Technology Offer

BIOMARKERS TO PREDICT LUNG OVERSTRETCHING

A research group from CIBER, FINBA, Universidad de Oviedo and Unity Health Toronto has developed a method for monitoring and evaluating of lung overstretching in patients who need mechanical ventilation.

The Need

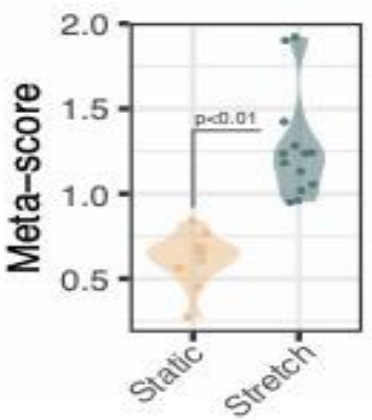
Lung damage associated with mechanical ventilation is caused by an increase in mechanical stress in the tissue, which triggers cell death and inflammation. This damage has been linked to a higher rate of death from disease in patients with lung damage.
There are currently no specific biomarkers that specifically serve to monitor the level of mechanical stress that tissue is undergoing.

The Solution

We have patented a new micro-RNA signature associated with mechanical stress in lung tissue and biological samples. After quantification, micro-RNAs are combined in a score proportional to the amount of lung stretch, allowing the diagnosis and monitoring of lung overstretching. Therefore, repeated measurements can help to optimize ventilatory settings in patients.

Innovative Aspects

- It is possible to monitor the evolution of patients receiving mechanical ventilation in real-time.
- Expression data is combined into a single score, proportional to the amount of lung stretch.
- These new biomarkers are highly sensitive and specific, even in the presence of another cause of lung injury.
- The signature has been validated not only in lung tissue, but also in bronchoalveolar lavage fluid from mechanically ventilated patients, with areas under the ROC curve between 0.89 and 1.
- miRNAs can be quantified by different technologies (from qPCR to sequencing to dedicated sensors).



Transcriptomic Meta-Score obtained after quantification of the micro-RNAs contained in the signature, in lung epithelial cells cultured in static conditions or after mechanical stretch.

Stage of Development:

Validated in animal models and human samples.

Intellectual Property:

Spanish patent application filed (March, 2nd 2022). Expenses subsidised by the Government of the Principality of Asturias through FICYT, for Knowledge and technology transfer grants 2022. AYUD/2022/33523, AYUD/2022/32384
Suitable for international extension (PCT application)

Aims

Looking for a partner interested in a license and/or a collaboration agreement to develop and exploit this asset.

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