



The Role of Uroplakin IIIA (UPIIIA) Gene and its Protein in the Diagnosis of Bladder Cancer

*Thesis Submitted to Faculty of Science,
Ain Shams University*

In partial Fulfillment of M.Sc. in Biochemistry

BY

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Approval Sheet

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿ قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا

﴿ إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم
الآية (32) سورة البقرة

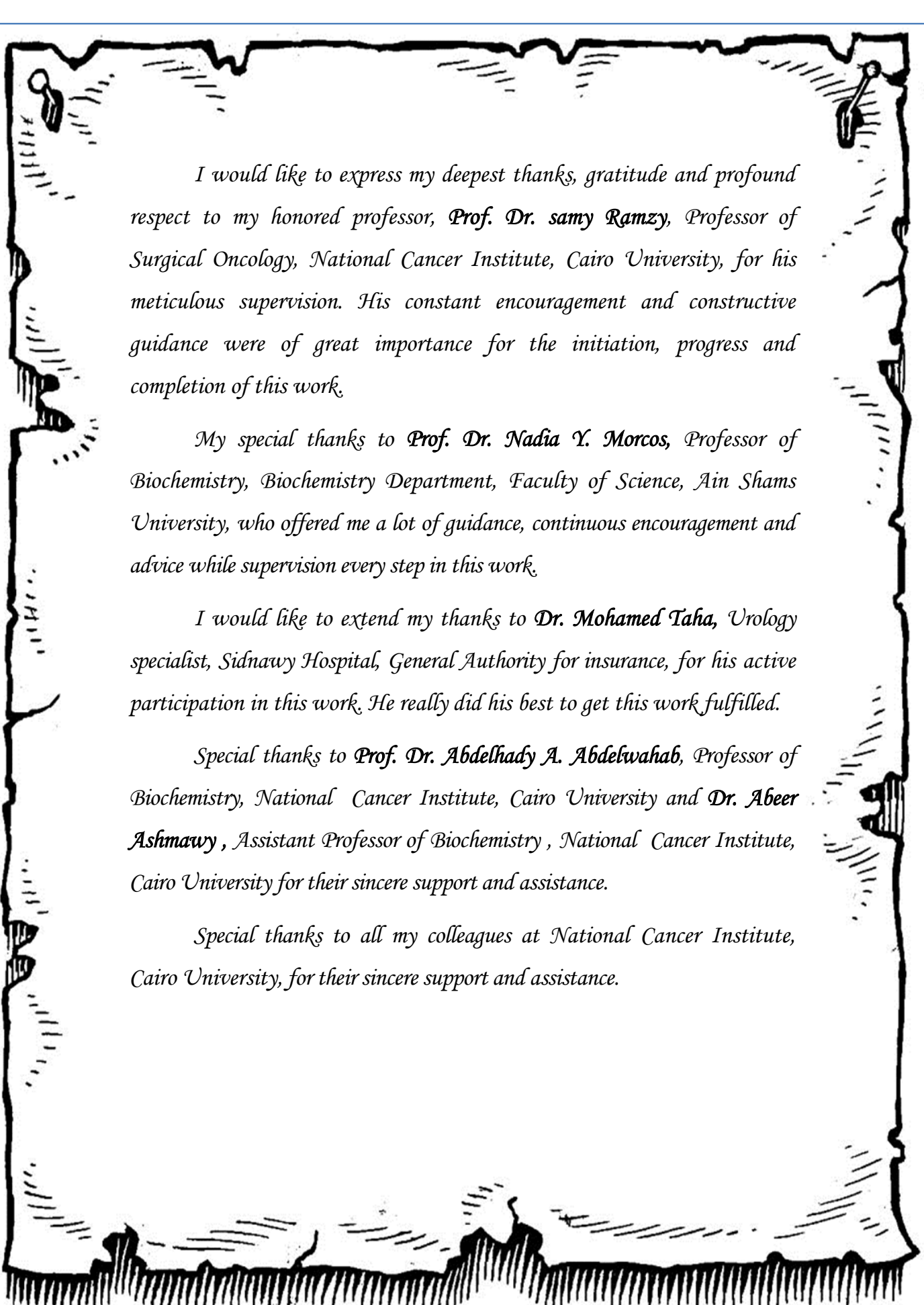


Acknowledgement

First, foremost, and all thanks to Allah by whose grace this work had been completed and by whose grace all my life is arranged in the best. Nobody can imagine this way that had been drawn by the mercifulness of Allah.

