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DEPARTMENT OF
IMMUNOLOGY AND ALLERGY
MEDICAL UNIVERSITY OF LODZ



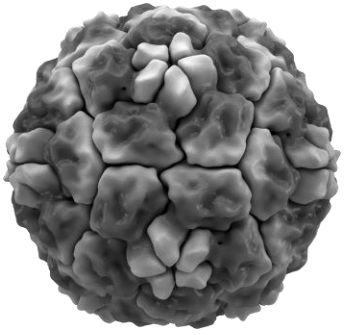
International Doctoral School
Medical University of Lodz

Assesment of the capability of the pulmonary vascular endothelium to generate an antiviral response in patients with asthma and chronic obstructive pulmonary disease

1st year PhD student – MSc Wojciech Karpik

Supervisor: Maciej Chałubiński, MD, PhD, Associate Professor

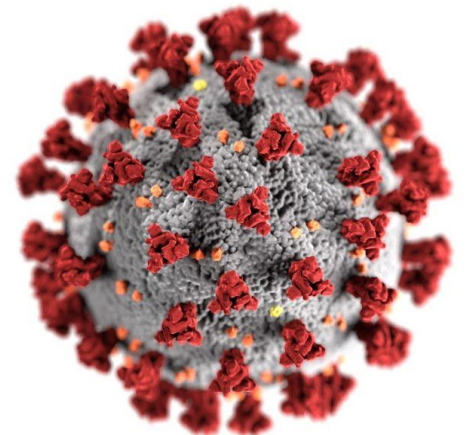
Dept. of Immunology and Allergy, Chair of Pulmonology, Rheumatology and Clinical Immunology



Why the antiviral response?

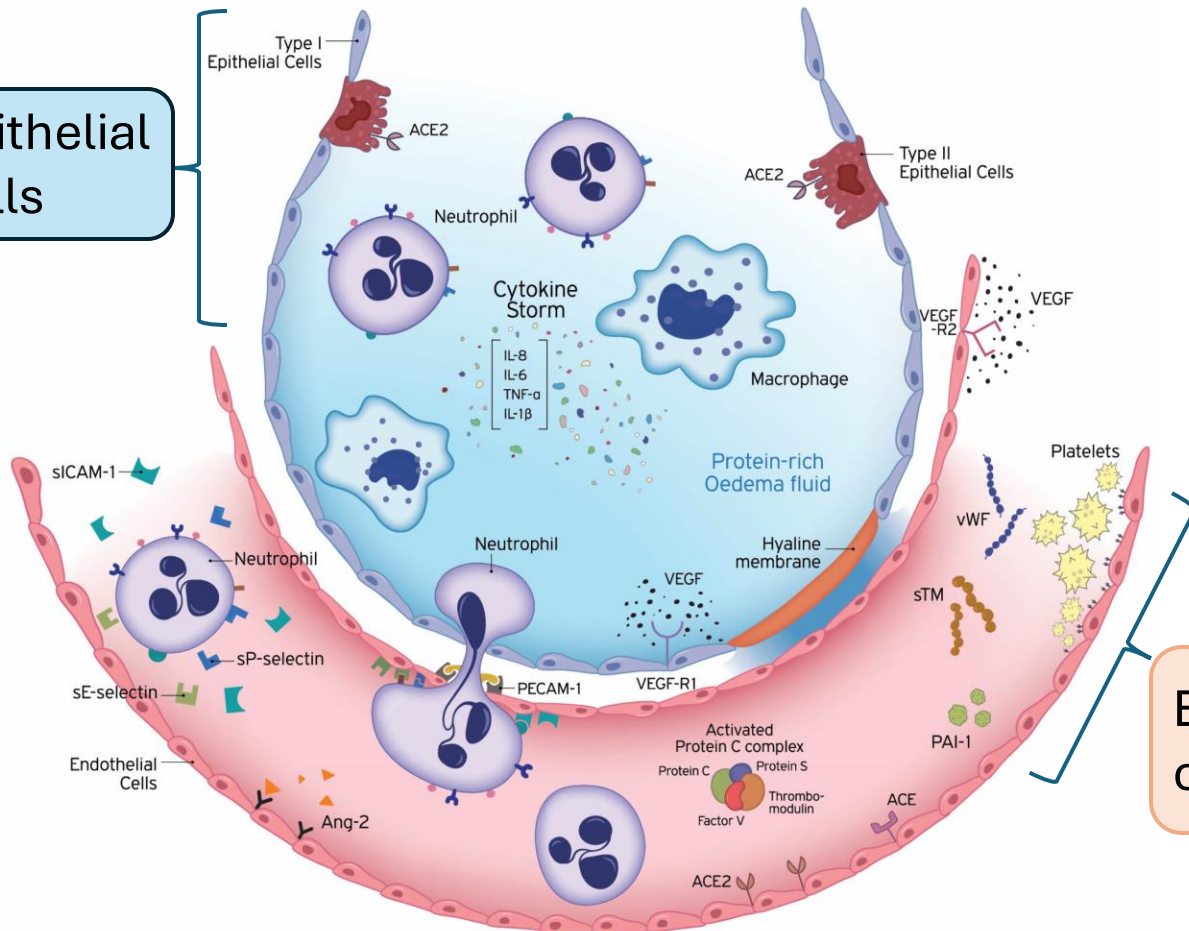
Viral infections in patients with asthma and COPD can lead to serious disease exacerbations

There are some reports stating a substantially higher viral titer in lungs of patients with chronic inflammatory airway disease



