



# ORAL PRESENTATIONS

## Object orientated automated image analysis: Quantitative and qualitative estimation of inflammation in mouse lung

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### Abstract

**Introduction:** Historically, histopathology evaluation is performed by a pathologist generating a qualitative assessment on thin tissue sections on glass slides. In the past decade, there has been a growing interest for tools able to reduce human subjectivity and improve workload. Whole slide scanning technology combined with object orientated image analysis can offer the capacity of generating fast and reliable results. In the present study, we combined the use of these emerging technologies to characterise a mouse model for chronic asthma.

**Methods:** We monitored the inflammatory changes over five weeks by measuring the number of neutrophils and eosinophils present in the tissue, as well as, the bronchiolar associated lymphoid tissue (BALT) area on whole lungs sections.

**Results:** We showed that inflammation assessment could be automated efficiently and reliably. In comparison to human evaluation performed on the same set of sections, computer generated data was more descriptive and fully quantitative. Moreover optimisation of our detection parameters allowed us to be more sensitive and to generate data in a larger dynamic range to traditional experimental evaluation, such as bronchiolar lavage (BAL) inflammatory cell counts obtained by flow cytometry. We also took advantage of the fact that we could increase the number of samples to be analysed within a day. Such optimisation allowed us to determine the best study design and experimental conditions in order to increase statistical significance between groups.

**Conclusion:** We showed that combination of whole slide digital scanning and image analysis could be fully automated and deliver more descriptive and biologically relevant data over traditional methods evaluating histopathological pulmonary changes observed in this mouse model of chronic asthma.

**Keywords:** Definiens eCognition, object orientated image analysis, whole slide scanning, mouse model of chronic asthma.