



symmetry



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Chiral Asymmetry in Cells

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Message from the Guest Editor

Most macromolecules found in cells are chiral (an object is chiral if it is distinguishable from its mirror image). Such molecular chirality plays pivotal roles in chemical reactions in cells. To what extent in the macroscopic levels can we observe chirality in cells? Various parts of cells, such as cilia and cytoskeletons, still demonstrate chirality in their structures and functions. Although chirality of a whole cell in eukaryotes has been awarded in protozoans, such as ciliates, chirality of a whole cell in metazoan has not been noticed until very recently. Recent studies showed that cells of various animals, including vertebrates, have intrinsic chirality in their structures and behaviours. Chiral asymmetry of cells is observed as chirality in shape, arrangement, locomotion, and intracellular flow. In addition, cell chirality is coupled with the left-right asymmetric development of animal body.[...]



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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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