

# PATHOGEN-HOST RELATIONSHIP IN CAVITY DEVELOPMENT IN TUBERCULOSIS

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The tuberculosis process is accompanied usually by the lung tissue destruction and cavitation associated with imbalance in the system of matrix metalloproteinases/inhibitors (MMP/TIMP). It is assumed that different proteinases are associated with the manifestation of various clinical characteristics of the process. Thus, it was shown that an increase in the concentration of metalloproteinase-1 (MMP-1) is noted in the presence of a cavity of destruction while an increase in the concentrations of MMP-9 and MMP-8 are proportional to the extension of volume destruction and associated with the activity and severity of the process. At the same time, pathogen (*Micobacterium tuberculosis*) can stimulate an inflammatory process leading to an even greater imbalance MMP/TIMP, that results in the strengthening of tissue destruction [1]. Such positive feedback also could be conditioned by the initially damaged immune status of the host.

We have created of a model based on the study of molecular regulatory mechanisms which reveal key factors contributing to the beginning of reparative changes or the transition of the disease to a chronic form, thereby solving the problem of identifying "key players" which stimulate the restoration of the structure and functions of tissues, as well as analysis of the dynamics of cellular populations for the diagnosis of functional and pathological conditions of the host.

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## References

- [1] Moores R.C., Brilha S., Schutgens F., Elkington T. P., Friedland S.J. (2017) Epigenetic regulation of Matrix Metalloproteinase-1 and -3 expression in *Mycobacterium tuberculosis* infection, *Frontiers in Immunology*, 8, 602