Lung vascular endothelium

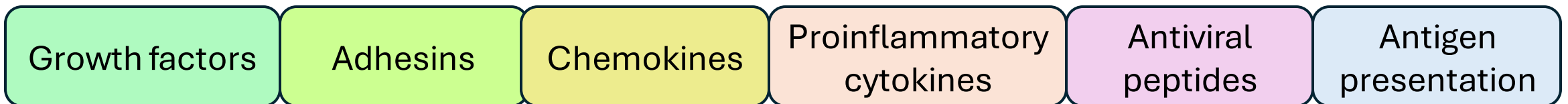
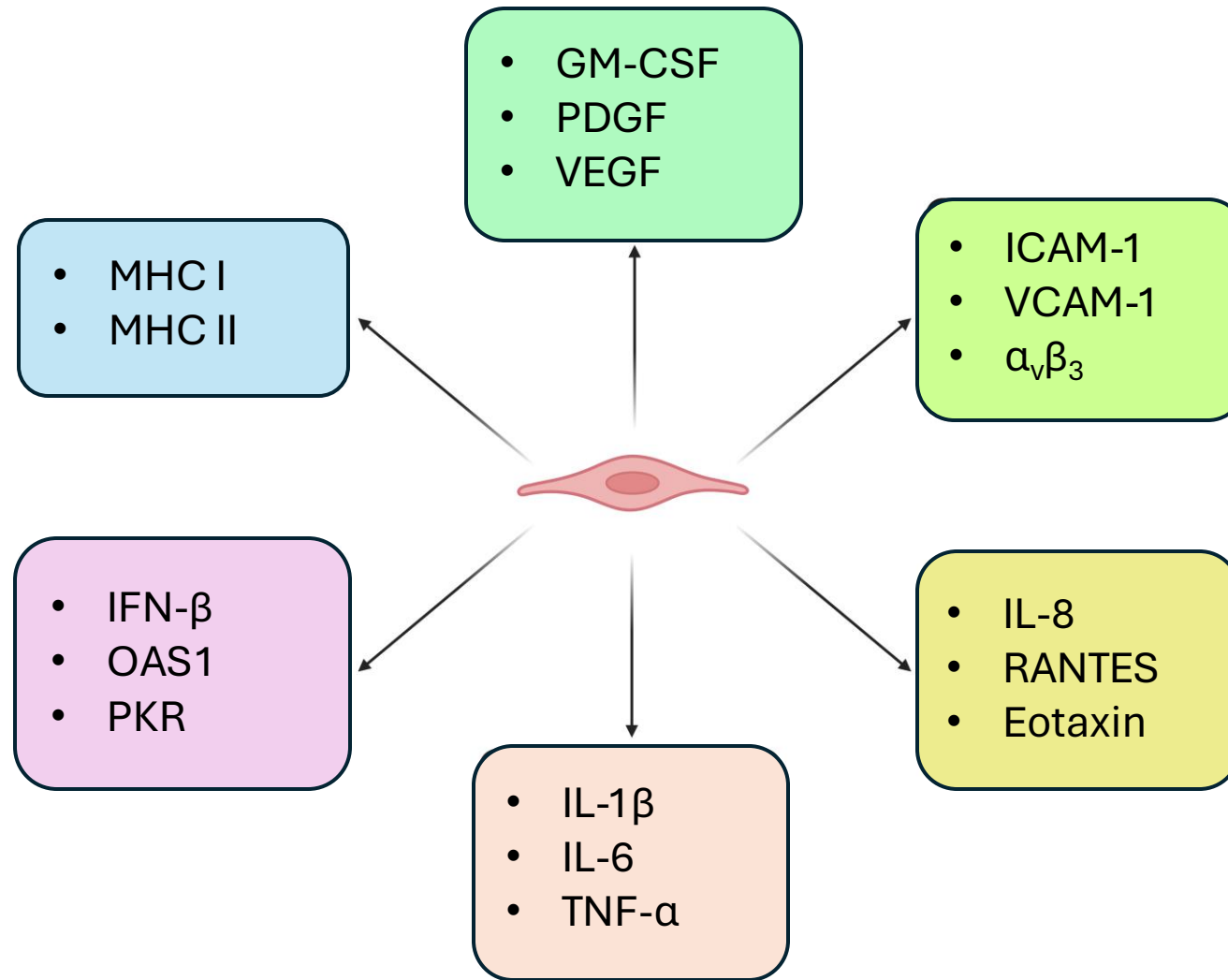
Epithelial cells

