第 1307 回生物科学セミナー

日時: 11 月 13 日(水) 15:00 - 16:30

演者: Prof. Ueli Grossniklaus

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演題: A Role for Epigenetic Variation in Plant Ecology and Evolution

Until recently, epigenetic variation was not thought to play a significant role in ecology and evolution and most text books on Evolutionary Biology lack any reference to epigenetic processes. Indeed, many biologists have difficulties to see how epigenetic variation could contribute to evolutionary change, as exemplified by the statement: "… it is hard to see its [epigenetic's] possible evolutionary significance, …" [Wolpert (1998) *J. Evol. Biol.* 11: 239-240]. Nevertheless, over the last years research on epigenetic mechanisms have taken centre stage and several scientists have argued that a possible role of epigenetic variation in ecology and evolution should be considered. I will present data from two distinct systems to illustrate the importance of epigenetic variation for adaptive processes. In the first, we have used selection experiments in *Arabidopsis* and could show that new phenotypes that were stable for at least 2-3 generations could be selected in the absence of genetic variation, suggesting the selection of (meta)stable, standing epigenetic variation. In a second example, I will provide evidence that different taxa of *Diplacus* spp. with distinct pollinator syndromes represent epigenetic variants. An insect-pollinated plant with yellow flowers can change, over the course of several years, into a plant producing bird-pollinated, red flowers. Since the acquired epigenetic state affects the morphology, colour, and scent of the flower and leads to reproductive isolation, it is expected to have a strong effect on population structure and eventually the evolutionary trajectory of this taxon, and thus that a change in epiallele frequency contributes to evolutionary change.

参考文献

1. Hirsch S, Baumberger R, Grossniklaus U. (2012) Cold Spring Harb Symp Quant Biol. 77, 97-104.
2. Schmid MW, Heichinger C, Coman Schmid D, Guthörl D, Gagliardini V, Bruggmann R, Aluri S, Aquino C, Schmid B, Turnbull LA, Grossniklaus U. (2018) Contribution of epigenetic variation to adaptation in *Arabidopsis*. Nat Commun.9, 4446.

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