ASTar™ – complete phenotypic AST in hours instead of days

Q-LINEA

ASTar – designed

to save lifetimes

ASTar – rapid AST results directly from clinical samples

A fully-automated system for rapid antimicrobial susceptibility testing (AST), Q-linea's ASTar cuts the diagnostic time for infectious diseases and delivers clinically-actionable results in hours instead of days.

Early information on bacterial pathogens and their antimicrobial susceptibility is of key importance for managing sepsis patients. Within three to six hours, ASTar delivers true minimum inhibitory concentration (MIC) results directly from positive blood cultures and against a panel of up to 48 antimicrobials, thereby providing comprehensive coverage of gram-negative, gram-positive and fastidious pathogens. ASTar also combines high throughput with a capacity for running 30 to 50 patient samples per day, a user-friendly interface and load-and-go operation.

Key features

Phenotypic AST

- Directly from positive blood cultures
- True MIC results in 3 to 6 hours

Fully-automated analysis

- 12 samples analyzed, random-access
- Up to 50 samples per day
- Load-and-go workflow

Comprehensive AST panel

- Up to 48 antimicrobials each in 5 to 11 two-fold dilutions
- Results generated from broth microdilution (CAMHB and fastidious)

Traditional workflow

Patient blood draw

0 hours

Blood bottle incubation

Culture cabinet alarm

Gram stain

Rapid ID

Culture on plates

Overnight incubation

0.5 McFarland prepared

Susceptibility determination

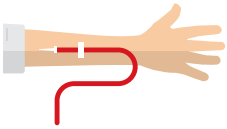
Optimized therapy

48–72 hours

Workflow analysis performed by Q-linea at several European and US hospitals. Workflow may differ between laboratories.

ASTar workflow

Patient blood draw



0 hours

Blood bottle incubation

Culture cabinet alarm

Gram stain

Susceptibility using ASTar

Rapid ID

Optimized therapy

< 24 hours

ASTar meets your need for rapid and comprehensive AST

Several approaches for rapid pathogen identification (ID), e.g. molecular techniques and MALDI-TOF mass spectrometry, are available today. Our phenotypic AST solution can be combined with any of these rapid ID technologies, which augments current laboratory capabilities and meets the clinical need for more rapid results. Thanks to the broad AST panel, positive blood culture may be directly analyzed in the ASTar instrument without waiting for pathogen ID, delivering a comprehensive answer in just one test. Pathogen ID is only needed to create the final MIC results report.

Current ID solutions + ASTar modular solution = More comprehensive results

Three simple steps for complete MIC results

ASTar simplfies the analysis workflow: less than one minute hands-on time is all that's needed. Simply transfer 0.5 ml of positive blood culture to the sample preparation cartridge. Choose the AST disc and load. Scan and load the sample preparation cartridge and tap the START RUN icon on the touch screen to start the run. Pathogen ID can be entered before, during or after the run to generate true MIC results.

1. Add positive blood culture

The sample preparation cartridge automatically isolates bacterial cells from the sample matrix and adjusts the concentration for a controlled inoculation to the AST disc.

2. Choose AST disc

Q-linea's unique proprietary technology – the AST disc – allows automated time-lapse imaging of bacterial population growth in wells containing different concentrations of antimicrobial agents.

3. Scan and load – tap START RUN

Proprietary algorithms translate visual information into MIC values. Based on EUCAST or CLSI breakpoints, MIC values are interpreted as S, I, or R.

In-house dataset generated from a prototype ASTar system

Isolates (*P. aeruginosa, E. coli, K. pneumoniae, S. aureus, E. faecalis, S. pneumoniae, and E. cloacae*) were spiked in blood culture flasks with blood from healthy individuals and incubated until signaled positive. Of the 499 bacteria-antimicrobial agent combinations tested, phenotypic AST results obtained within 6 hours showed 96.8% essential agreement and 96.6% categorical agreement compared to reference broth microdilution.

				No. of tests			No. of tests		
Antimicrobial agent	Total no. of tests	EA (%)	CA (%)	S	I	R	Minor error	Major error	Very major error
Ampicillin	46	46(100%)	43(93%)	30		16	3		
Cefotaxime	64	61(95%)	59(92%)	34	10	20	5		
Ceftazidime	51	51(100%)	48(94%)	29	5	17	3		
Ciprofloxacin	48	47(98%)	46(96%)	34		14	2		
Gentamicin	77	75(97%)	76(99%)	54	1	22	1		
Meropenem	48	45(94%)	48(100%)	48					
Piperacillin-tazobactam	45	43(96%)	44(98%)	25	9	11	1		
Vancomycin	52	51(98%)	52(100%)	52					
Tetracycline	8	8(100%)	7(88%)	3		5	1		
Daptomycin	2	2(100%)	2(100%)	2					
Benzylpenicillin	6	6(100%)	6(100%)			6			
Tigecycline	2	2(100%)	2(100%)	2					
Trimethoprim-sulfamethoxazole	8	8(100%)	8(100%)	8					
Levofloxacin	8	8(100%)	8(100%)	3		5			
Ceftolozane-tazobactam	6	6(100%)	6(100%)	6					
Amoxicillin-clavulanic acid	14	10(71%)	13(93%)	6		8			1
Colistin	14	14(100%)	14(100%)	6		8			

All AST solutions built into one

The ASTar system can be extended to other types of clinical samples. The modular design of the sample preparation cartridge, in combination with the AST disc, allows for future adaptation to other sample types such as urine, respiratory, and sterile aspirates. For isolates, only the AST disc is needed allowing for cost-efficient semi-automated AST analysis to further improve laboratory workflow flexibility.

Blood culture	Urine	Respiratory	Sterile aspirates	Isolates/ Semi-automated rapid AST

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For more information, please contact us at contact@qlinea.com or visit www.qlinea.com

Save lifetimes

Q-linea is an innovative research, development and manufacturing company that primarily develops instruments and consumables for rapid and reliable infection diagnostics. Q-linea's vision is to help save lives by ensuring antibiotics continue to be an effective treatment for future generations.

Q-linea was founded in Uppsala, Sweden, in 2008 by scientists from the Rudbeck Laboratory at Uppsala University together with Olink AB and the Uppsala University holding company UUAB. We are an interdisciplinary, experienced and highly motivated team with state-of-the-art development and manufacturing facilities in the center of Uppsala Science Park. Q-linea is a publicly-listed company developing inventive systems for *in vitro* diagnostics for infectious diseases.

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