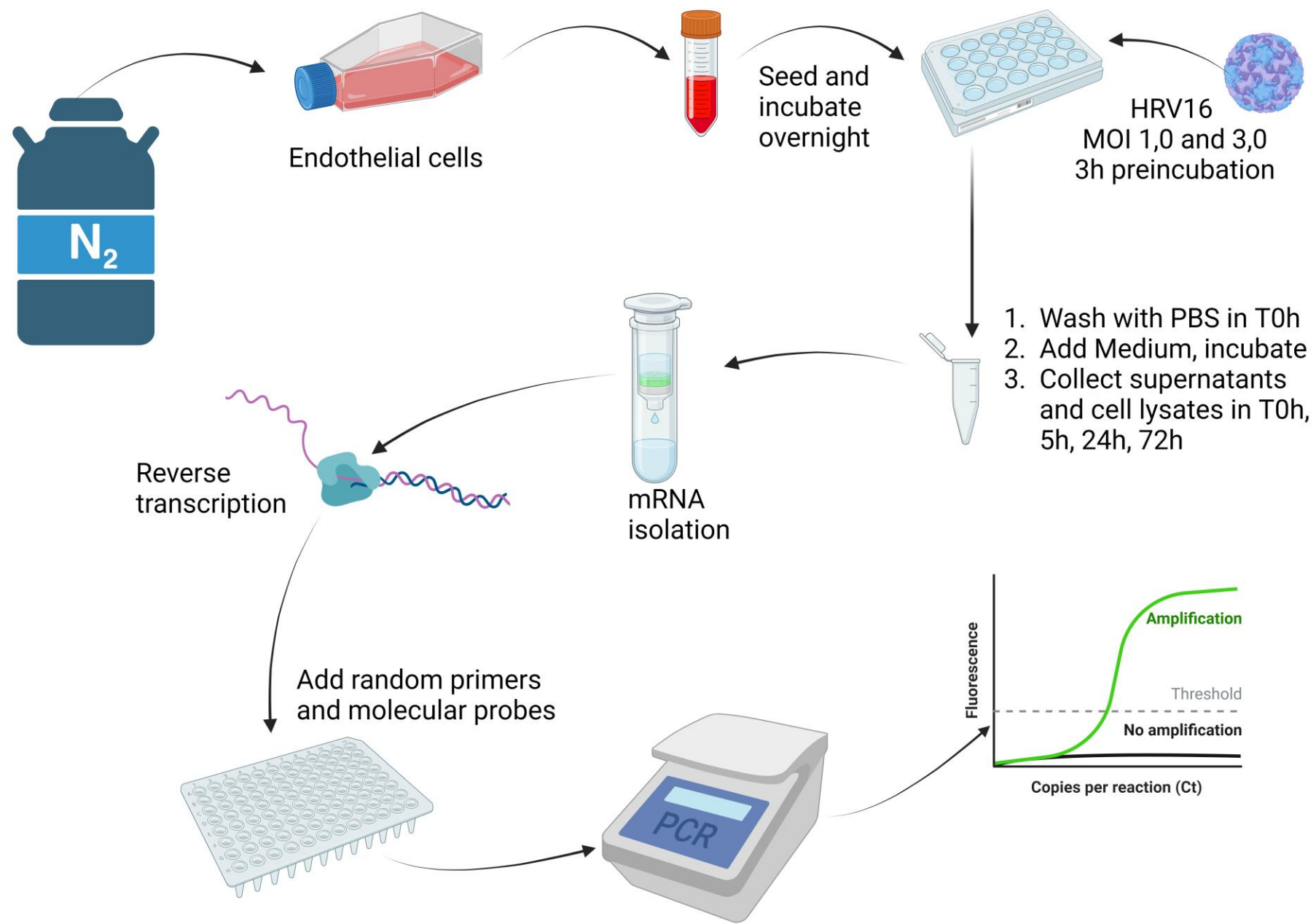


- Semi-permeable, regulates the circulation of particles and cells
- Can be infected by respiratory viruses like HRV16 and HCoV-229E
- Shows expression of various PRR receptors
- Able to produce various proinflammatory and antiviral cytokines

