Monday, January 5, 2026

Poster abstract submission

Approval Status Not Started

Presenting author Oliver Hancox

Presenting author's email oliver.hancox@astratus.co.uk

Further authors (if any)

Sarah Helen Needs (1,2)
Julie Hart (1,2)
Alexander Edwards (1,2,3)

Affiliation(s)

1. Astratus Limited, Reading, United Kingdom.
2. University of Reading, Reading, United Kingdom.
3. University of Southampton, Southampton, United Kingdom.

Country United Kingdom

Type of organization Industry / company

Poster title

Novel rapid microcapillary platform enables phage-host measurements alongside antimicrobial susceptibility testing

Poster abstract

Background
Standard culture methods for phage-host measurements (e.g. phage lysis and plaque assays) are manual, slow and labour-intensive. To realise the full potential of phage therapies, more rapid phage-host and phage sensitivity assays are required. We have developed a rapid microcapillary platform for performing phage-host measurements alongside antimicrobial susceptibility testing (AST). Here we present our proof-of-concept data demonstrating the detection of phage lysis and counting of phage plaques using our novel microcapillary platform.

Methods
Up to 60 different conditions per sample can be tested using our microcapillary assay cartridges to provide categorical susceptibility/resistance in <6h based on differential growth. Darkfield imaging combined with LED illumination inside microcapillaries permits label-free quantitation of light scattering from bacterial cells. Escherichia coli B strain and T2 bacteriophage and the non-permissive strain Escherichia coli 25922 were selected as a safe model system to study bacteria and phage detection. The double layer agar method was compared to microcapillary testing.

Results
Following bacteriophage lysis within microcapillaries, light scatter signal goes from high (white) to low (black). At high bacteriophage concentrations, all host cells lyse eliminating light scatter by bacterial cells. At low bacteriophage concentrations, plaques are clearly visible in liquid suspension within microcapillaries. Similar results were obtained with gram-negative and gram-positive phage-host combinations. We have demonstrated the ability of our microcapillary platform to determine host specificity for lytic bacteriophage alongside performing bacterial measurements including growth kinetics,

sedimentation and phage lysis of both low and high bacterial cell densities.

Conclusions
Dark field imaging combined with LED illumination permits label-free quantitation of bacterial light scattering following bacteriophage lysis of Escherichia coli. Importantly, the phage sensitivity assays can be performed alongside rapid AST. Our customisable microcapillary platform can rapidly evaluate and screen combination therapies. The intended users of our platform are hospital and veterinary laboratories and researchers involved in therapeutic phage and bacteriophage research. By incorporating both phage and antibiotic selection into one single rapid platform, our goal is to help make personalised therapies available for patients.

Research topic

Diagnostics

If you wish to submit a graphic with your abstract you can upload it here.