



Example of an assignment structured around a single argument

The following is an example of a scientific article from ST that uses components of the argumentation model. The example is taken from the article titled Cold-acclimation increases the predatory efficiency of the aphidophagous coccinellid *Adalia bipunctata* (Sørensen & Kristensen, 2013, p. 87-94).

The content was prepared by Tine Wirenfeldt Jensen.

Claim (excerpts from the introduction and conclusion)

From the introduction: We hypothesized that (1) developing at a particular temperature enhances the predatory performance of ladybirds in terms of an increased feeding rate on aphids at that temperature (according to the beneficial acclimation hypothesis).

From the conclusion: Our results showed that ladybirds acclimated to the temperature at which they were tested, performed significantly better, in terms of consuming aphids, compared to ladybirds acclimated to a different thermal environment.

Grounds (own experiments and figures, excerpt from the discussion)

We found that a laboratory bred population of *A. bipunctata* responded plastically to developmental temperature and that this response strongly enhanced its ability to consume aphids at that particular temperature (Figs. 1 and 2 and Graphical Abstract). The response to developmental temperature also affected other fitness components, and costs of cold acclimation were observed in several traits.

Warrant (excerpt from materials and methods)

For estimating heat resistance, a knockdown test was used (see e.g. Kellett et al., 2005). Thirty adult ladybirds (15 males and 15 females) from each acclimation temperature were taken directly from the predatory performance experiment and tested. Only individuals that had experienced the same temperature during rearing and predation test were used (Table 1). The ladybirds were placed individually in 5 mL glass vials and exposed acutely to 43 C by immersion in a preheated water bath. Initially the high temperature exposure caused the ladybirds to become very active, but soon they became increasingly lethargic. Heat knockdown time was scored as the time it took for individual ladybirds to lose muscular function.

For statistical analysis JMP (8.0 by SAS Institute) was used. The untransformed data from the predatory performance tests were in all cases normally distributed (tested by Shapiro-Wilk W-tests) and showed homogeneity of variances (confirmed with Bartlett's tests).

[...] For the graphical presentations the consumption data have been transformed to percentages (Fig. 1). Chi-square tests were used to test the effect of rearing temperature on pupal survival.

Rebuttal (excerpt from discussion)

Although **not significant**, results from the predatory performance study performed at natural fluctuating temperatures revealed the same trend; ladybirds acclimated at lower temperatures consumed more aphids than ladybirds acclimated at higher temperatures. The trend was in the predicted direction since the ambient temperature was lower than any of the rearing temperatures.

Backing (excerpt from discussion)

Lower statistical power due to a lower number of replicates in the outdoor experiment compared to the laboratory microcosm experiments might explain the lack of significance in the experiments performed outdoor. Overall results from the microcosm experiments suggest that acclimation can be utilized in biological control systems.

Qualifier (excerpt from the conclusion)

Our results showed that ladybirds acclimated to the temperature at which they were tested, performed **significantly better, in terms of consuming aphids**, compared to ladybirds acclimated to a different thermal environment.