MITOCHONDRIA DYSFUCNTION IN ONCOGENESIS

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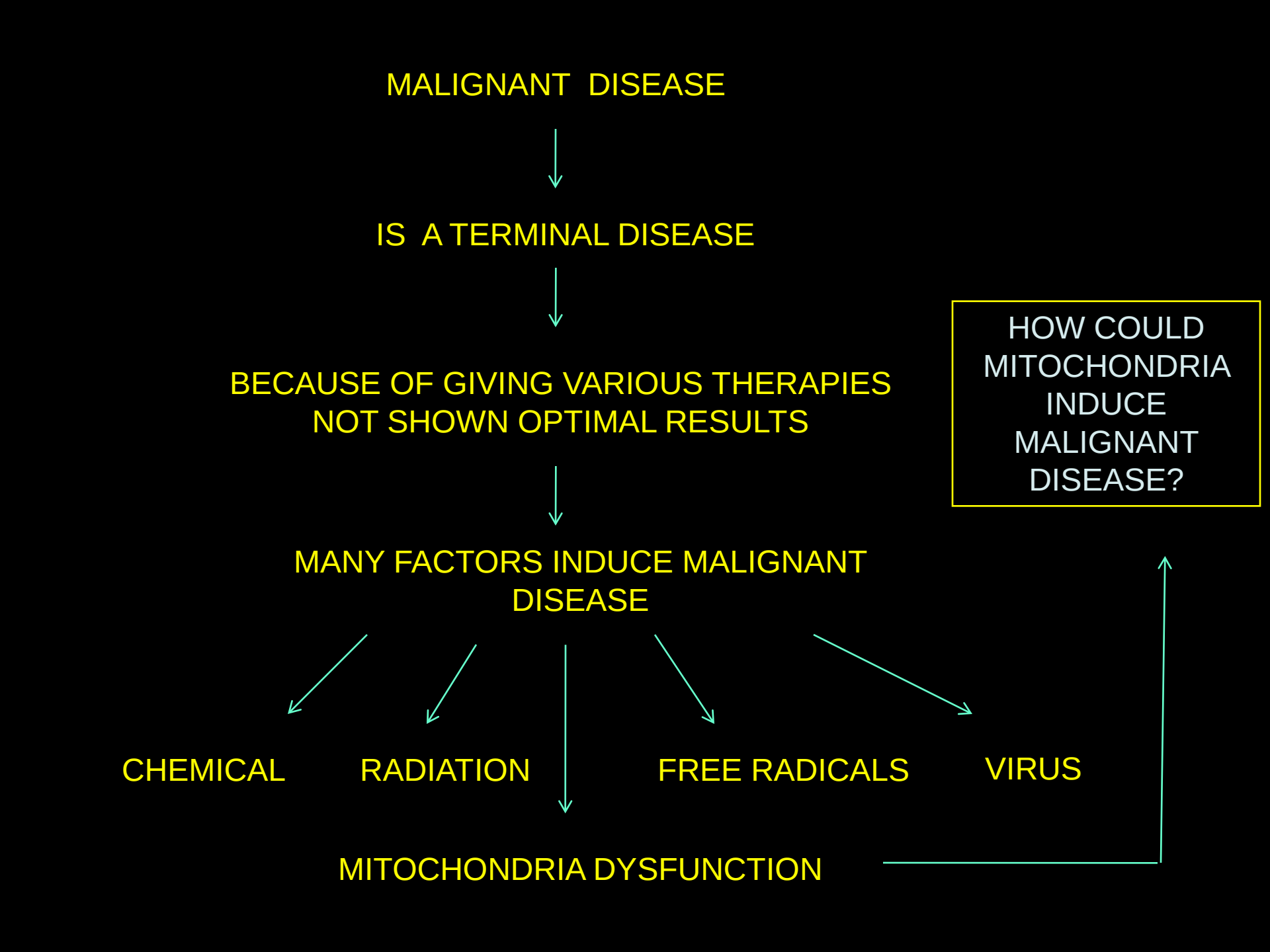
