

Point-of-care blood test for early sepsis diagnosis

Sepsis is a life-threatening complication of infection in ICU and emergency care, where each hour of delayed diagnosis and treatment significantly increases mortality. Conventional biomarkers such as CRP, PCT or lactate often rise late and lack specificity, limiting early risk stratification. A rapid full-blood assay that detects sepsis before organ failure manifests can substantially improve triage, ICU admission and patient outcomes.



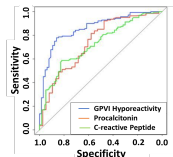
Functional platelet GPVI assay detects sepsis up to 36h earlier

Patients with incipient and manifest sepsis show a characteristic dysfunction of the platelet collagen receptor glycoprotein VI (GPVI) and related immune receptor signaling. In the inventive IVD, full-blood samples are stimulated with defined agonists and platelet responses (activation markers, aggregation, signaling readouts) are quantified. This functional assay discriminates sepsis from non-septic infection and healthy controls and is compatible with standard lab methods and point-of-care platforms.

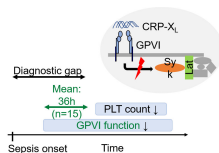
- 01 Detects sepsis up to 36h earlier than CRP, PCT and lactate in clinical cohorts
- 02 Differentiates sepsis from septic shock and correlates with disease severity
- 03 Simple full-blood assay, compatible with ELISA, FACS, aggregometry and POC devices

REFERENCES:

- ↓ Weiss et al., Blood adv. (2022)
- ↓ Weiss et al., Blood (2021)



The innovative sepsis IVD test is highly sensitive and specific compared with "classical" sepsis biomarkers like PCT and CRP



Diagnostic head start of 36 hours: GPVI dysfunction allows much earlier sepsis diagnosis than conventional biomarkers

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CHALLENGE

Clinicians urgently need better tools for early sepsis detection and severity stratification. Each hour of delayed diagnosis increases mortality, yet standard markers (CRP, PCT, lactate) and scores often identify sepsis only after organ dysfunction is established and poorly discriminate patients at risk of septic shock. This leads to late ICU admissions, suboptimal triage and avoidable deaths, particularly in overcrowded emergency rooms and hospital wards.

INNOVATION

The invention provides a functional platelet-based sepsis IVD that measures GPVI-mediated activation defects in full blood after stimulation with defined agonists. Using standard methods (aggregometry, FACS, ELISA), the assay clearly separates sepsis from non-septic infection and healthy controls and shows a robust shift between sepsis and septic shock. In a 250-patient study it outperformed CRP, PCT and lactate, enabled diagnosis up to 36 hours earlier, and GPVI dysfunction correlated significantly with disease severity, supporting use for early diagnosis and risk stratification.

01 Basic principles observed · 02 Technology concept formulated · 03 Experimental proof of concept · 04 Technology validated in lab · 05 Technology validated in relevant environment · 06 Technology demonstrated in relevant environment · 07 System prototype demonstrated in operational environment · 08 System complete and qualified

TRL 08

TRL 07

TRL 06

TRL 05

TRL 04

TRL 03

TRL 02

TRL 01

Technology Readiness Level (TRL)



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