



Chromosomal Abnormality: A Study from Microorganisms

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Short Communication

Studies of chromosomal replication mechanisms started in tobacco mosaic virus and *Escherichia coli* [1]. Recently, the analysis of chromosomal replication mechanisms in the malaria parasite [2] and *Candida* [3] has begun uncovering many notions. Some microbes, including *Mycobacterium tuberculosis* [4] and *Listeria monocytogenes* [5], proliferate within the host cells and have unique chromosomal replication machinery (such as DNA) for chromosomal replication. On the other hand, protozoa such as the malaria parasite, and yeasts such as *Candida*, which can also grow in mammalian cells, have their own chromosomal replication machinery that is regulated by origin recognition complex (ORC) [6], which is even associated with virus replication.

Growth rates and pathogenicity to humans differ among microorganisms, but the mechanisms by which proliferation and pathogenicity occur are not fully understood. Moreover, we do not know in detail the mechanisms by which pathogens can escape human immunity.

Recently, a lot of attention has been paid to biological defences, with a focus on signals like hormone and cytokine and analysis of the chromosomal replication mechanisms of viruses, budding yeasts, and *Drosophila* [1]. Early in *Drosophila* development, endoreplication and gene amplification occur in the four pairs of chromosomes [7]. These steps are maybe regulated by some signals like hormone [1]. Surprisingly, it has become clear that gene amplification occurs during the growth of the malaria parasite, too. Many researches therefore would like to uncover the relationship between the start of these mechanisms, the virulence of pathogenic microorganisms, and biological defences. Additionally, many new findings in this field could contribute to growth initiation and virulence in pathogenic microorganisms and in cancer.

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