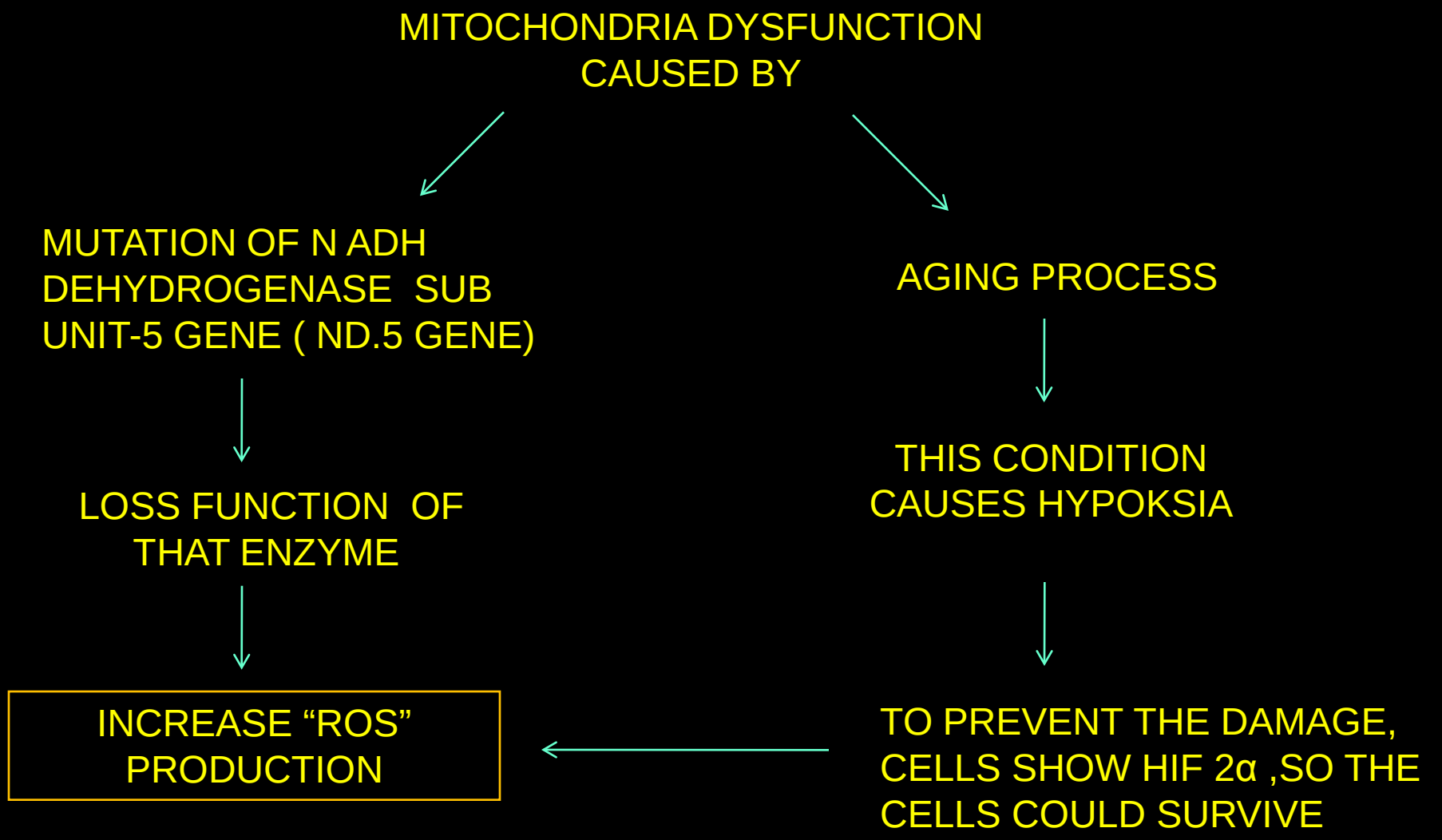
TO DAY WE EXPLAIN ABOUT RELATION OF MITOCHONDRIA DYSFUNCTION WITH MALIGNANT DISEASE

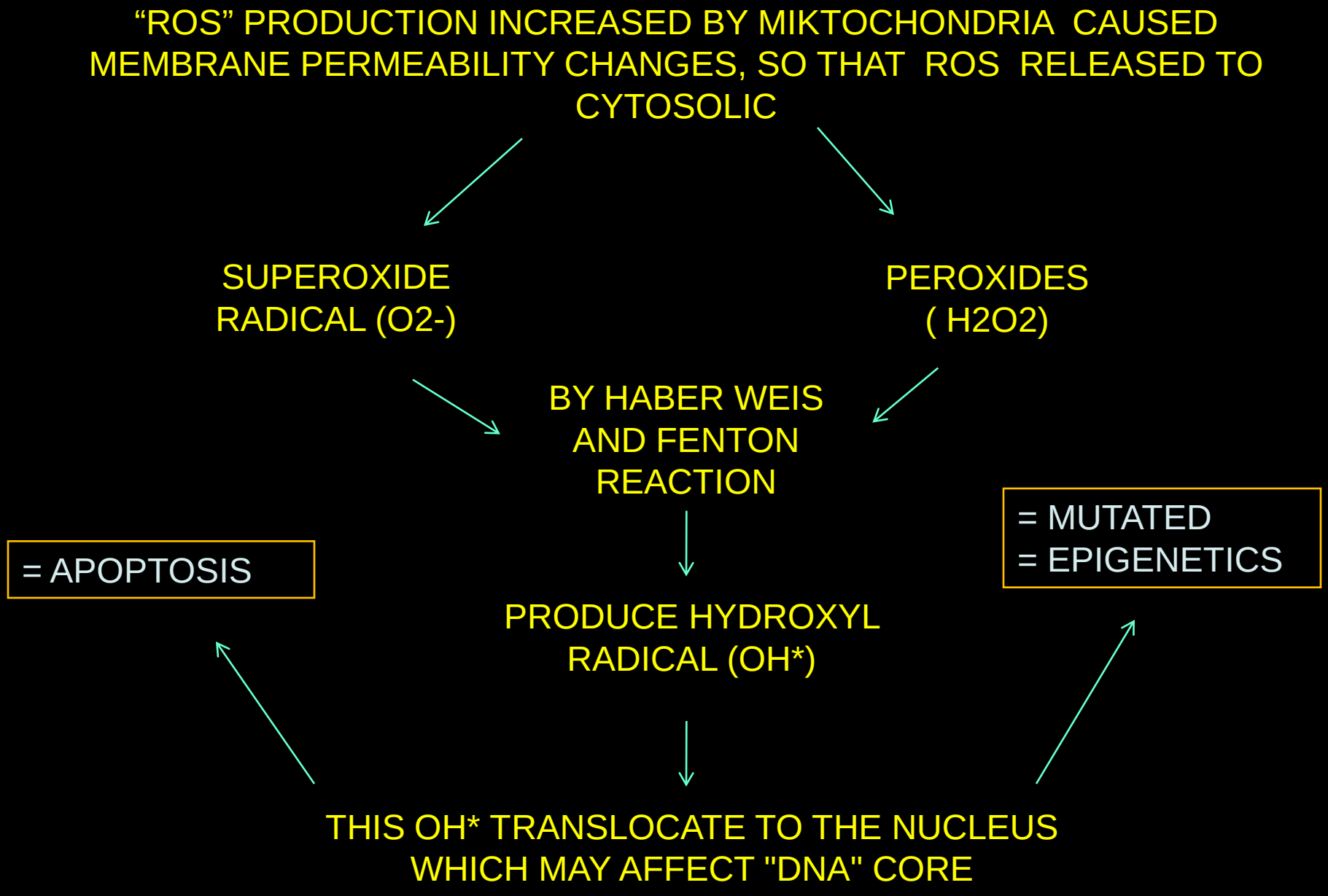
