بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / هناء محمد علي

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: ....

Investigation of Genetic Drivers of Early Carcinogenesis in Hepatocellular Carcinoma

Submitted By

Eman Abd El-Razek Metawea Abbas

M.Sc. in Microbiology (2017)

Faculty of Science, Ain Shams University

For the Fulfillment of PhD Degree of Science in Microbiology

Under supervision

Prof. Dr. Ahmed Barakat Barakat

Professor of Virology

Faculty of Science

Ain Shams University

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Department of Microbiology

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Ain Shams University

2022

Ain Shams University
Faculty of Science
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Approval sheet

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Graduation Year : 2007

Year of grants : 2022

I declare that the thesis titled "Investigation of Genetic drivers of early carcinogenesis in Hepatocellular Carcinoma" is my own work and has not previously submitted to any other university. The references were being checked when possible; show the extent to which I have availed myself of the work of others.

Eman Abd El-Razek Metawea


بسم الله الرحمن الرحيم
﴿ قالوا سبحانك لا علم لنا الا ما علمتنا
إنك انت العليم الحكيم ﴾
صدق الله العظيم
الآيه(32) سوره البقره

Dedication

I dedicate this work

To My Family:

My Great Dad

My Kind Mum

My Beloved Brother

and His Family

My Dear Husband

My LoVely Daughters

*I thank **Allah** for choosing you to be my family*

Thank you for supporting me with kindness, patience, ……. and love.

I Love you all

Yours,

Eman Abd El- Razek Metawaa

Acknowledgment

First and foremost thanks for **ALLAH**, the most beneficent and merciful

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Eman Abd El- Razek Metawaa

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AASLD	American Association for the Study of Liver Disease
A1ATD	Alpha1-Antitrypsin deficiency
Ab	Antibody
AFB1	Aflatoxin B1
AFP	alpha-fetoprotein
AFP-L3	Lens culinaris-reactive AFP
AIH	Autoimmune hepatitis
AJCC	American Joint Committee on Cancer
ALT	Alanine transferase
ASR	Age-standardized incidence rate
AST	Aspartate aminotransferase
AXIN1	Axin 1
β	Beta
BCLC	Barcelona Clinic Liver Cancer
BCL9	B-cell CLL/ lymphoma 9
BCL9L	B-cell lymphoma 9-like
Bil.T.	Bilirubin Total
BMI	Body Mass Index
bp	Base Pair
CCND1	Cyclin D1
CDKN2A	Cyclin-dependent Kinase inhibitor 2A
CDKN2B	Cyclin-dependent kinase inhibitor 2B
cDNA	Complementary DNA
cfDNA	Circulating cell-free DNA
CI	Confidence interval
CLIP	Cancer of the Liver Italian Program
CMV	Cytomegalo virus
CN	Copy number
CND1	cyclin D1
CNV	Copy number variation
Conc.	Concentration