



Pathogen independent Sepsis detection by host response

Cell-Free circulating DNA (cfDNA) is an incredible source of information on the health status of humans and animals. This largely untapped source of knowledge can be utilized to detect sepsis earlier than ever before and independent of the causing pathogen.

BACKGROUND

Scientists first stumbled upon cell-free DNA (cfDNA) in human blood 75 years ago. Since then, its presence has been confirmed in diverse organisms, from simple bacteria to complex animals.

Traditionally, disease diagnosis relied on identifying the causative agent (like a virus or bacteria) or assessing symptoms. However, a new promising approach is emerging by analysing the host response to the threat, captured in its cfDNA. Thus, imagine detecting disease early, even before symptoms appear, simply by looking at DNA fragments circulating in the blood. This exciting possibility is fuelling research in a new field of diagnostics, aiming to identify specific DNA markers unique to each disease. This could revolutionize how we diagnose and manage illnesses, replacing slow and error-prone methods with a faster, more reliable approach.

TECHNOLOGY

acib specializes in extracting, analysing, and interpreting cfDNA, offering valuable insights for various applications. We isolate and purify cfDNA from blood samples with high precision, separating it from other molecules like RNA and proteins. This purified cfDNA serves as a "liquid biopsy," offering information about your health without traditional tissue biopsies. Through advanced bioinformatics, we identify genuine cfDNA and differentiate true cfDNA from cell debris to ensure accurate results. We map the DNA and compare the cfDNA to the complete genome, pinpointing abundance differences in distribution. We then identify key patterns and specific DNA sequences associated with diseases, enabling the development of a powerful diagnostic tool. Applying our in-house developed analysis method, we are able to **detect sepsis with a balanced accuracy higher than 85%**.

OFFER

acib is looking for partners to further co-develop a qPCR-based diagnostic tool for the pathogen-independent diagnosis of sepsis. This assay already demonstrates a high balanced accuracy of over 85 % on the same day the blood culture sample is taken according to the Sepsis-3 definition. Reach out to explore partnership opportunities and be part of our innovative approach to sepsis diagnostics.

acib-EXPERTS:

Dr. Petra Heidinger
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DEVELOPMENT STATUS:

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IPR:

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PARTNER(S):

List of partners already participating in the co-development

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