بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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MONA MAGHRABY

Expression of NKG2A Inhibitory Receptor on Cytotoxic Lymphocytes as an Indicator of Severity in Corona Virus Disease 2019 (COVID-19) Patients

Thesis

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Marwa Mustafa Mounir

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List of Abbreviations

Abb.	Full term
2019-nCoV	*2019-novel coronavirus*
ALI	*Acute lung injury*
ARDS	*Acute respiratory distress syndrome*
ALT	*Alanine aminotransferase*
ACE2	*Angiotensin converting enzyme 2*
AT1R	*Angiotensin receptor 1*
ACEIs	*Angiotensinconverting enzyme inhibitors*
SHP-1	*Anti-Src Homology Phosphatase-1*
SHP-2	*Anti-Src Homology Phosphatase-2*
AST	*Aspartate aminotransferase*
BAL	*Bronchoalveolar lavage*
BALF	*Bronchoalveolar Lavage Fluid*
CHB	*Chronic hepatitis B*
CT	*Computed tomography*
COVID-19	*Coronavirus disease 2019*
CSS	*Cytokine storm syndrome*
CCR2	*C-C Chemokine receptor type 2*
CCL27	*C-C Motif Chemokine Ligand 27*
CXCL8	*C-X-C Motif Chemokine Ligand 8*
DCs	*Dendritic cells*
DMARD	*Disease-modifying anti-rheumatic drug*
R	*Effective reproductive number*
ERGIC	*Endoplasmic reticulum-Golgi intermediate compartment*
eIF2α	*Eukaryotic initiation factor 2 subunit-α*

List of Abbreviations (Cont...)

Abb.	Full term
ECMO	*Extracorporeal membrane oxygenation*
favipiravir-RTP	*Favipiravir ribofuranosyl-5B-triphosphate*
FGF	*Fibroblast growth factor*
FiO2	*Fraction of inspired oxygen*
G-CSF	*Granulocyte colony-stimulating factor*
GM-CSF	*Granulocyte-macrophage colony-stimulating factor*
HCWs	*Health care workers*
HGB	*Hemoglobin level*
HCV	*Hepatitis C virus*
CHB-H	*High HBV DNA titer*
HCoV	*Human coronaviruses*
HCQS	*Hydroxycholoroquine*
ITIM	*Immunoreceptor tyrosine-based inhibitory motif*
IP-10	*Interferon γ-induced protein 10*
ISGs	*Interferon stimulated genes*
IFN-γ	*Interferon-γ*
IL-1B	*Interleukin 1beta*
IL-15	*Interleukin-15*
KLRD1	*Killer Cell Lectin Like Receptor D1*
KIRs	*Killer immunoglobulin Ig-like receptors*
KIRs	*Killer immunoglobulin receptors*
LIR-1	*Leukocyte Ig-like receptor-1*
CHB-L	*Low HBV DNA titer*
M-CSF	*Macrophage Colony Stimulating Factor*

List of Abbreviations (Cont...)

Abb.	Full term
MIP-1A	*Macrophage Inflammatory Protein-1 Alpha*
MHC-I	*Major histocompatibility complex I*
MBL	*Mannose-binding lectin*
M	*Matrix protein*
MASP-2	*MBL-associated serine protease 2*
MAP	*Mean arterial pressure*
MFI	*Mean intensity of fluorescence*
MAC	*Membrane attack complex*
MERS	*Middle East Respiratory Syndrome*
mAbs	*Monoclonal antibodies*
MCP-1	*Monocyte Chemoattractant Protein-1*
MCP-3	*Monocyte Chemotactic Protein 3*
NK	*Natural killer*
nAbs	*Neutralizing IgG anti- bodies*
N/L Ratio	*Neutrophil to Lymphocyte Ratio*
NKC	*NK gene complex*
NLRs	*NOD-like receptors*
NCIP	*Novel coronavirus-infected pneumonia*
NAAT	*Nucleic acid amplification Test*
N	*Nucleoprotein*
NOD	*Nucleotide-binding and oligomerization domain*
OAS	*Oligoadenylate synthase*
PAMPs	*Pathogen-associated molecular patterns*
PRRs	*Pattern recognition receptors*
PBMCs	*Peripheral blood mononuclear cells*

List of Abbreviations (Cont...)

Abb.	Full term
PPE	*Personal Protective Equipment*
PLT	*Platelet count*
PDGF	*Platelet-derived growth factor*
PEEP	*Positive end-expiratory pressure,*
PD-1	*Programmed cell death protein-1*
PKR	*Protein kinase R*
rRT-PCR,	*Real-time reverse transcription polymerase chain reaction*
RBD	*Receptor binding domain*
RIG-I	*Retinoic acid-inducible gene I*
RdRp	*RNA dependent RNA polymerase*
SARS	*Severe acute respiratory syndrome*
SARS-CoV-2	*Severe acute respiratory syndrome coronavirus-2*
S	*Spike structural protein*
SH2	*Src Homology 2*
TIGIT	*T cell immunoreceptor with immunoglobulin and ITIM domains*
RO	*The basic reproduction*
TLRs	*Toll-like receptors*
TLC	*Total leucocytic count*
TMPRSS2	*Transmembrane serine protease 2*
TNFa	*Tumor necrosis factor alpha*
IFN-I	*Type I interferons*
TMPRSS2	*Type II transmembrane serine protease*
VEGF	*Vascular endothelial growth factor*
E	*Viral envelope*
WHO	*World Health Organization*

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an emerging viral infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a novel beta coronavirus firstly identified during a burst of respiratory illness cases in Wuhan City, Hubei Province, China ***(Li et al., 2020***). In a few weeks the disease became a global pandemic with 5, 593, 631 cases and 353, 334 confirmed deaths as reported by the World Health Organization on 28 May 2020. A wealth of recent data highlights the dysregulated immune response and its inflammatory component as the main cause of morbidity and mortality ***(Blanco-Melo et al., 2020).***

This novel virus is associated with higher mortality than other respiratory viruses, it also demonstrates a broader variation in its clinical presentation ***(Xu et al., 2020)***. The majority of COVID-19 cases (about 80%) are asymptomatic or exhibit mild to moderate symptoms, but approximately 15% progress to severe pneumonia and about 5% develop critical disease with respiratory failure and organ dysfunction ***(Huang et al., 2020)***. Pneumonia is the most frequent serious manifestation of infection, while acute respiratory distress syndrome (ARDS) is the major complication in patients with severe illness. Other complications include: coagulopathy, microvascular thrombosis such as myocardial infarction and stroke, arrhythmias, acute cardiac injury, liver injury, acute kidney injury, and shock ***(Arentz et al., 2020)***.