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COURSE & YEAR: MS BIO 2

## RESEARCH PROPOSAL OUTLINE

### TITLE: CLONING AND CHARACTERIZATION OF *swrA* GENE INVOLVED IN SERRAWETTIN BIOSYNTHESIS OF *Serratia marcescens*

#### I. INTRODUCTION

##### a. BACKGROUND OF THE STUDY

- i. *Serratia marcescens* is a species of Gram-negative, rod-shaped bacterium in the family Enterobacteriaceae. A human pathogen, *S. marcescens* is involved in nosocomial infections, urinary tract infections and wound infections
- ii. Serrawettin produced by many pigmented *S. marcescens* strains, is a surface-active cyclodepsipeptide identical to serratamolide, which helps in the colonisation of surfaces.
- iii. Serrawettin biosynthesis and *swrA* gene

##### b. OBJECTIVES OF THE STUDY

- i. To clone and characterize the *swrA* gene of the bacteria *Serratia marcescens* that involves in the biosynthesis of serrawettin
- ii. To determine the sequence of *swrA* gene in local strains of *S. marcescens*
- iii. To determine the copy number of the *swrA* homolog in the local strains of *S. marcescens* genome
- iv. To characterize the gene sequence through bioinformatics

##### c. SIGNIFICANCE OF THE STUDY

- i. Characterization of the gene sequence involved in serrawettin biosynthesis
- ii. Guide in Genetic Engineering for gene sequence analysis of *S. marcescens*

##### d. SCOPE AND LIMITATION OF THE STUDY

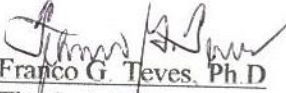
- i. Focuses on the amplification of the *swrA* gene of the local strains of *S. marcescens*.
- ii. *swrA* gene will be cloned by PCR and will be analyzed through agarose gel electrophoresis and bio-informatics.

#### 2. REVIEW OF RELATED LITERATURE

#### 3. MATERIALS AND METHODS

- a. Genomic DNA Isolation
- b. PCR Amplification
- c. Agarose Gel Electrophoresis
- d. DNA Sequencing and DNA Analysis

Approved by:

  
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