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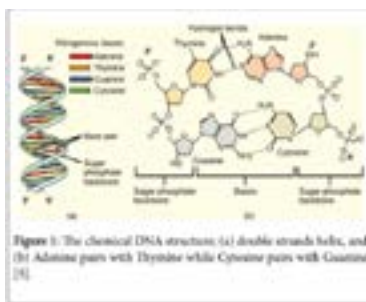
Molecular biology applications in oral and maxillofacial

Abstract:

Genetic developments during the 20th century had a great impact on our lives initiated by Mendel principles in 1900. Following the publication of the entire human genome sequence on 2004 chromosomes now can be rapidly analyzed very precisely by **microarray techniques** and next generation sequencing providing the genetic studies useful for clinical applications. Up to now the number of phenotypes with a known molecular basis reached 5500 while the number of genes with a phenotype causing mutation reached 3400. Genetic is becoming significant to every **medical field**. Recent discoveries have influences not only on rare **genetic diseases** and syndromes but extend too many common human disorders. The advancement of genetics refers back once the structure of DNA was discovered in 1953 by James Watson and Francis Crick, while nucleic acid was actually detected in 1849. Then in 1960s, the unraveling of the sequence of bases in DNA and the sequence of amino acids in protein called genetic code, was achieved with sophisticated techniques. **Molecular biology** provided wide applications in different areas such as genetically modified disease resistant crops, therapeutic drugs produced by genetically engineered animals and the advances to introduce vaccines that are DNA-based. In this article, we are reviewing the general application of molecular biology and its advances in the field of oral and maxillofacial surgery.

Keywords: Cystic fibrosis; Pharmacogenomics; Oral and Maxillofacial surgery; Craniofacial syndromes; Genetic in Dentistry

Images/Graphs/Tables:



Decade	Development	Examples
1980s	Southern blot, Sanger sequencing, and Recombinant DNA technology	DNA sequence of Epstein-Barr virus genome (1984), DNA fingerprinting (1984), and Recombinant erythropoietin (1987)
1990s	Polymerase chain reaction (PCR)	Genetic disorder diagnosis
2000s	Microarray technology and capillary sequencing	Human genome sequence (2003)
2010s	Next generation sequencing	Human genome sequenced (2003), First acute myeloid leukemia (AML) cancer genome sequenced (2008)

Table 1: Stages of genetic technology development.

Biography

Raniah Al Eid Faculty member with over 13 years of experience in teaching, research and clinical management in oral & maxillofacial surgery department at King Saud University. Completed Master Science and Clinical training in Oral and maxillofacial surgery College of Dentistry, King Saud University Riyadh, KSA 2013 Published several papers in reputed journals. Currently working as Assistant Professor in Oral and Maxillofacial Surgery Department, College of Dentistry, KSU.

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