of the "last resort" such as imipenem, peropenem, etc. leaving very limited choices for clinical treatments. In this report, new discoveries of the mechanistic and inhibition studies of representative carbapenemases carried out in laboratory. The design of an innovative methodology for rapid screening of clinical carbapenemase-producing *Enterobacteriaceae* (CPE) using a new calorimetry approach. These results are believed to provide new insights into current understanding on carbapenemase catalysis and characterization.

## Biography

Yuan He has completed her PhD from University of York, UK and Postdoctoral studies from The Scripps Research Institute, USA. She is currently an Associate Professor at Northwest University, China and is a recipient of the provincial "100 Talent Plan". She has published more than 18 papers in reputed journals.

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