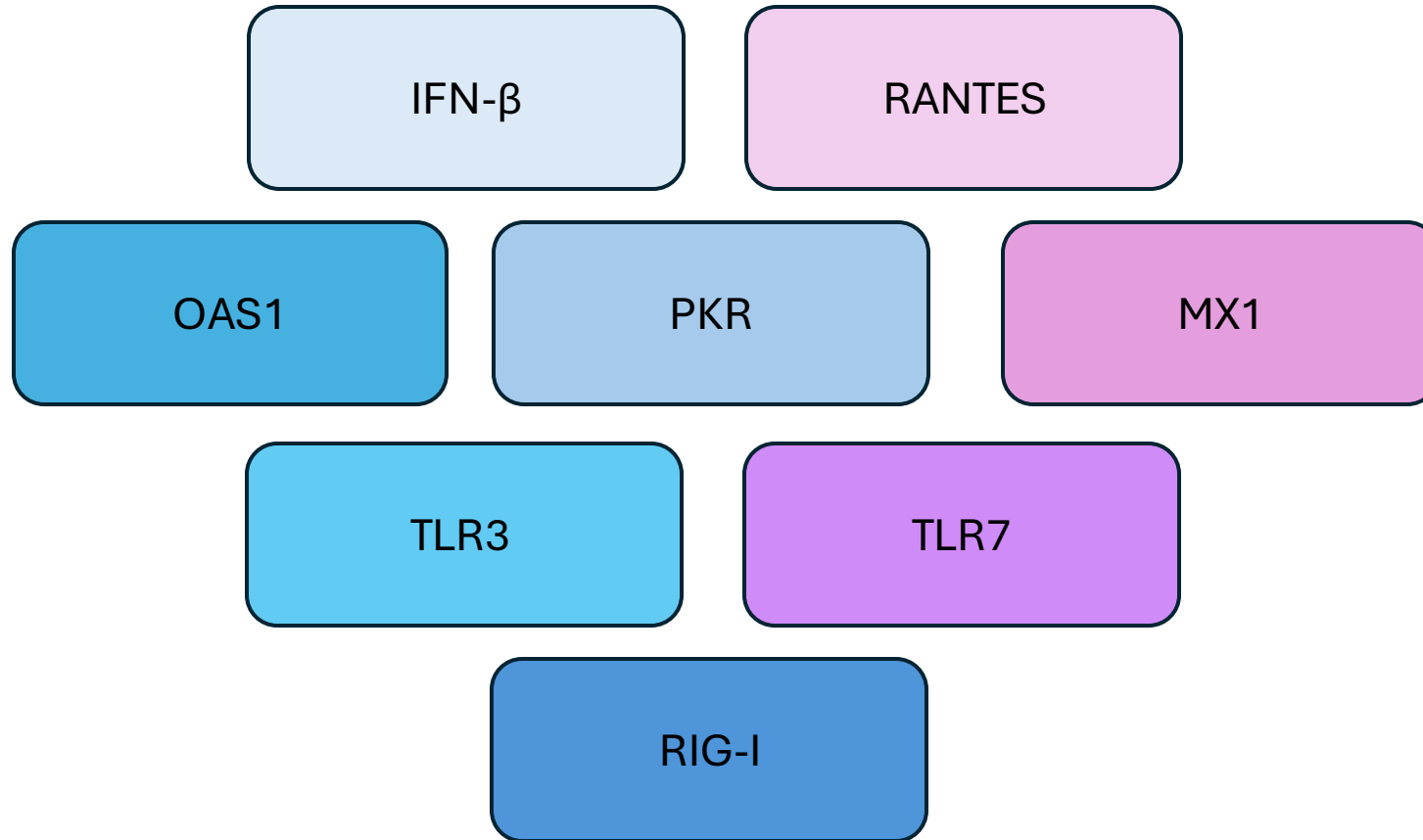
Endothelial cells

- Able to self-resolve the infection





Relative mRNA expression of genes coding



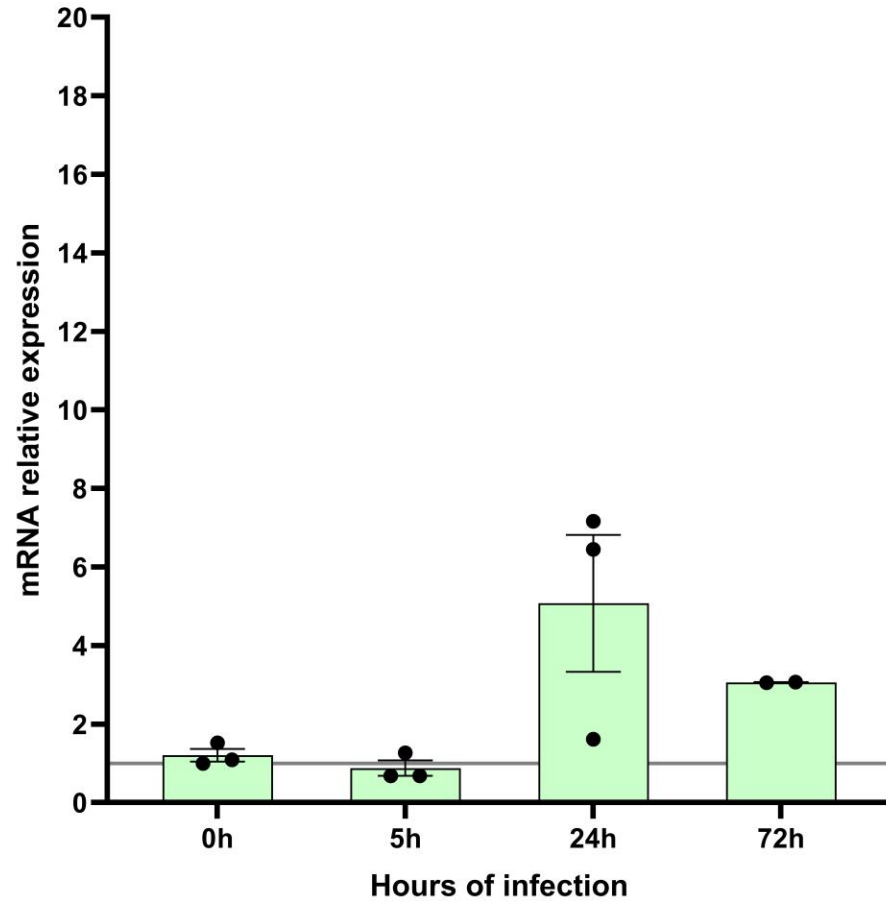
