BACTERIA ISOLATED FROM LUNG AS BIOTHERAPEUTICS IN ASTHMA

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Bacteria Isolated From Lung as Biotherapeutics in Asthma

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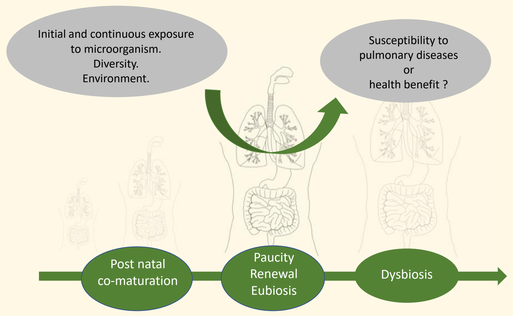
Come listen our speaker Dr. Muriel Thomas on the 1st of October 2019 from 10:00 to 10:15 in room N104 !

But also the oral presentation of Dr. Quentin Marquant on the 2nd of October 2019 from 9:45 to 10:00 in room 9B: "Microbiota educates innate immune response to Toll-like receptors stimulation and RSV infection in lung".

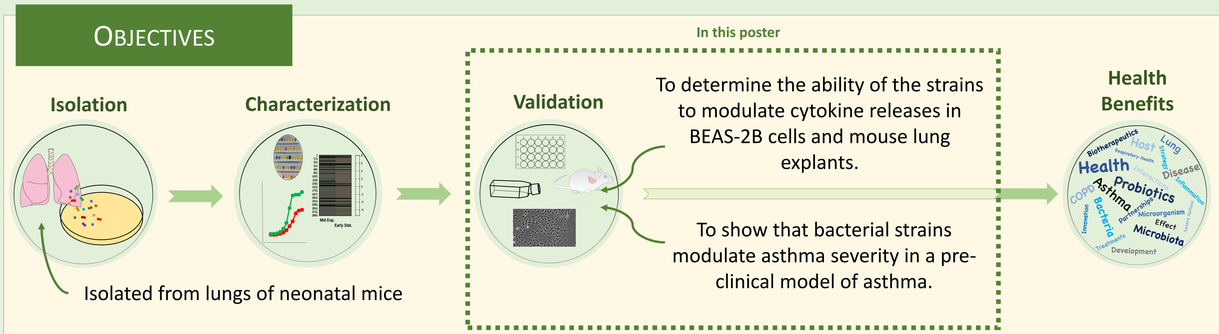
Background

- The lungs harbour microorganisms.
- The lung microbiota is shaped by continual waves of intrusion and expulsion.
- Exposure to diverse microbial signals during the first months of life has a major impact on asthma development susceptibility.

→ **We hypothesized that bacteria isolated from lungs could reveal specific immune regulatory properties on the lungs.**

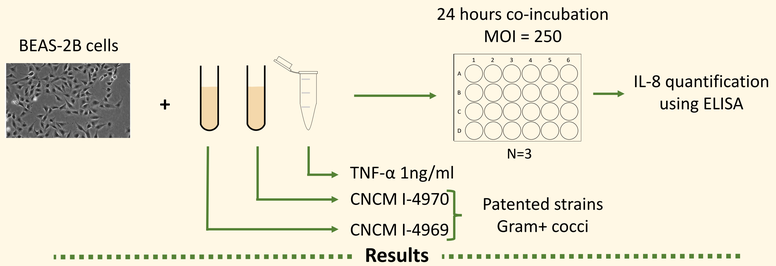


Objectives

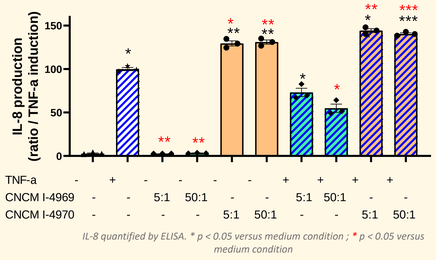


Pulmonary strains Have Immuno-Modulatory effect

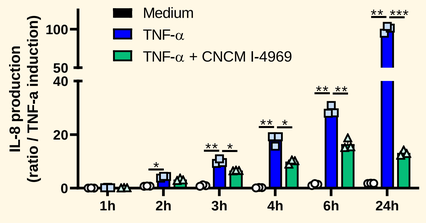
In Vitro



Results

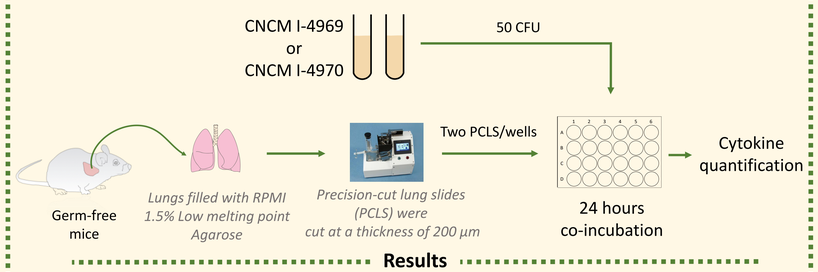


*IL-8 quantified by ELISA. * p < 0.05 versus medium condition ; * p < 0.05 versus medium condition*

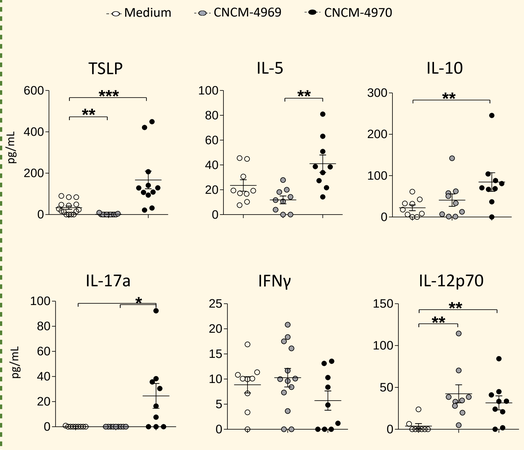


- In BEAS-2B cells, CNCM I-4970 alone induced a higher IL-8 production than TNF-α.
- CNCM I-4969 did not induce IL-8 production by itself and even reduced the amount of IL-8 produced following TNF-α treatment.
- CNCM I-4969 inhibited TNF-α-induced IL-8 production in BEAS-2B cells. The increasing amount of IL-8 through time is inhibited by the strain CNCM I-4969.

