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**Parasitic ciliates of Egypt: a model of
cutaneous infection and immunity in some
freshwater fish**

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A Thesis

Submitted in partial fulfillment of the requirements
for Degree of Master of Science (M.Sc.) in Zoology

By

Rewaida Abdel-Hakim Abdel-Gaber

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Approval sheet

Title of the M.Sc. thesis

Parasitic ciliates of Egypt: a model of cutaneous infection and immunity in some freshwater fish

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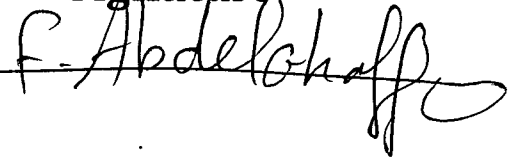
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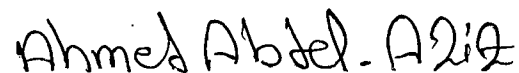
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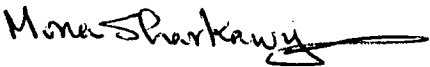
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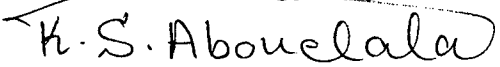
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List of Abbreviations:

°C	Degrees Celsius
Ab	Antibody
Ag	Antigen
AP	Apoptotic cell
B cell	Bone marrow (Bursa) derived cell
BOD	Biological oxygen demand
C	Chromatin
C3	Complement 3
CFU	Colony forming unit
CM	Cytoplasmic melanosomes
COD	Chemical oxygen demand
E	Eosinophil
ELISA	Enzyme-linked immunosorbent assay
EP	Exocrine pancreatic tissue
FCS	Foetal calf serum
Fig.	Figure
H & E	Hematoxylin & Eosin
h.	Hour
HMW	High molecular weight
I.P.	Intraperitoneal
Itch	<i>Ichthyophthirius multifiliis</i>
Ig	Immunoglobulin
IgA	Immunoglobulin A
IgD	Immunoglobulin D
IgE	Immunoglobulin E
IgG	Immunoglobulin G
IgM	Immunoglobulin M
IL	Interleukin
IL -1	Interleukin-1
IL -1 β	Interleukin-1 β
IL-2	Interleukin-2
IL-6	Interleukin-6
IL-8	Interleukin-8
IL-10	Interleukin-10
IL-12	Interleukin-12

IRF-1	Interferon regulatory factor-1
L	leucocytic
M	Mitochondria
MA	Macrophage
mAb	Monoclonal antibody
MHC II	Major histocompatibility complex class II
ML	Milliliter
MMCs	Melano-macrophage centers
MS	Melanosomes
N	Necrosis
NCC	Natural cytotoxic cells
NK	Natural killer
NNC	Non-specific cytotoxic cells
OD	Optical density
PBS	Physiological buffer saline
PC	Pigment cell
Pg.	Picogram
Ph	Phagocytic cell
PHA	Phytohaemagglutinin
R	Red pulp
SDS-PAGE	Sodium dodecyl sulphate polyacrylamide gel electrophoresis
T	Trophont
Tc	Thymocyte cytotoxic cell
T-cell	Thymus derived cell
TCR	Thymocyte cell receptor
TDS	Total dissolved salts
TGF- β	Tumor growth factor- β
T _{h1}	Thymocyte helper 1
T _{h2}	Thymocyte helper 2
TNF- α	Tumor necrosis factor- α
VC	Vacuolated cells
W	White pulp

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