Toxoplasmosis is one of the most common parasitic diseases of endothermic animals, including humans. This parasitosis is caused by the protozoan *Toxoplasma gondii* that is an intracellular pathogen capable of invading all nucleated cells of host organism. In immunocompetent individuals the primary infection occurs usually symptomless. Under the pression of adaptive immunity, the acute infection is limited and fast-replicating parasite forms (tachyzoites) convert into dormant forms (bradyzoites) which enclose in tissue cysts and localize preferentially in central nervous system, musculature and eye (chronic infection). In immunocompromised humans and animals (fetuses, AIDS patients and those treated with immunosuppressive drugs etc.), primary invasion or reactivation of chronic infection occurs systemically and rapidly, and could lead to the host death.

Apart from human losses, *T. gondii* infection causes high economic losses associated with abortions in animals cultivated for consumption purposes (sheep, goats etc.), which are the main infection source for people. Long-term presence of the paraiste in brain is not neutral for the hosts. It changes neutrotransmitters levels, host behaviour and favours the development of many neural dieseases (as schizophrenia and others).

Current toxoplasmosis-associated problems include mainly: 1/ unsatisfactory serological diagnostics and 2/ lack of effective immunoprevention methods (prophylactic vaccination). Recent achievements in genetic enginering and biotechnology could rise these both challenges by the use of recombinant parasite antigens synthesized in microorganims transformed with genesencoding *T. gondii* proteins. These recombinant proteins may be applied as both diagnostic or vaccine antigens. A new trend in generation of recombinant antigens relies on the development of chimeric recombinant antigens, composed of fragments derived from two, three or more antigens. These fragments, called immunodominant regions, are able to induce specific immunity of protective character, i.e. preventing the hosts from the infection development.

The aim the the project is generation of *T. gondii* chimeric antigens in bacterial expression system (*Escherichia coli*), and then preliminary estimation of their utility using the reaction with human/animal sera (testing whether obtained recombinant antigens are recognized by *T. gondii*-specific serum antibodies, similarly to natural homologous antigens). The selected preparations of chimeric antigens will be a subject of further detailed analysis from the point of view of their utility as vaccine antigens. The immunogeneic actvity i.e. the ability to induce specific immunity will be determined in laboratory inbred mice with defined innate susceptibility to toxoplasmosis. The products of aquired humoral immunity are specific serum antibodies. Their profile i.e. the ratio IgG1/IgG2 antibodies will be a marker of the protection. Since cellular immunity plays a key role in eradication of the parasite, e.g the produced cytokines, including interferon gamma as prominent protective cytokine, will be also determined. The crucial test is the evaluation, whether specific *T. gondii* immunity in chimeric antigen-vaccinated mice protects the animals from infection and its outcomes. Adequate selection of immunodominant regions from parasite proteins with important biological function followed by a confirmation of their immunoprotective role is the intial step of effective *T. gondii* vaccine development.