My deep thanks and gratitude to Professor Dr. Nadia I. Zakhary, Professor of medical Biochemistry and Former Minister of Scientific Research , Cancer biology Department, National Cancer Institute, Cairo University for her precious guidance .I owe her more than I can express for all the time, she spent in revising every detail, in spite of her busy schedule. In fact all credit goes to her in bringing this study to light. I consider myself fortunate to work under her supervision

It is great honor for me that I take this opportunity to express my sincere appreciation and my deep respect to Professor Dr. Ahmed Osman, Professor and Head of Biochemistry department, faculty of science, Ain Shams university, for his precious guidance. Without his generous and valuable assistance, this work would lose its value. It is an honor working under his supervision



*I would like to express my deepest thanks, gratitude and profound respect to my honored professor, **Prof. Dr. samy Ramzy**, Professor of Surgical Oncology, National Cancer Institute, Cairo University, for his meticulous supervision. His constant encouragement and constructive guidance were of great importance for the initiation, progress and completion of this work.*

*My special thanks to **Prof. Dr. Nadia Y. Morcos**, Professor of Biochemistry, Biochemistry Department, Faculty of Science, Ain Shams University, who offered me a lot of guidance, continuous encouragement and advice while supervision every step in this work.*

*I would like to extend my thanks to **Dr. Mohamed Taha**, Urology specialist, Sidnawy Hospital, General Authority for insurance, for his active participation in this work. He really did his best to get this work fulfilled.*

*Special thanks to **Prof. Dr. Abdelhady A. Abdelwahab**, Professor of Biochemistry, National Cancer Institute, Cairo University and **Dr. Abeer Ashmawy**, Assistant Professor of Biochemistry, National Cancer Institute, Cairo University for their sincere support and assistance.*

Special thanks to all my colleagues at National Cancer Institute, Cairo University, for their sincere support and assistance.

I should like to add appreciation to patients in this study who have been helpful in achieving the desired outcome. I hope that with this and other studies we can alleviate their sufferings.

Finally, my truthful affection and love to my husband, my family, who were, and will always be by my side all my life.



Fatma Mahmoud Abdelwahed Mohamed

Declaration

***I declare that this thesis has been
composed by me and it has not been
submitted before for a degree at this or
any other university.***

FATMA MAHMOUD ABDELWAHED



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Abstract

The Role of Uroplakin IIIA (UPIIIA) Gene and its Protein in the Diagnosis of Bladder Cancer.

Background: Advanced bladder cancer is an aggressive malignancy with a poor prognosis. Despite precise pathologic staging and grading, prediction of clinical outcomes in patients is very difficult. Uroplakins are urothelial differentiation-related membrane proteins, they represent major urothelial cyto-differentiation products and are highly conserved during mammalian evolution.

Objective: To evaluate the role of uroplakin IIIA as a potential diagnostic and / or prognostic predictor marker for metastasis of bladder cancer patients.

Methods: A total of 106 subjects: 61 bladder cancer patients, 20 benign cases, 25 healthy subjects, were enrolled in the present study. Patients were observed for 3 years postoperative. UPIIIA mRNA level was detected in blood using q-PCR, and in urine by conventional PCR, while urinary UPIIIA protein was measured using ELISA.

Results: At baseline, before cystoscopy, blood UPIIIA mRNA was significantly higher in the metastatic patients as compared with controls, patients with benign lesions, and non

metastatic cancer ones ($p < 0.015$, 0.02 , and 0.03 ; respectively). Urinary UPIIIA protein was significantly higher in patients who developed metastasis within the 3 years observation period from the time of surgery.

Conclusion: The results suggest that UPIIIA may provide a feasible non-invasive tool for differential diagnosis and prediction of metastasis in bladder cancer.

Key words: bladder cancer, UPIIIA, metastasis.

List of Abbreviation

| Abbreviation | Description |
|---------------------|----------------------------------|
| <i>APC</i> | Adenomatous polyposis coli |
| <i>ARF</i> | Alternate open reading frame |
| <i>ASR</i> | Age Specific incidence Rate. |
| <i>AUM</i> | Asymmetric unit membrane |
| <i>Bax</i> | BCL2-associated X protein |
| <i>BCG</i> | Bacillus calmette guerin |
| <i>BCL-2</i> | B-cell lymphoma 2 |
| <i>BTA</i> | Bladder tumor associated antigen |
| <i>BTA</i> | Bladder tumor antigen |
| <i>CASP8</i> | Caspase-8 |
| <i>CD</i> | Cluster of differentiation |
| <i>CDH1</i> | Cadherin-1 |
| <i>CDH13</i> | Cadherin-13 |
| <i>CDK</i> | Cyclin-dependent kinases |

List of Abbreviation

| | |
|----------------------|---|
| <i>CDKAL</i> | CDK5 regulatory subunit associated protein 1-like 1 |
| <i>CI</i> | Confidence interval |
| <i>CIS</i> | Carcinoma in situ |
| <i>CK20</i> | Keratin 20 |
| <i>CT</i> | Computed tomography |
| <i>DBC2</i> | Deleted in breast cancer2 |
| <i>DBCCR1</i> | Deleted in bladder cancer chromosomal region 1 |
| <i>DVs</i> | Discoidal vesicles |
| <i>EAU</i> | European Association of Urology |
| <i>EGFR1</i> | Epidermal growth factor receptor 1 |
| <i>ER</i> | Endoplasmic reticulum |
| <i>ERCC4</i> | Excision repair cross-complementing group 4 |
| <i>ERK</i> | Extracellular signal-regulated kinases |
| <i>EST</i> | Expressed sequence tag |
| <i>FASL</i> | Fas ligand |
| <i>FDA</i> | U S Food and Drug Administration |
| <i>FGFR</i> | Fibroblast growth factor receptor |