CONTENTS

Chapter 1: INTRODUCTION

1.1 Overview.....1

1.2 Objective.....2

Chapter2: CENTRAL DOGMA OF MOLECULAR BIOLOGY 3

2.1DNA (Deoxyribonucleic acid) 5

2.2 RNA (Ribonucleic acid).....10

2.3 PROTEINE.....14

2.4 TRANSCRIPTION.....16

2.5 TRASLATION.....18

Chapter 3: GENETIC CODE 21

Chapter 4: CODON USAGE BIAS 28

4.1 Factors contributing codon uses bias.....29

4.2 Methods of analyzing codon usages bias.....31

4.2.1 Frequency of optimal codon.....31

4.2.2Relative Synonymous Codon Usage.....32

4.2.3Codon Adaptation Index (CAI).....33

4.3 Methods of measuring codon usages bias.....35

Chapter 5: WEB BASE PORTAL FOR MEASURING CUB 39

Snapshots

Chapter 6: CONCLUSION AND FUTURE WORK 44

6.1 Conclusion.....44

6.2 Future work.....44

List of Figures

Fig1: Information flow in biological system

Fig2: The structure of the DNA double helix.

Fig3:RNA molecule

Fig4-Nitrogen base structure in RNA

Fig5:Structure of protein

Fig6: Transcription

Fig7:Translation

Fig8:Genetic code table

Fig9: Genome G+C%

Fig10. Home page of our portal

Fig11 Information about DNA

Fig12.Information about RNA

Fig13Information about Proteine

Fig14Our existing bacteria's name

Fig15Information about Escherichia coli

Fig16CAI, Nc ,GC, L_aa values for e-coli bacteria

Fig17Uploading gene sequence for calculating Nc values

Fig18Nc values for a gene sequence uploaded by the use