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Title: *Opisthorchis felinus* as environment factor modify genetic risk of asthma

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Body: Asthma is a complex disease resulting from interactions between multiple genes and environmental factors. One of the environmental factors that have influence in risk of development asthma are helminthes. The Sibiria is endemic region of *Opisthorchis felinus*, we investigate the role of *O.felinus* invasion as environmental factor in the development of asthma and it's clinical traits. Genotyping of ten immune-response modifying genes was performed by means of RFLP analysis in 222 healthy people and 207 bronchial asthma (BA) patients with established status of *O. felinus* invasion (~50% in every group). Multifactor dimensionality reduction was used to analyze gene-environmental interactions (GxE). We find gene-gene interaction IFNG rs2069705-SOCS5 rs6737848 and impact of *O.felinus* as environment factor on the risk of asthma. This GxE model showed a maximum cross-validation consistency of 7 of 10 and a minimum prediction error of 43,57% among other models. CC IFN rs2069705 (p=0.03) and GG TBX21rs11652969 (p=0.01) are associated with low lung function parameters in patients with asthma and GC rs12756687 PIAS3 (p=0.04) –in asthma patients infected *O.felinus*. So different genes are involved in change of lung function in asthma patients and asthma patients with *O.felinus* invasion. Impact of *O.felinus* to GE model and it's modifyng role on genetic component control lung function can suggests that *O.felinus* is important environment factor that can modify genetic risk of asthma in endemic region.