MALIGNANT DISEASE OCCUR BECAUSE OF MULTI GENE DEFECT → ESPECIALLY OF GENES THAT REGULATE CELL CYCLE DIVISION

PROTO ONCOGENE → FOR EXAMPLE: Bcl2, Ras

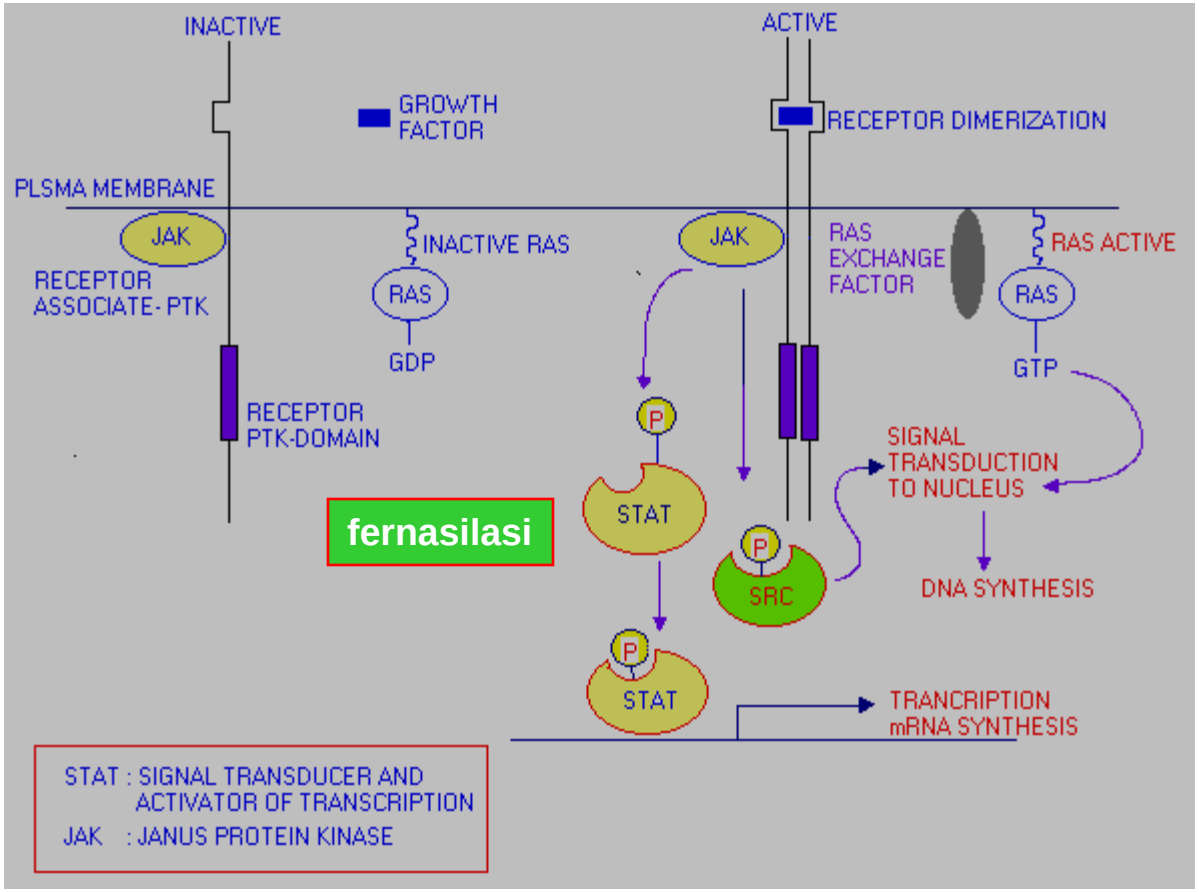
TUMOR SUPPRESSOR GENE → FOR EXAMPLE : p53, pRb, PTEN

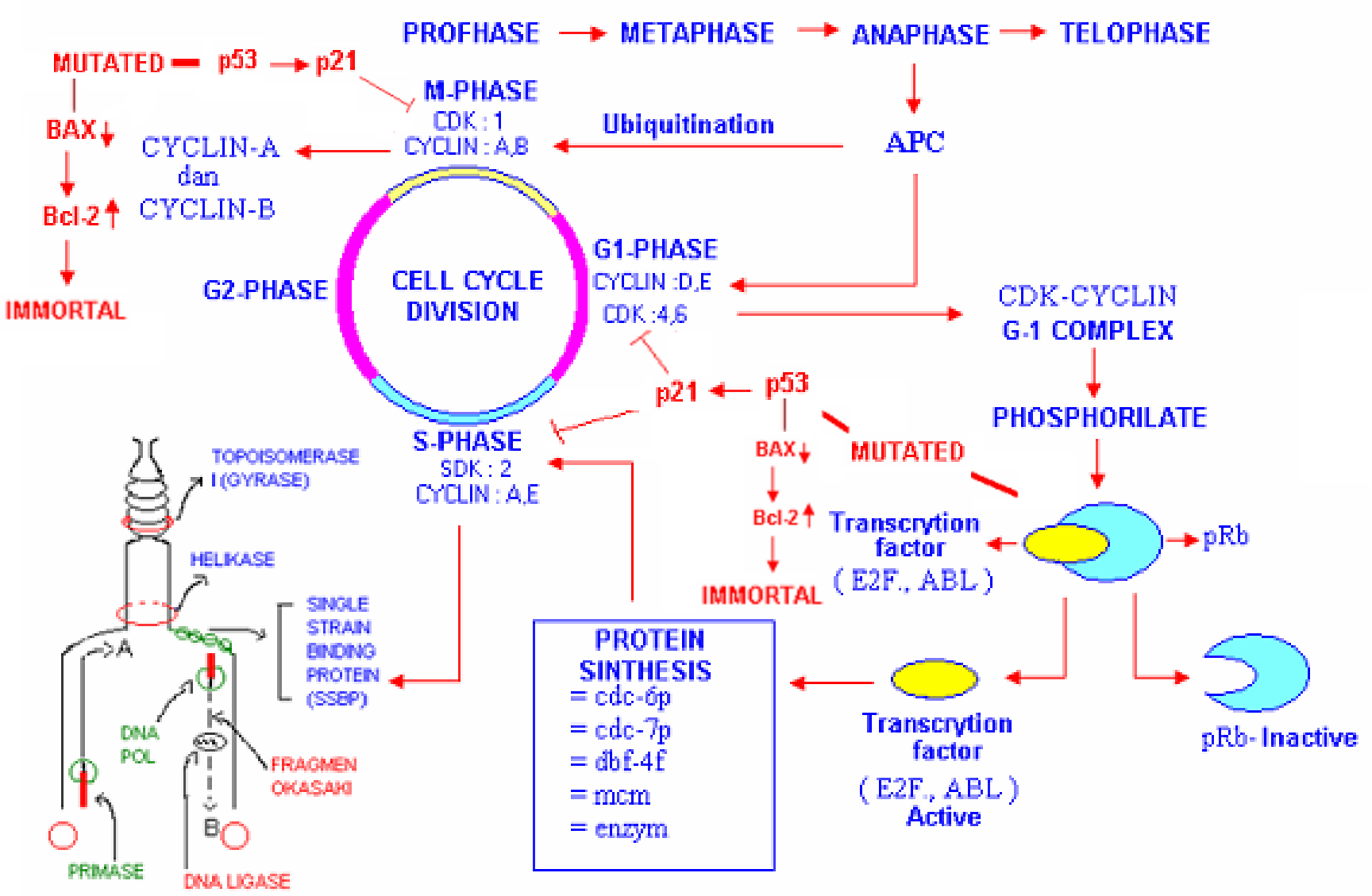

MALIGNANT DISEASE
IS A TERMINAL DISEASE
BECAUSE OF GIVING VARIOUS THERAPIES
NOT SHOWN OPTIMAL RESULTS
HOW COULD MITOCHONDRIA INDUCE MALIGNANT DISEASE?
