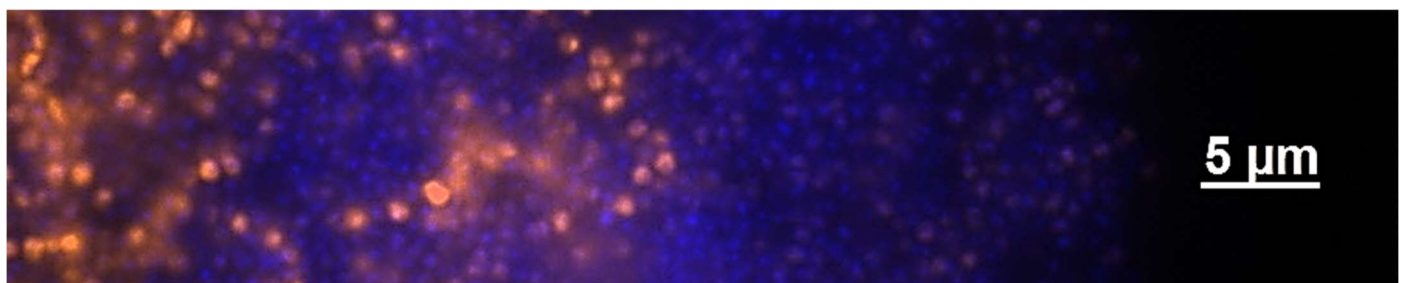
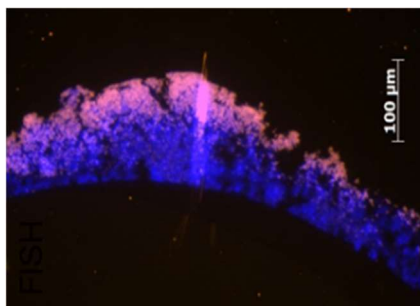


# Anti-biofilm efficacy testing of antimicrobial substances

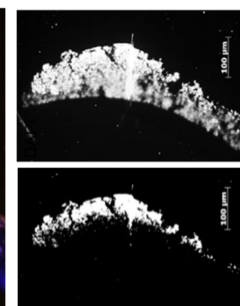
**Fluorescence in situ Hybridization (FISH)** is an innovative molecular biological tool both to visualize and to measure directly the efficacy of **antimicrobial substances** against biofilms. Therefore, FISH is also able to test **anti-infective substances**. Thus, FISH for the first time quantifies culture-independently the effect of antimicrobials with spatial resolution: Where is the substance active? How is it working? Do surviving microorganisms remain? How time- and dose-dependent is the killing effect in biofilm?



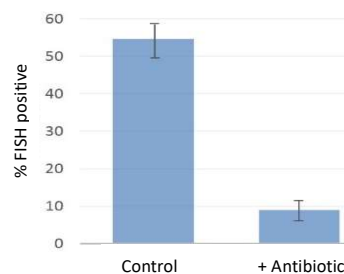
## FISH microscopy



## Digital image analysis



## Quantification



## Results

- Biomass quantification
- Quantification of active bacteria in the biofilm
- Localization of active bacteria in the biofilm

FISH analysis of a staphylococcal biofilm. Detection of the in situ efficacy of antibiotics against biofilms (DAPI, blue). The fraction of active, FISH-positive bacteria (magenta) is reduced after antibiotic treatment as compared to the controls. (Work of the Biofilmzentrum, Charité - Universitätsmedizin Berlin.)

## Process description

FISH uses fluorescently labelled probes that bind specifically to the ribosomes of microorganisms. Thus, FISH is visualizing the activity of the microorganisms based on their ribosome content on a single-cell-level. The fluorescence signal is reduced after successful treatment with an antimicrobial substance as compared to active biofilms. Thus, FISH detects directly the efficacy of antimicrobial substances by measuring the reduction of FISH-positive cells and the entire biofilm mass. The effect is quantified by digital image analysis.

## MoKi Analytics

MoKi Analytics is a start-up from Charité - Universitätsmedizin Berlin, established in 2017 by Prof. Dr. Annette Moter and Dr. Judith Kikhney. MoKi Analytics offers products and services for the innovative detection of microorganisms and biofilms by molecular biological techniques, such as FISH and nucleic acid amplification (PCR, sequence analysis, NGS, microbiome analysis). MoKi Analytics offers efficacy-testing services with standardized procedures. (Publication list upon request)

## Information and Contact

MoKi Analytics GmbH  
 Marienplatz 9  
 12207 Berlin  
 info@moki-analytics.com  
 www.moki-analytics.com