Compared to uninfected control

Two healthy patients

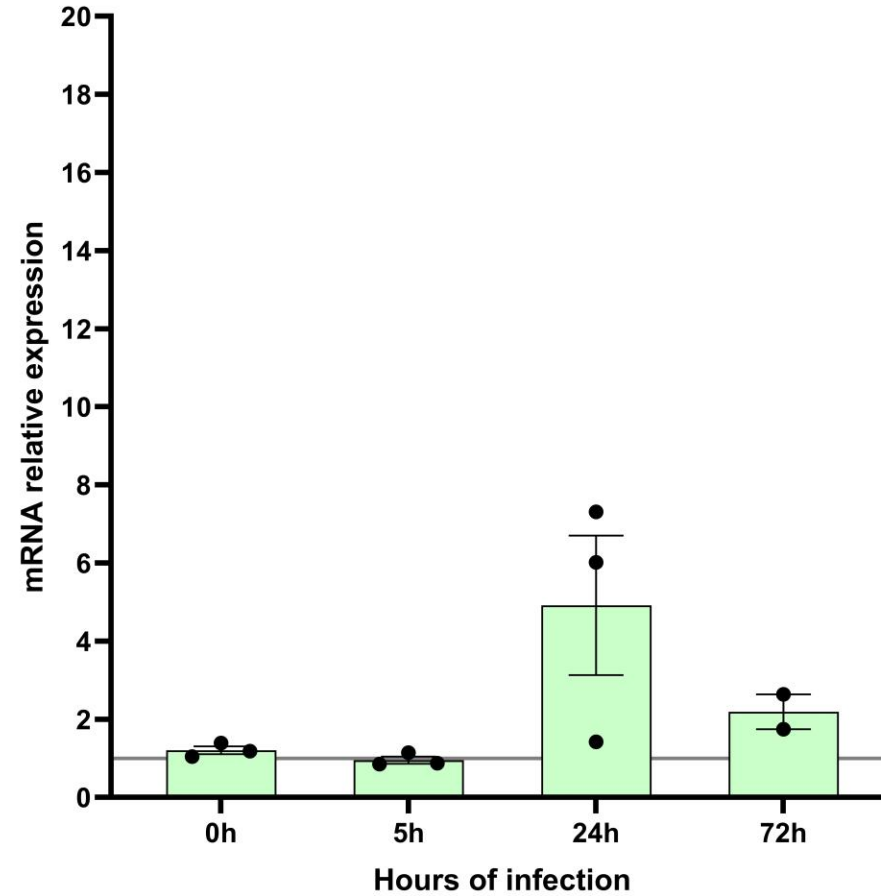
One asthmatic endothelium



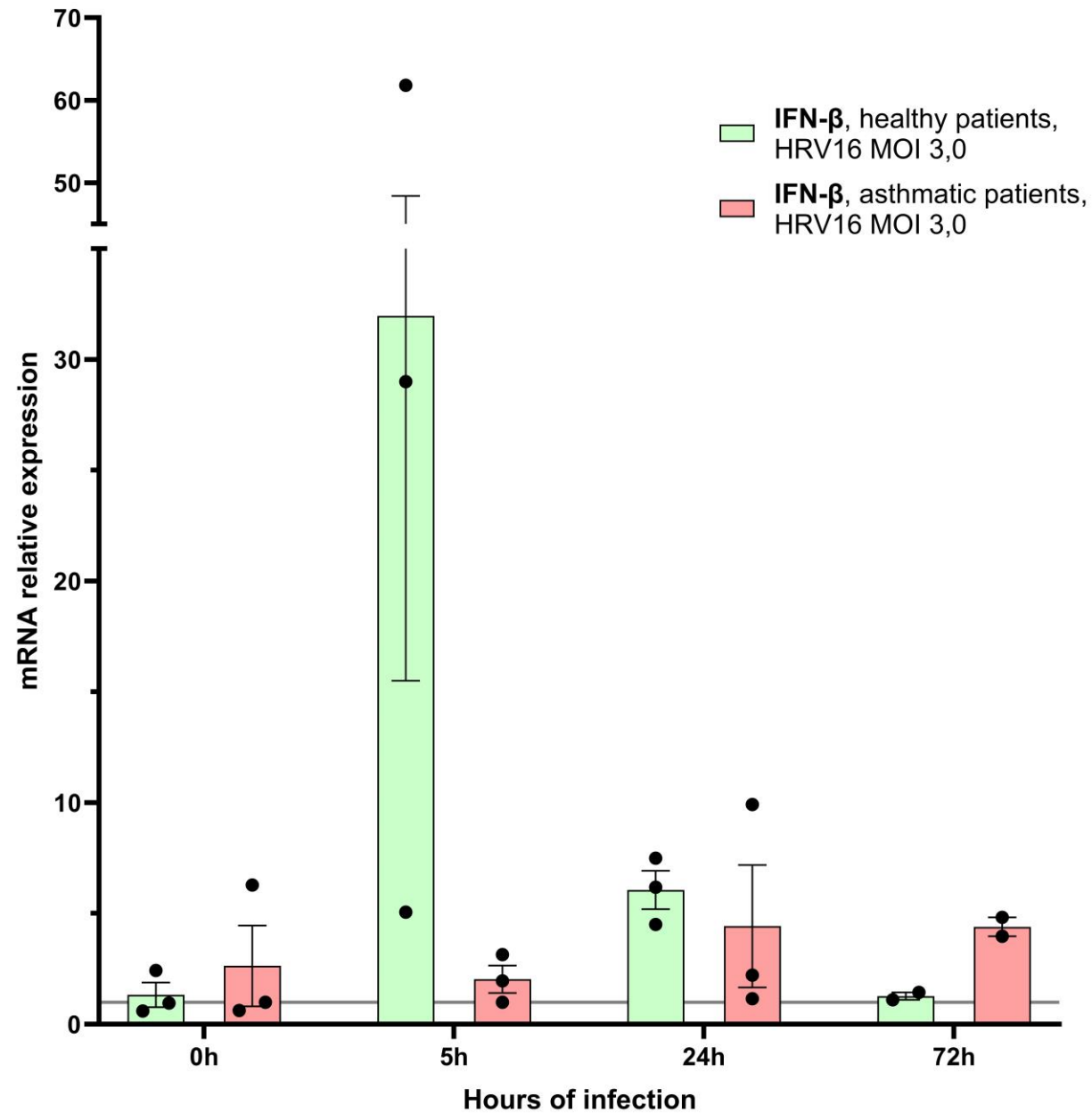
