

第 1303 回生物学セミナー

日時： 9 月 18 日(水) 13:30–15:00

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演題: Mirror symmetry in plants

what is known about the mechanisms selecting chiral configurations of structures and processes

Chiral phenomena can be detected on all hierarchically different levels of matter organization – both in living and nonliving systems. In the latter they extend from electron opposite spins and asymmetric carbon atoms in organic compounds to planets rotations and configurations of spiral galaxies. In living systems the chiral phenomena are also omnipresent. They can be seen in molecular organization of a cell, in its ultrastructure, but also, on the higher, supracellular level, in the patterns of organ distribution in both plants and animals. Mirror symmetry applies not only to the structures of living organisms, but also many developmental processes. There is a question of how the decision on selecting their chiral configuration is being made. Are both configurations equivalent or there is a preference for one of them, and if so why? A short survey of available examples of chiral, developmental events, mostly in plants, will be made in search for an answer to this question. Special attention will be paid to the function of stem cells located in plants meristematic tissues – apical meristems and cambium. As we will see they are capable of acting in the oriented manner.

Crucial and lately challenging question is what mechanism stays behind the selection of chiral configuration. The genetic basis is being slowly unraveled. Numerous recent reports on the role of intrinsic cell chirality seem to be very promising, although they come mostly from the studies on animal systems. It seems therefore that we are very close to finding the Holy Grail, which is our understanding the mystery of chiral growth and oriented cell divisions in plants.

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