

## Ph.D. projects in progress

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**Title of the research topic:** A new player in innate immunity: The multinucleated giant blood cell

**Description of the research topic:** The specific aim of the present project is to receive insight in the regulatory and developmental processes of the inflammatory reactions using *Drosophila* as a model organism. The project is built on our original observations, the discovery of the multinucleated giant hemocyte (MGH) and a track we followed when showed that these cells, discovered in the *ananassae* subgroup of *Drosophilidae*, bear significant similarities with the characteristic cell type in different granulomas of vertebrates, the multinucleated giant cell (MGC). So far, we generated molecular and genetic tools for the analysis of the *Drosophila* immune system, and characterized the hemocyte subsets and compartments with respect their origin and function. Based on these findings we propose a project with the following aims:

- i) to identify novel molecular markers for further analysis of the cell mediated immunity of species belonging to the *ananassae* subgroup of *Drosophilidae* and to analyze the molecules with respect to their functions;
- ii) to generate genetic markers and transgenic stocks in *D. ananassae* as tools for further analysis of MGH differentiation;
- iii) to carry out a gene expression profile analysis of uninduced hemocytes, immune induced plasmatocytes and MGHs, and selection of candidates for further studies;
- iv) to analyze the effective anti-parasite immune response and killing mechanism;
- v) to find vertebrate homologs of the newly identified immune-genes/molecules via a computational analysis and to study their function in a vertebrate model.