TLR3, healthy patients, HRV16 MOI 3,0

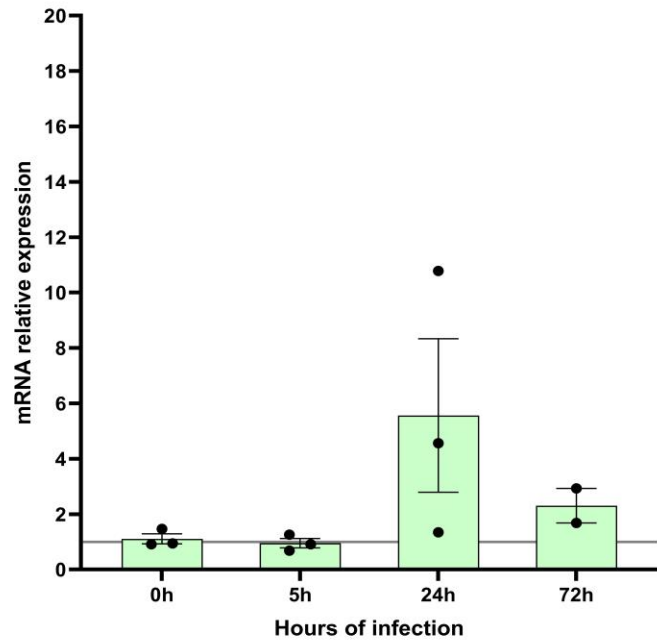
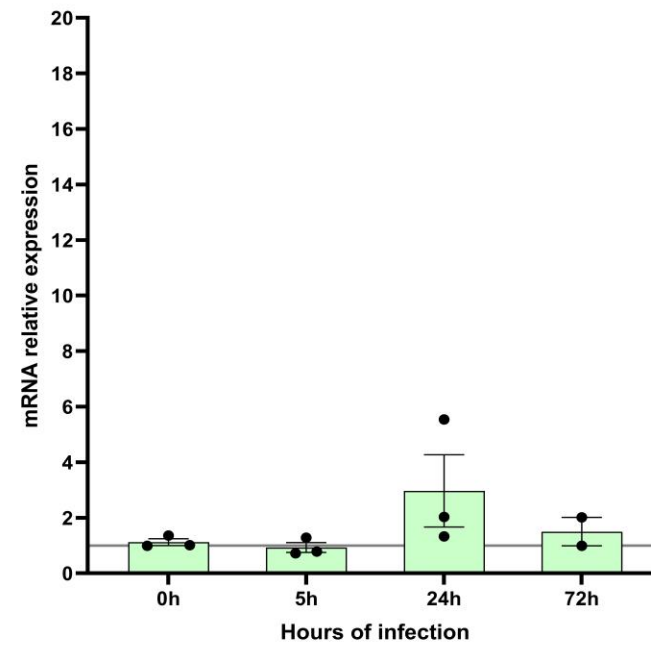
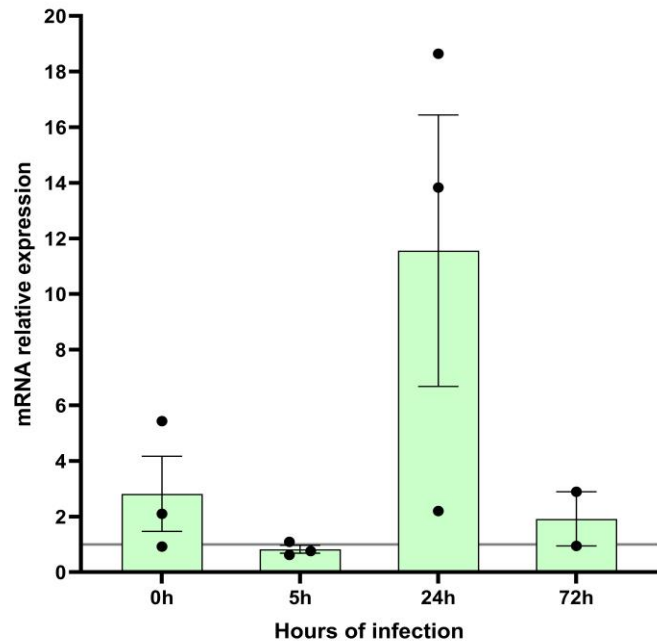
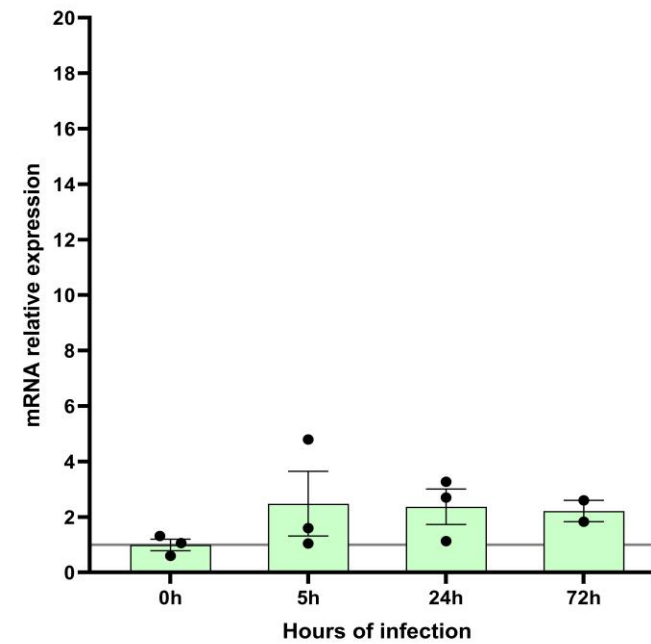


