

## Challenging molecular diagnostics with quantum mechanics – ICHORtec's FMB-technology for highly sensitive and rapid in vitro diagnostics

A key to reduce antimicrobial resistances is a rapid and sensitive in vitro diagnostic to define the pathogen on a molecular level and allow a specific antibiotic treatment. Additionally, the therapy success should be monitored closely to enable a treatment as short as possible but as long as needed.

ICHORtec GmbH is developing the first medical device that utilizes quantum effects to enable point-of-care in vitro diagnostics 100-times faster, 2-times more accurate, and 72 % less expensive than PCR-based gold standards. The patented technology, fluorimetry-of-molecular-binding (FMB), is based on quantum physics and enables direct detection of molecules such as proteins and nucleotides. The technology has been proven for the detection for various pathogens including MRSA.

FMB allows to overcome the disadvantages of PCR-techniques, with at least the same limit of detection in a time frame of a few seconds to minutes. The core element of the FMB is a molecular probe. This probe is optically passive in the unbound state, but starts to emit light as soon as a target is present. The immobilized probe is localized in a robust micro-fluorescence configuration, which allows single molecule detection. Fundamental difference of the FMB to classical approaches is that FMB interprets fluorescence as the probe's energy state. Until now fluorescence intensity played a crucial role, but with FMB fluorescence position is used regardless of intensity.

This allows to overcome the challenges faced by current techniques, which require a dedicated facility, specialized reagents, and skilled individuals. ICHORtec's technology can be easily established in hospitals, clinics and primary care settings. This leads to a decentralization of the in vitro diagnostics value chain and improved health outcomes through early and effective medical diagnosis.

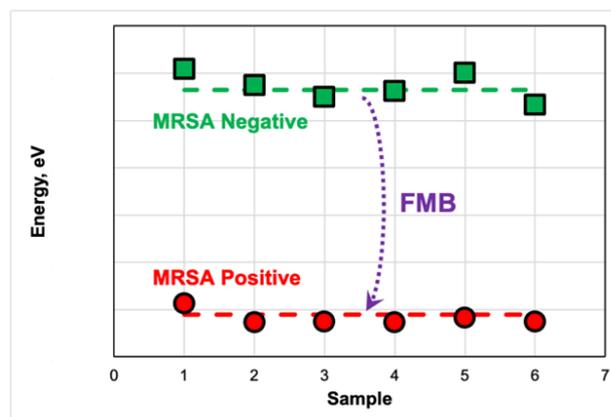


Figure: Detection of MRSA via FMB