MANY FACTORS INDUCE MALIGNANT DISEASE
CHEMICAL
RADIATION
FREE RADICALS
VIRUS
MITOCHONDRIA DYSFUNCTION

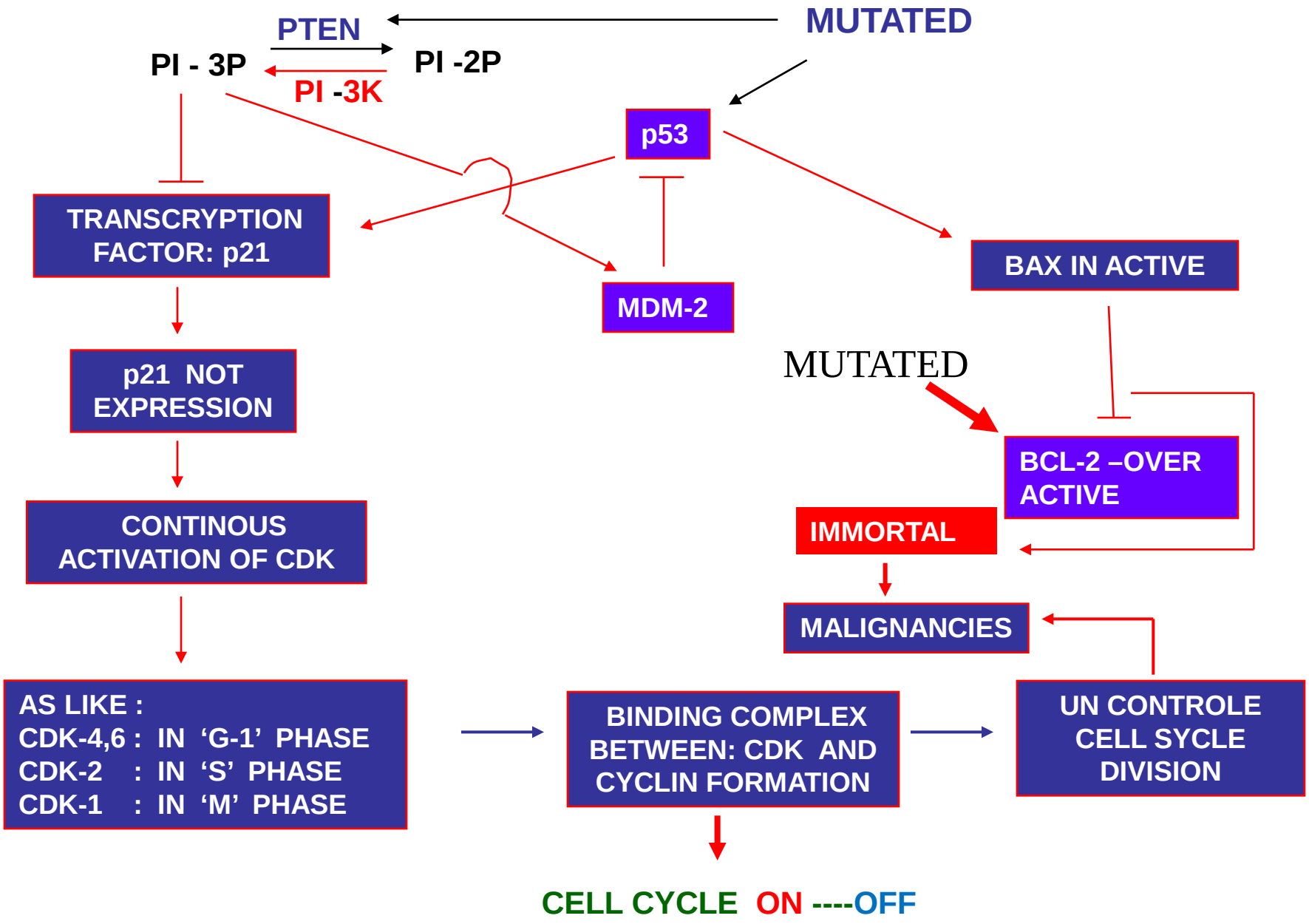

MITOCHONDRIA DYSFUNCTION
CAUSED BY
MUTATION OF N ADH
DEHYDROGENASE SUB
UNIT-5 GENE (ND.5 GENE)
AGING PROCESS
LOSS FUNCTION OF
THAT ENZYME
THIS CONDITION
CAUSES HYPOKSIA
INCREASE “ROS”
PRODUCTION
TO PREVENT THE DAMAGE,
CELLS SHOW HIF 2α ,SO THE
CELLS COULD SURVIVE

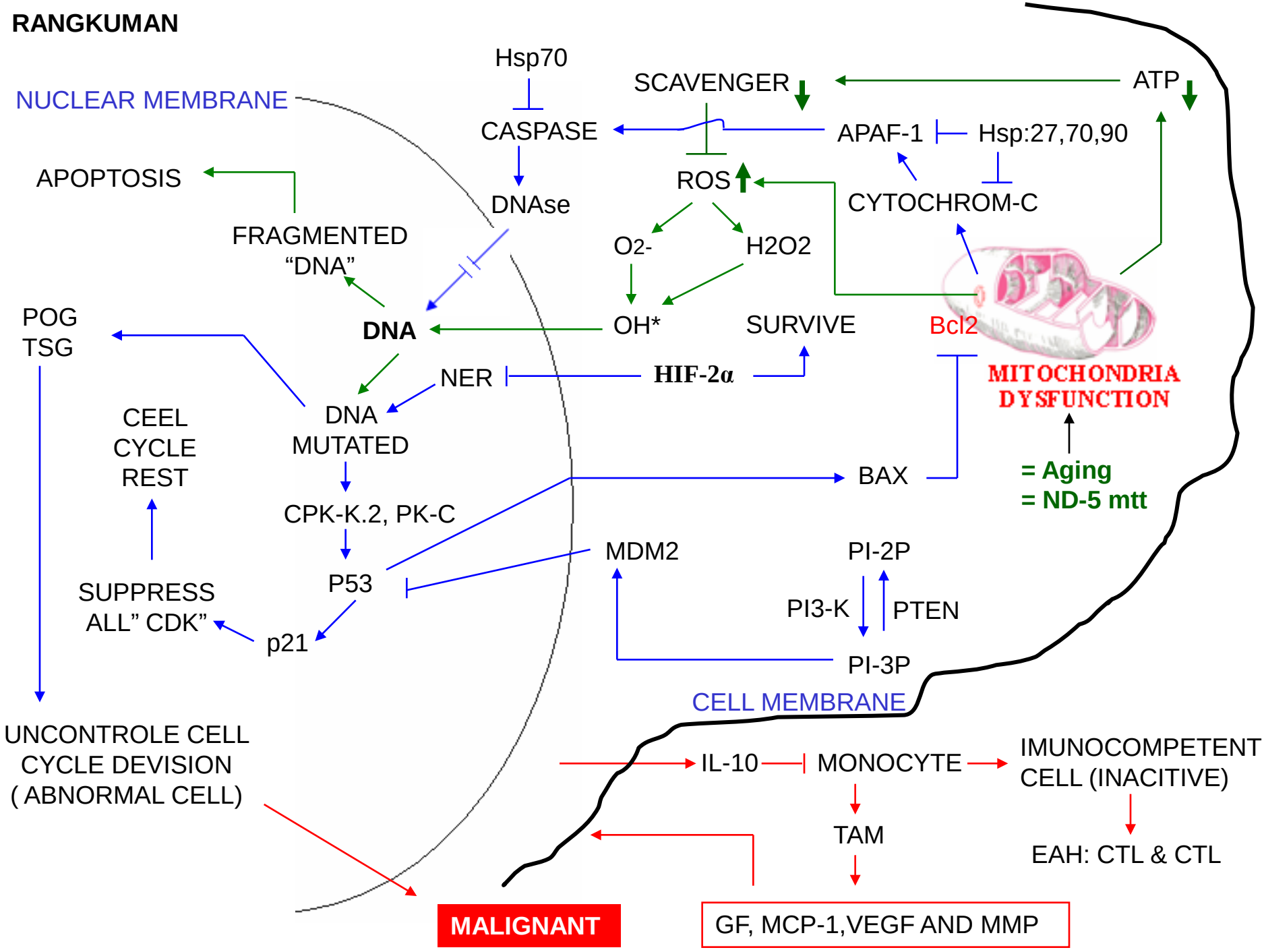

“ROS” PRODUCTION INCREASED BY MIKTOCHONDRIA CAUSED MEMBRANE PERMEABILITY CHANGES, SO THAT ROS RELEASED TO CYTOSOLIC
SUPEROXIDE RADICAL (O2-)
PEROXIDES (H2O2)
BY HABER WEIS AND FENTON REACTION
PRODUCE HYDROXYL RADICAL (OH*)