Ex Vivo

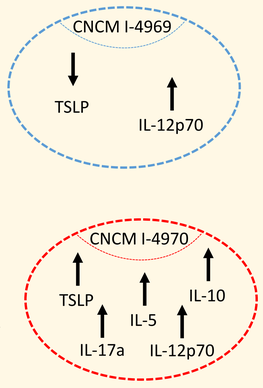


Results



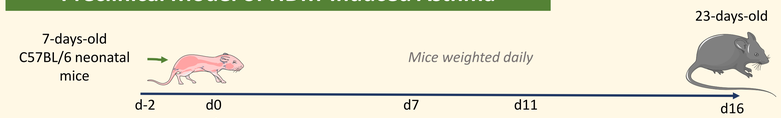
Cytokines were measured in PCLS supernatants.
*Data represent two pooled independent experiments (n = 9 – 13 mice per group). *P<0.05; **P<0.01; ***P<0.001.*

CNCM I-4969 and CNCM I-4970 displayed specific immunostimulatory properties.

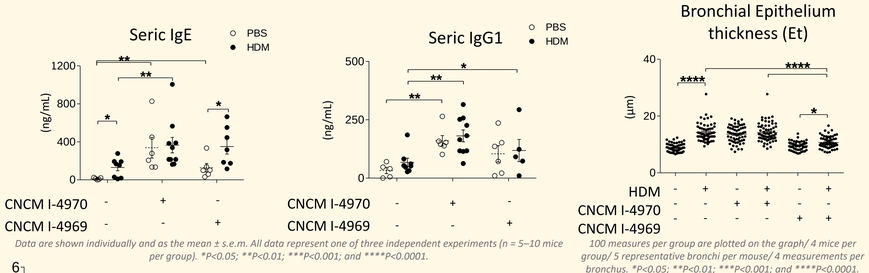


Pulmonary Strains Modulate Aeroallergen Responsiveness

Preclinical Model of HDM-Induced Asthma

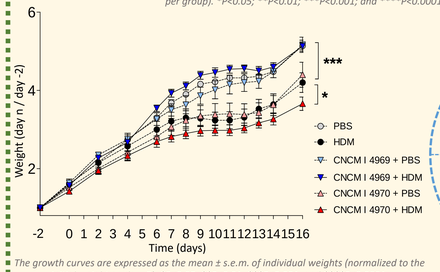


Results

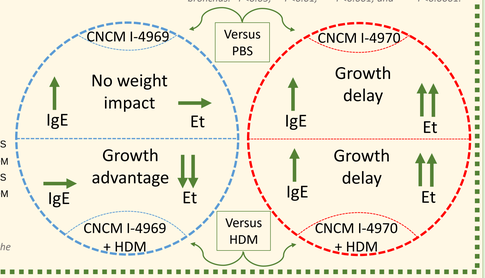


*Data are shown individually and as the mean ± s.e.m. All data represent one of three independent experiments (n = 5–10 mice per group). *P<0.05; **P<0.01; ***P<0.001; and ****P<0.0001.*

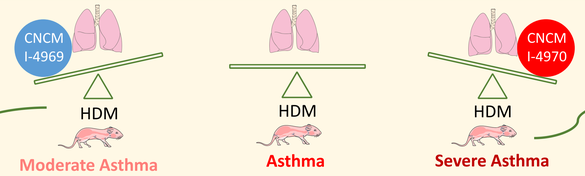
*100 measures per group are plotted on the graph/ 4 mice per group/ 5 representative bronchi per mouse/ 4 measurements per bronchus. *P<0.05; **P<0.01; ***P<0.001; and ****P<0.0001.*



*The growth curves are expressed as the mean ± s.e.m. of individual weights (normalized to the initial weight on day -2). *P<0.05; **P<0.01; ***P<0.001; and ****P<0.0001.*



Conclusion



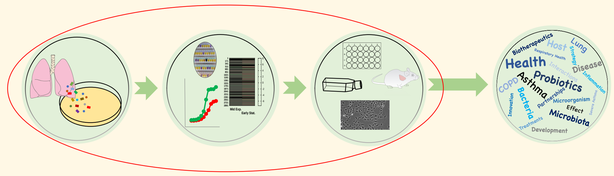
Neonatal mice exposed to HDM and CNCM I-4969 developed **moderate asthma**

Neonatal mice develop **asthma** after HDM exposure

Neonatal mice exposed to HDM and CNCM I-4970 developed **severe asthma**

➡ **Bacterial strains isolated from lung of neonatal mice displays specific immunostimulatory properties.**

➡ **Early administration of either CNCM I-4969 or CNCM I-4970 strains modulated aeroallergen responsiveness.**



Functional and efficient framework to screen lung microbes that could be used as prophylactic or therapeutic applications in respiratory health.

References

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