BÖLÜM 7

Homolog Rekombinasyon ve DNA Tamir Mekanizmaları

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Giriş

"*Olmak ya da olmamak, işte bütün mesele bu!*"
W. Shakespeare

Yaşamın en temel unsuru olan hücrelerin var olması DNA molekülündeki bilgiye dayanmaktadır. İster tek hücreli ister çok hücreli olsun her bir yaşam formu bu bilgiye dayalı olarak fizyolojik işlevlerini yerine getirebilir. Ancak DNA molekülünün yapısında iç veya dış kaynaklı etkenler nedeniyle bazı değişimler söz konusudur. Kısaca DNA değişime açık bir moleküldür. Homolog Rekombinasyon (HR) mekanizmaları iki ayrı ebeveynden gelen eşlenik kromozom dizileri arasında parça değiş-tokuşuna yol açar. Dolayısıyla yeni birey her iki atanın bazı özelliklerine sahip olarak dış koşullara adaptasyonda daha avantajlı bir hale gelir. DNA yapısındaki bu tür değişimler evrimsel süreçte çeşitliliği teşvik ederek değişen koşullara karşı en iyi uyum gösteren bireylerin (veya tek bir hücrenin) hayatta kalmasını sağlar. Diğer taraftan kadim yaşam bilgisi kusursuz olmalı ve hata içermemelidir. Eğer DNA'da mutajenler vasıtasıyla bir değişim meydana gelirse bunun sonucu yaşam ile bağdaşmayabilir. Dolayısıyla hücre içerisindeki DNA hasarlarının tamir mekanizmalarıyla onarılması kaçınılmazdır. İşte bu olmak veya olmamak meselesidir. Bu bölümde homolog rekombinasyon ve DNA tamir mekanizmaları ele alınmıştır.

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