THIS OH* TRANSLOCATE TO THE NUCLEUS WHICH MAY AFFECT "DNA" CORE
= APOPTOSIS
= MUTATED
= EPIGENETICS

SIGNAL TRANDUCTION HUMAN GF -RAS




PROFHASE
METAPHASE
ANAPHASE
TELOPHASE
MUTATED
p53
p21
M-PHASE
CDK : 1
CYCLIN : A,B
Ubiquitination
APC
BAX
CYCLIN-A
dan
CYCLIN-B
Bcl-2
IMMORTAL
G2-PHASE
CELL CYCLE
DIVISION
G1-PHASE
CYCLIN :D,E
CDK :4,6
CDK-CYCLIN
G-1 COMPLEX
p21
p53
PHOSPHORILATE
S-PHASE
SDK : 2
CYCLIN : A,E
BAX
MUTATED
Bcl-2
Transcrytion
factor
(E2F., ABL)
pRb
IMMORTAL
TOPOISOMERASE
I (GYRASE)
HELIKASE
SINGLE
STRAIN
BINDING
PROTEIN
(SSBP)
A
DNA
POL
FRAGMEN
OKASAKI
B
PRIMASE
DNA LIGASE
PROTEIN
SINTHESIS
= cdc-6p
= cdc-7p
= dbf-4f
= mcm
= enzym
Transcrytion
factor
(E2F., ABL)
Active
pRb- Inactive


MUTATED
PTEN
PI - 3P