RIG-I, healthy patients, HRV16 MOI 3,0

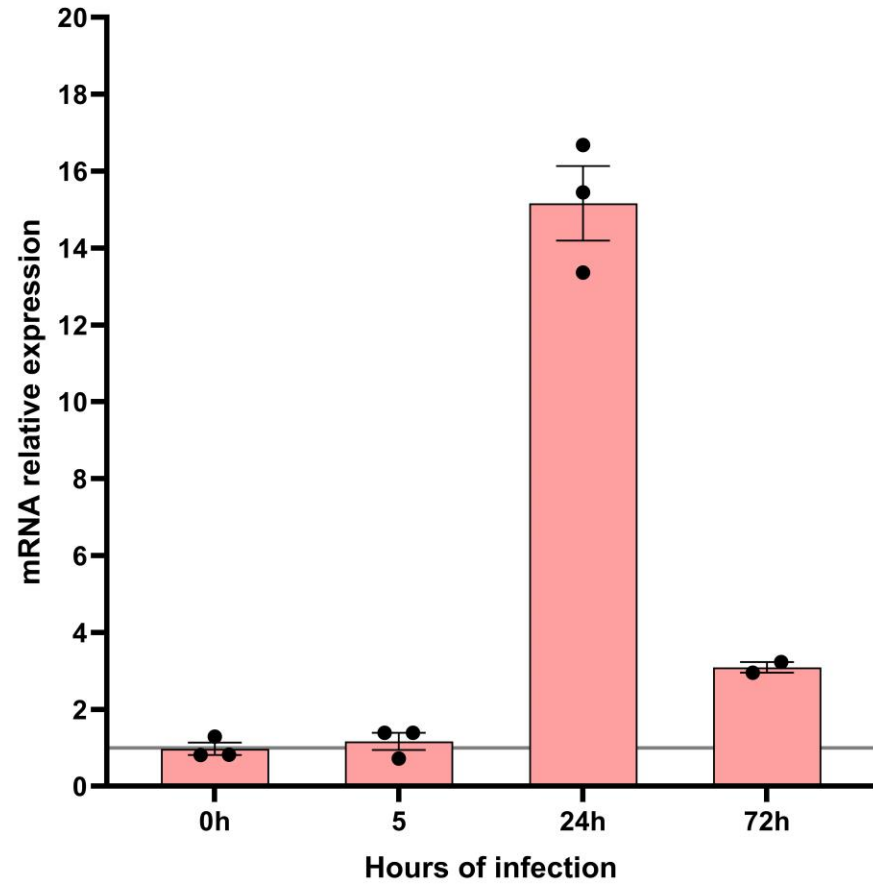


IFN- β , HRV16 MOI 3,0

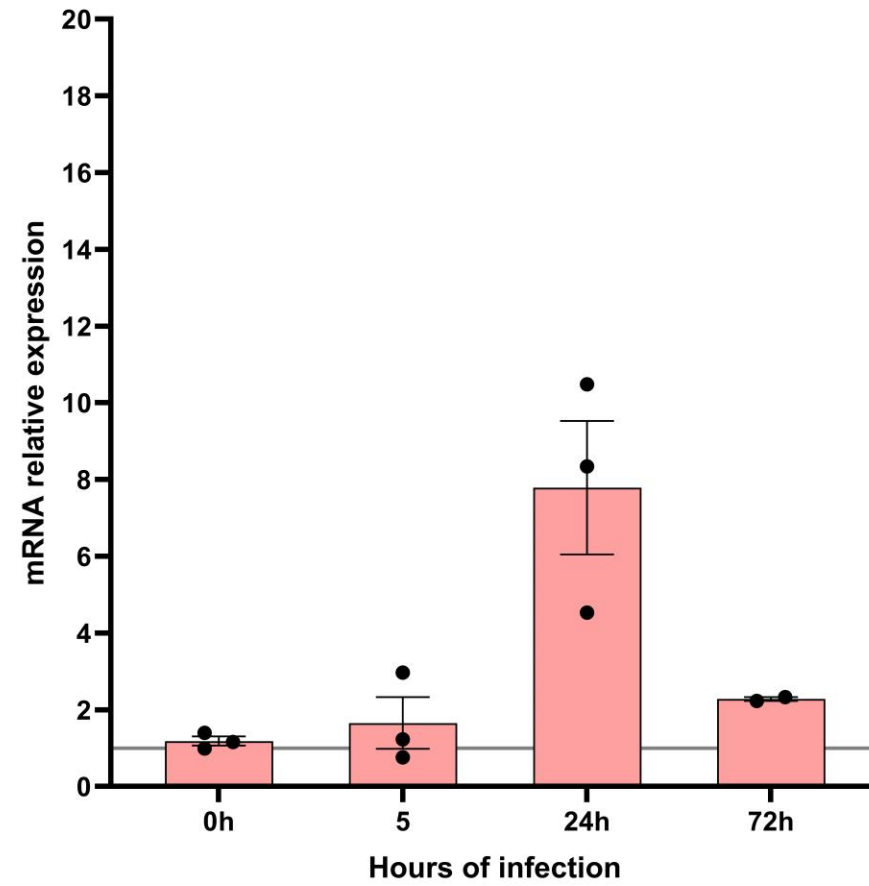


OAS1, healthy patients, HRV16 MOI 3,0**PKR, healthy patients, HRV16 MOI 3,0****MX1, healthy patients, HRV16 MOI 3,0****CCL5, healthy patients, HRV16 MOI 3,0**

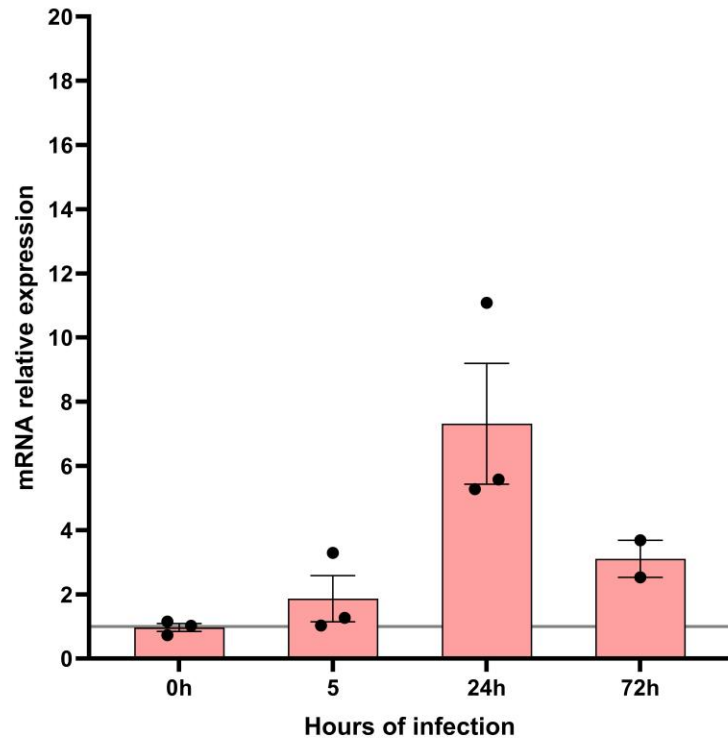
TLR3, asthmatic patients, HRV16 MOI 3,0



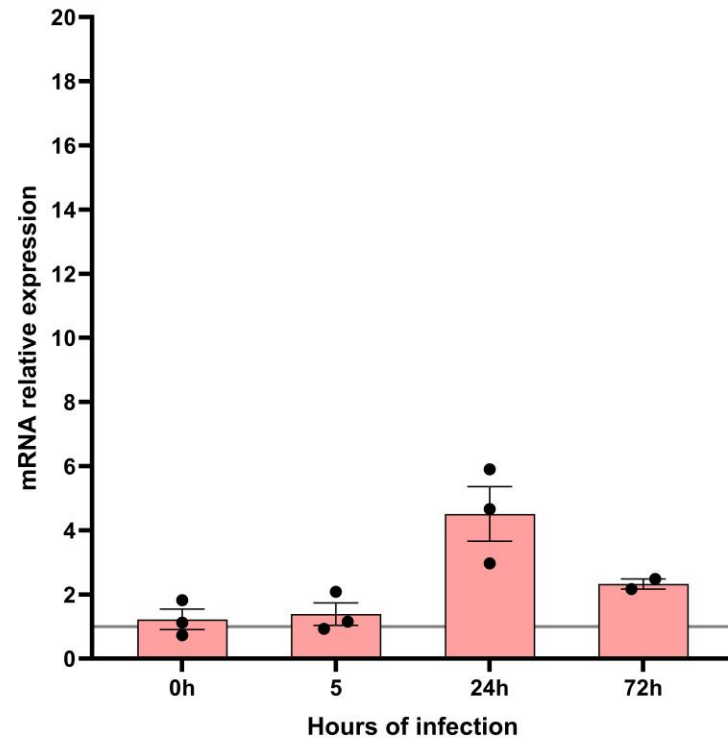
RIG-I, asthmatic patients, HRV16 MOI 3,0



