Males of the same species might differ in strategies they use to obtain their mating partners. Males vary not only in behavior but also in their appearance. This phenomenon has been observed in many species. For example, in the bulb mites – little creatures inhabiting plant bulbs, there are two types of males. More aggressive fighters are armored with a deadly weapon – massive, thickened and sharply terminated legs that thy use to cut or crush rivals. Males of the other type, called scramblers, are much less aggressive and defenseless against fighters. In mixed populations, fighter males are able to copulate with more females than scramblers are, so they produce more offspring and achieve higher fitness. Given that, why do scrambler males persist in many bulb mite populations?

Recently, we have discovered that in populations in which we used artificial selection (a procedure based on allowing for reproduction of a given type males only) to increase the number of fighters, females perform much worse than females from scramblers only populations. They lay less eggs and live shorter. This means that genes that are beneficial to males (making them fighters) are harmful to females (decreasing their fecundity and longevity). Scientists call such a situation "intralocus sexual conflict".

We came to an idea that perhaps this conflict might be the reason allowing both male types to be maintained in populations, because natural selection favoring "fighter genes" in males should be balanced by selection favoring "scrambler genes" in females. In the current project we want to check this exiting hypothesis by comparing populations evolving under natural levels of conflict with populations in which we will eliminate it. The elimination of the conflict will be achieved by eliminating natural selection acting on females. We expect that populations with no conflict will be dominated by fighter males.

Another issue we are interested in, is explaining why fighters practically vanish from populations evolving at high temperature, whereas they dominate in populations from low temperatures. What we know so far, is that the benefits of being a fighter don't depend on temperature. However, being a fighter seems energetically costly. A male needs to invest his resources and energy into developing his weapon. Effective fighting requires high energetic expenditures as well. That's why fighters have increased metabolism in comparison to scramblers and metabolic costs often depend on temperature. We thus want to check if development costs in fighters rise with temperature faster than these costs in scramblers. What'd be even more interesting, if "fighter genes" increase metabolism in females, daughters of fighters should also pay the higher costs the higher temperature they are at. This is why we expect that fighters' daughters would be much less fecund than scrambles' daughters at high temperatures, but this difference would be smaller at low temperatures.