

Poster presentation

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Flying non-LTR retrotransposons: DNA transposons as freely available "wings"?

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Horizontal transmission (HT) can be defined as the process by which genes move between reproductively isolated species. Many examples of HT of transposable elements have been identified in eukaryotes. The mechanisms of HT are still unknown since it is not possible experimentally to show how the HT can occur. The frequencies of HT events are not equal among diverse types of transposable elements. Majority cases of putative HT are known for DNA transposons and LTR retrotransposons. According to the rough estimation, approximately 96% of HT events described for *Drosophila* account for LTR retrotransposons and DNA transposons, and only 4% - for non-LTR retrotransposons [1]. It seems to be that HT of non-LTR retrotransposons is relatively rare event. Previously, we provided strong evidences for the recent horizontal transmission of CR1 non-LTR retrotransposons between silkworm (Bombycidae) and large blue butterflies, genus *Maculinea* (Lycaenidae) [2]. The further investigations showed that the multiple HT events of DNA transposons took place between the same groups (Bombycidae and Lycaenidae) recently. At the same time, HTs among other groups of lepidopterans appeared to be relatively rare. Moreover, we identified number of chimeric DNA transposons in genomes of *Bombyx* and *Maculinea* which carry insertions of non-LTR retrotransposons (including CR1) and capable for transposition since insertions did not disrupt coding regions of DNA transposons. Thus we can suppose that non-LTR retrotransposons have ridden DNA transposons and used them as the "wings" for their transmission.

We also suppose that the features of life cycles of large blue butterflies and silkworm played important roles in increasing of HT frequency. Large blue butterflies are living in ant nests during the third larvae stage where they are fed by ants or eat up ant's larvae. Silkworm characterized by periodical massive outbreaks and can represent main course in ants menu during such years. The ant nest can be the crucial point of tangency between donor of chimeric DNA transposons (silkworm) and recipient (common ancestor of large blue butterflies).

References

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