Decoding The Neutrophil Urinary Biomarker Message to Identify Respiratory Infection

Diagnostic tests to detect infection by reading the innate host response

Paul J Davis
CSO Mologic Ltd

Location: Thurleigh, Near Bedford “Where’s that?”
Microbial intrusion

The traditional approach

INSENSITIVE TOO SPECIFIC

The Biomarker message to be de-ciphered

Structural, metabolic & QS molecules

Ultrasensitive sensor?

Signal transduction?

High sensitivity Detection?

Direct detection

Innate immune sensing

Cells

Pathogen recognition receptors

Phagocytes

Epithelial Cells

Urinary Proteomics

Optimised Multiplex Assays

Urinary Proteomics

Effector molecules

Consequence molecules

Signalling molecules
Postcapillary venule

Diapadesis (neutrophil extravasation)

Magnified view

Neutrophils - fighters of infection

Chemotactic migration

Neutrophil infiltration

Passage of blood through kidney

Inflammatory mediators in blood

Consequence molecules

Effector molecules

Protease inhibitors

Desmosine

TIMP-2

MMP-9

sICAM1 domains 3-5

Signal & recruitment molecules

Urinary Biomarker Tests

Biomarkers detectable in urine

Results

Algorithm

Diagnosis

Torso image by courtesy of Pharma Times, London
Mologic infection tests in development

UTI - triplex

Respiratory infection – COPD & CF

Infection in peritoneal dialysis fluid

Sepsis – post surgical and general

Bacterial vaginosis