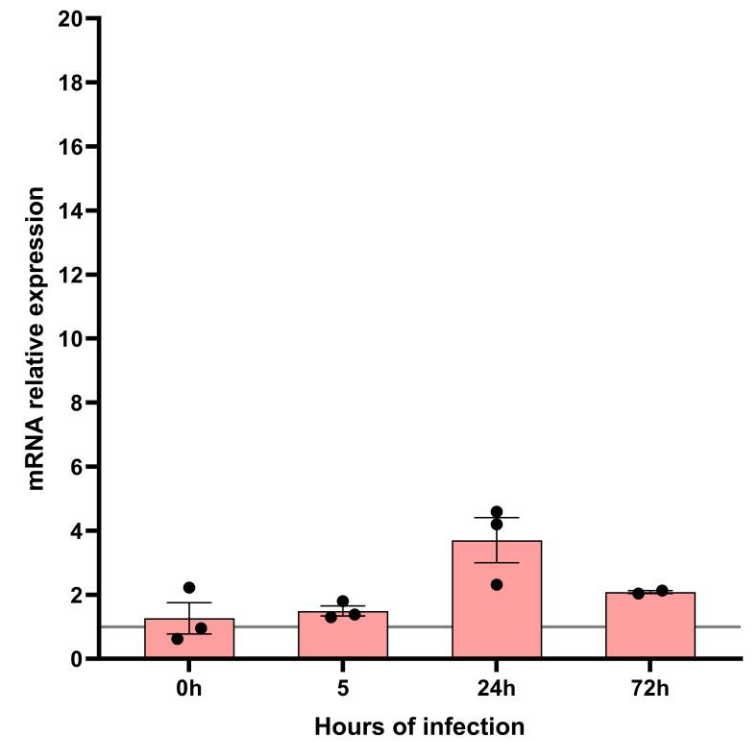
OAS1, asthmatic patients, HRV16 MOI 3,0



PKR, asthmatic patients, HRV16 MOI 3,0



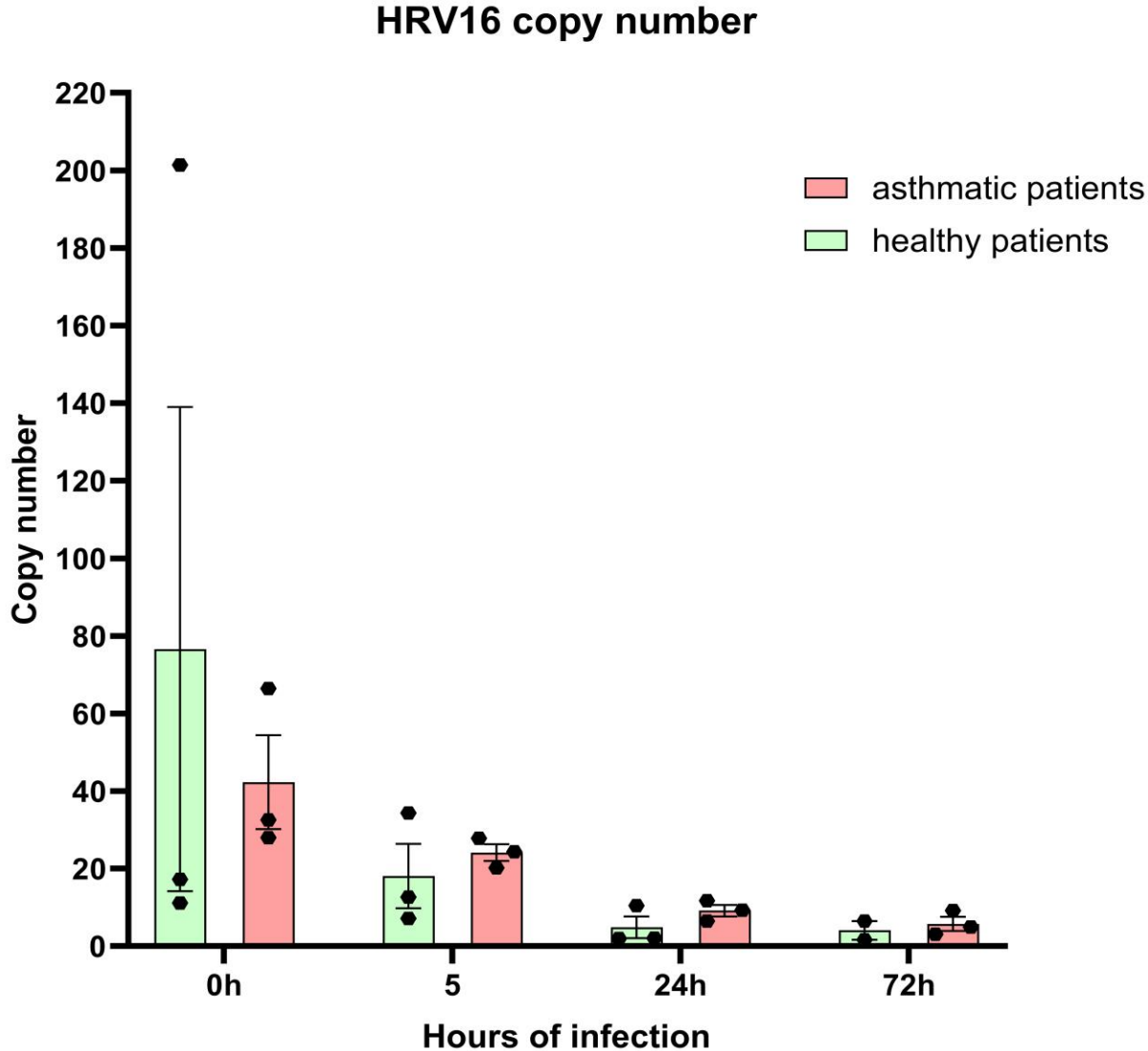
CCL5, asthmatic patients, HRV16 MOI 3,0



HRV16 copy number in infected cells

Viral copy number decreases drastically within 72h after infection

This demonstrates the effectiveness of cytokines and antiviral proteins produced by endothelium.



Polecana bibliografia

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Dziękuję za uwagę

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