PExA
Particles in Exhaled Air

A non-invasive method to collect biomarkers from the peripheral airways

New possibilities for biomarker research

Many severe lung diseases often begin with pathological changes in the small airways. But as of yet there has been no accurate, non-invasive method to collect material from the peripheral airways.

PExA opens up a new possibility. It gives researchers a breath sampling device to investigate a whole range of different biomarkers, each one a possible disease marker or drug target. The same research patient can repeatedly be tested and changes over time can be studied.

- Non-invasive method
- Simple for research patient
- Quantifiable and reproducible
- Repeat sampling even from elderly and severely diseased
- Samples derived from the peripheral airways

PExA 2.0

- 10 or more tests per day and instrument
- No hospitalization or additional resources needed
- Easily handled by one research nurse

How PExA works

BREATHING MANEUVER

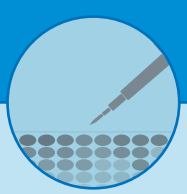
1. Research patient exhales into the mouthpiece. The small airways close and reopen, releasing liquid particles.

PARTICLE COLLECTION

2. Exhaled particles are collected and sorted on a substrate surface. Typically 100 nanograms (ng) of particles are collected in the range of 0,5 - 4,5 microns.

PARTICLE MATRIX

ANALYSIS



3. Analysis is done using standard methods: Mass Spectrometry, ELISA, Multiplex ELISA.

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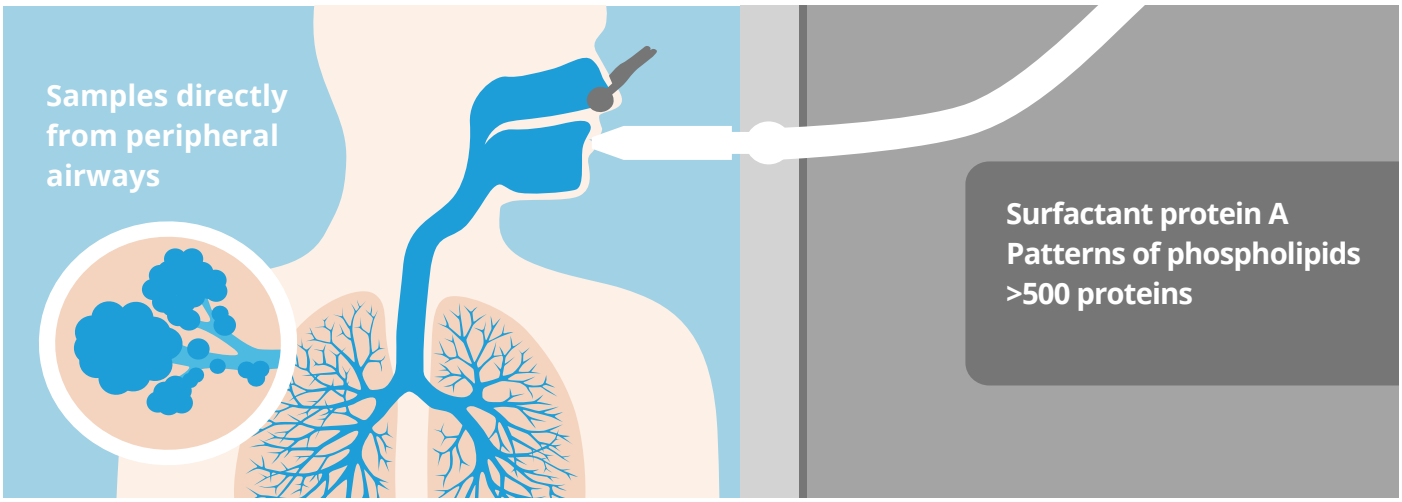
PExA 2.0

PExA 2.0 is designed for easy and non-invasive collection of particles in human breath. Particles are quantified by size. Key components include impactor, particle counter (measuring particle size), flow meters, pumps as well as soft- and hardware. Flow- and particle curves are visualized in real time as well as total particle mass and total exhaled volume.

- A CE marked instrument for the research market
- Robust design, user-friendly and easy to implement
- Show real-time data

Allowing for identification of biomarkers for various lung diseases at an early stage

By using the PExA method, researchers can study patients' disease in the early stages and produce disease-specific results. PExA 2.0 is a new way to collect potential biomarkers through a non-invasive, reproducible and accurate method. Using this objective, quantitative method research groups can get new disease insights and contribute to the development of more effective treatments and diagnostic methods.



PExA in literature

- A non-invasive method to sample particles from the peripheral airways.[1,2]
- The composition of the sampled exhaled particles reflects the Respiratory Tract Lining Fluid (RTLF) in peripheral airways.[3]
- The concentration of surfactant protein A, the most abundant lung-specific protein, can be accurately measured with high repeatability in the PExA sample using ELISA.[4]
- The protein content of PExA samples has been established in healthy test subjects.[3,4]
- The number of PEx reflects airway closure and re-opening and is a biomarker per se.[1,2]
- Many different potential biomarkers, in the form of phospholipids and surfactant proteins, have already been investigated using the PExA method.[1-8]

References

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LET'S WORK TOGETHER

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