Characterization of phenotypically similar murine and porcine models of human lung emphysema

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Auditorium 3-13 *Models of Cardio-Vascular and Pulmonary Inflammation* **Chair: Axel K. Hansen, KU-LIFE**
Erkki Pesonen, Lund (30 min): Infections as a stimulus for coronary occlusion, obstruction, or acute coronary syndromes
Merete Fredholm, KU-LIFE (15 min): "Characterization of phenotypically similar murine and porcine models of human lung emphysema"
Mia Nyberg Godiksen, KU-LIFE/SSI (15 min): Non-synonymous variant in the coding sequence of feline MYBPC3 gene results in the expression of variant MYBP-C form in the feline heart: Implications for the pathogenesis of feline hypertrophic cardiomyopathy (HCM)
Sophia G. Moesgaard, KU-LIFE (15 min): Markers of cardiac remodelling are upregulated in porcine hearts following infections with *Chlamydia Pneumoniae* and *Influenzae".*
Charlotte Bjørnvad, KU-LIFE (15 min): "Obesity in physically inactive domestic shorthaired cats is associated with a hypercoagulable state"
Ingrid Hunter, KU-LIFE (15 min): " Impact of age, gender, and body composition on plasma N-terminal BNP concentrations in domestic shorthaired cats"

CHARACTERIZATION OF PHENOTYPICALLY SIMILAR MURINE AND PORCINE MODELS OF HUMAN LUNG EMPHYSEMA

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A new pig phenotype caused by a spontaneous mutation resembles the phenotype of the ITGB6 knock-out mouse. The candidate region on SSC15 harbouring the mutated locus has been narrowed down in the pig, thereby excluding ITGB6 as the responsible gene in this species. Still, the resemblance with the ITGB6 knock-out mouse is considerable and we expect that analogous biological pathways are affected in the two species. Comparative studies of the two phenotypes have therefore been initiated. The mutated pig phenotype is characterized by hairlessness until puberty, thin skin, few hair follicles and absence of musculi arrectores pili, and at puberty localized areas of lung emphysema are present. The knock-out mice display juvenile hairlessness in the neck region. The hair coat is gradually restored to a variable extend and the architecture of the skin is otherwise normal. At puberty localized areas of emphysema, local accumulations of alveolar macrophages and accumulations of lymphocytes surrounding the arterioles are seen in the lungs. Lung emphysema in the knock-out mouse is known to be caused by an elevated expression of MMP12, a metalloelastase expressed in macrophages and normally regulated by TGF-β1. The increased elastolytic activity causes loss of lung elasticity and enlargement of alveolar airspaces. Various MMPs have been described in relation to human emphysema. The expression of MMP2, 7, 9, 12 and TGF-β1 has therefore been investigated by qPCR which has shown a normal expression in affected pigs. The MMP9 and 12 expression has also been investigated immunohistochemically with pig specific antibodies. This method, however, showed an increased expression in adult affected pigs.

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