شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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15 – 25c and relative humidity 20-40 %

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بالرسالة صفحات

لم ترد بالأصـــل

STUDY OF TELOMERASE ACTIVITY IN HEPATOCELLULAR CARCINOMA

Thesis

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in partial fulfillment of the requirements for

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To My Family

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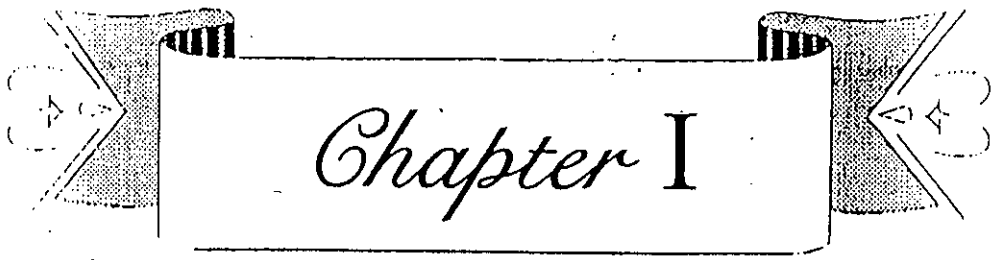
CONTENTS

ABBREVIATIONS

DNA	Deoxyribonulceic acid
RNA	Ribonucleic acid
mRNA	Messenger RNA
PCR	Polymerase Chain Reaction
HCC	Hepatocellular carcinoma
HCCs	Hepatocellular carcinomas
TRF	Terminal Restriction Fragment
S. AFP	Serum Alfa-feto-protein
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HBSAg	Hepatitis B surface antigen
HBeAg	Hepatitis B virulence antigen
HBe Antibodies	Hepatitis B virulence antibodies
CTC	Child Turcott Classification
CT	Computed Tomography
U/S	Ultra sound
WDHCC	Well differentiated hepatocellular carcinoma
MDHCC	Moderately differentiated hepatocellular carcinoma
PDHCC	Poorly differentiated hepatocellular carcinoma
Hb%	Haemoglobin percentage
RBC_s	Red blood cells
WBC_s	White blood cells
SGPT	Serum glutamic pyruvate transaminases
ALT	Alanine transaminases
FNAC	Fine needle aspiration Cytology
ELISA	Enzyme Linked Immuno Sorbent Assay
RIBA	Radio immunoassay
Rt.	Right
Lt.	Left



INTRODUCTION

ESSENTIALS IN MOLECULAR GENETICS

The chromosomes are double stranded extremely long helical molecules of DNA confined within the cell nucleus. In each human cell there is twenty two pairs of autosomes with an X and a Y chromosomes in males and two X chromosomes in females[1].

DNA is composed of phosphoric acid, deoxyribose sugar and four nitrogen bases (two purines : Adenine, Guanine and two pyrimidines : Thymine, Cytosine). The phosphoric acid and deoxyribose form the two helical strands back-bone of DNA molecules, and the bases lie between the two strands and connect them by hydrogen bonds. Adenine is always bonding with Thymine, and Guanine with Cytosine. So, **DNA nucleotides** are : Adenylic acids, Guanylic acids, Thymidylic acids and Cytidylic acids. The nucleotides are **linked by** a phosphodiester bonds between 3` and 5` position of each pentose[1,2].

DNA containing genes can be isolated from a cell, then can be cut into pieces with restriction enzymes. The fragment of DNA containing enough nucleotide sequences that is able to recognize the sequence of its corresponding gene is called a **probe**. If the probe has complementary sequence to any part of the immobilized DNA (immobilization can be achieved onto nitro-cellulose filters during

southern blotting technique for identification of the specific DNA fragments) it will seek it out and hybridize to it. The probes to be useful are tagged with radioactive or fluorescent marker. This is **the key for DNA analysis**[1,3].

The segment of DNA carrying the genetic information concerned with polypeptide formation is called **gene**. Each DNA strand in each chromosome carries about four thousands of genes. **The function of genes** is to provide exact informations for the synthesis of the specific amino-acids sequence of the proteins they control. There is one gene for every polypeptide chain[1,2] .

P.C.R. (Polymerase Chain Reaction)is a technique which permits amplification of specific fragment of DNA to copy numbers so as to be easily analysed to permit detection of specific genes in extremely small amount of tissue[1,3].

Two **steps** are **required to convert the informations stored in DNA into protein,** transcription and translation. In transcription, the DNA is used as a tempelate for the synthesis of a complementary mRNA, that are synthesized in the nucleus, then translocated to the cytoplasm carrying the genetic message from DNA to the ribosomes (the machinary sites for protein synthesis). The informations stored in mRNA are in the form of triplet of nucleotides (codones). In translation, the informations in mRNA are converted in the ribosomes into protein[4].

Chromosomes would loose DNA sequences on their ends with each round of **replication**. Numerous rounds of DNA replications would result in a large amount of **DNA sequences being lost from** the **chromosomal ends**[5], and thus chromosomal protection and stabilization which is suggested to be responsible for **gene stability** are not guaranteed[6,7].

Mutations in genes and carcinogenesis

The tranformation of a normal cell to a tumour cell appears to depend on **mutations in genes** that normally control cell cycle progression. It is suggested that the **growth abnormalities of tumour cells resulted from** both too little of the cell cycle brakes (tumour suppressors) and too much of the cell cycle accelerators (oncogenes). Mutations in genes result in combinations of increased cell drive through the cell cycle (increased oncogenes activity) or decreased inhibition of cell cycle progression (loss of tumour suppressor genes) and increased antiapoptosis signals[8].

Cell cycle and carcinogenesis

Aberration of normal **cell control** reflect some of the molecular alterations that are characteristic of cancer cells.

The precise copying of the DNA (S phase or DNA replication), the accurate segregation of duplicated sets of chromosomes between daughter cells (M or mitosis phase). The cells prepare itself biochemically for S phase in G_1 and prepare for mitosis in G_2.