شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائق الاصلية تالفة

بالرسالة صفحات لم ترد بالاصل

Morphological, Karyological and Electrophoretical Studies on the Genus *Arvicanthis* (Rodentia: Murinae) in Egypt

A THESIS

Submitted to the Department of Zoology, Faculty of Science, Minia University

FOR

The Fulfillment of the Requirements of the Master's Degree of Science in Zoology

BY

Mahmoud Ibraheem Shoulkamy Ibraheem

(B.Sc. Zoology)

SUPERVISORS

Prof. Dr.

Abdel Tawab M. Ata

Department of Genetics

Faculty of Agricalture

Associate Prof. Dr.

Adel A. Basyouny Shahin

Department of Zoology

Faculty of Science

Mina University

2006

DEDICATION

TO

My Mother,

My Brothers and

Memory of my Father

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

My foremost and greatest gratitude indebtedness go to ALLAH, the most merciful and originator of earth and heavens, who has and is a constant support and guidance in my life at all times. I pray that I will be able to use my experience and knowledge to help others and in doing so glorify ALLAH through all my actions and deeds. I acknowledge without God's support nothing would have been accomplished.

I owe a special debt of my gratitude to my supervisor **Dr. Adel Abdel Aleem Basyouny Shahin**, Associate Professor of Evolutionary Biology and Systematics of Vertebrates, Zoology Department, Faculty of Science, Minia University, for suggesting the point, providing me with his excellent experience and advice. In addition, he did his best during the final revision of the manuscript as well as his great encouragement during the development of the research.

A special deepest and warmest thanks to **Dr. Abdel Tawab Mohamed Ata,** Professor of Cytogenetics, Genetics Department, Faculty of Agriculture, Minia University, for suggesting the point, his assistance, great efforts, continuous guidance, encouragement, revising the manuscript and offering much of his time to my work.

Many thanks to **Prof. Dr. Ezzat mahmoud Fadl Alla**, Dean of Faculty of Science and **Prof. Dr. Nagi S. Tawfek**, Head of Zoology Department, Faculty of Science, Minia University, for their support and encouragement.

My deepest thanks are also extended to all staff members of Genetics Departement, Faculty of Agriculture for their encouragement and assistance in the preparation of the manuscript.

Many thanks also go to **Mr. Saed Toulba** for collecting the specimens.

My deepest thanks are also extended to my family for their encouragement, patience and assistance in the preparation of the manuscript.

CONTENTS

CONTENTS

INTRODUCTION

INTRODUCTION

The murine rodents form one of the most common subfamilies of the family Muridae (Musser and Carleton, 1993). The subfamily Murinae comprises the Old World mice and rats and includes 122 genera and 529 species of the whole rodent species currently described. One of its unique features is the quasi-absence of any suprageneric arrangement, which illustrates the high phenotypic homogeneity of its components. In contrast to the related subfamily Sigmodontinae (New World mice and rats), which is subdivided into seven well-defined tribes (Reig, 1980), the only tribal units proposed for the Murinae were Conilurini, Hydromyini, and Anidomyini (Watts and Aslin, 1981: Lidicker and Brylski, 1987), all restricted to the Australian region. In particular, the suprageneric relationships of the extensive African murine fauna, which include more than 150 species arranged in approximately 30 genera, are still very poorly understood. Arvicanthine murid rodents are one of the most common groups of murine fauna in Africa and that have ever been put forward to contribute to a better understanding of their taxonomy and phylogeny.

The first author to introduce the concept of arvicanthine rodents was Misonne (1969) in his study of the evolutionary trends in the African and Indo-Australian Muridae. He created an *Arvicanthis* "Division" in which he grouped 12 genera, both African and Asian, namely *Aethomys*, *Arvicanthis*, *Dasyms*, *Dephomys*, *Golunda*, *Hadromys*, *Hybomys*, *Lemniscomys*, *Mylomys*, *Pelomys*, *Rhabdomys* and *Stochomys*, with the possible inclusion of *Bandicota* and *Nesokia*. This *Arvicanthis* "Division", named after its most representative genus, was defined almost solely on dental traits. In a later revision of the systematics of *Hadromys*, Musser (1987) concluded that only the genera *Arvicanthis*, *Lemniscomys*, *Mylomys*, *Pelomys* (including *Desmomys*), *Rhabdomys* and