Laboratory of Interdisciplinary Biology

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Let's do some interesting research.

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(Nuclear Function)

"Proliferation" is a characteristic feature of living organisms. Considering that the cell is the most basic unit of life, the "proliferation" of the cell is the basis of the living organisms. When a cell proliferates, the DNA of the mother cell, the blueprint of the cell, must be precisely duplicated without missing or overlapping any parts of it before being distributed to the two daughter cells. We are investigating the mechanism of accurate DNA replication using in vitro system with Xenopus egg extracts.

Regulatory mechanisms of the initiation of the DNA replication in Eukaryotic cells

The proteins involved in the initiation of DNA replication have been extensively studied over the past several years, and the basic pathway of how DNA replication begins at a given replication start point is becoming clearer. However, in order for a long DNA strand to be completely replicated by a limited number of proteins in a limited time, it is necessary to understand how each replication start point is spatially distributed and temporally coordinated. It is now known that it also acts in the control of normal replication initiation. We have investigated the basic pathways of replication initiation and have found that one replication start point is not the only one that is involved in the control of replication from other locations.

We would also like to clarify how the start of production is coordinated.

Figure legend: Nuclei formed in Xenopus egg extracts. Blue: DNA Red: DNA replication by fluorescently labeled nucleotides

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