PI -2P
PI -3K
p53
TRANSCRYPTION FACTOR: p21
MDM-2
BAX IN ACTIVE
p21 NOT EXPRESSION
MUTATED
BCL-2 –OVER ACTIVE
CONTINOUS ACTIVATION OF CDK
IMMORTAL
MALIGNANCIES
AS LIKE :
CDK-4,6 : IN 'G-1' PHASE
CDK-2 : IN 'S' PHASE
CDK-1 : IN 'M' PHASE
BINDING COMPLEX BETWEEN: CDK AND CYCLIN FORMATION
UN CONTROLE CELL SYCLE DIVISION
CELL CYCLE ON ----OFF


RANGKUMAN
Hsp70
NUCLEAR MEMBRANE
SCAVENGER
ATP
CASPASE
APAF-1
Hsp:27,70,90
APOPTOSIS
ROS
DNAse
CYTOCHROM-C
FRAGMENTED
"DNA"
O2-
H2O2
POG
TSG
DNA
OH*
SURVIVE
Bcl2
NER
HIF-2α
MITOCHONDRIA
DYSFUNCTION
CEEL
CYCLE
REST
DNA
MUTATED
BAX
= Aging
= ND-5 mtt
CPK-K.2, PK-C
MDM2
PI-2P
P53
SUPPRESS
ALL" CDK"
PI3-K
PTEN
p21
PI-3P
CELL MEMBRANE
UNCONTROLE CELL
CYCLE DEVISION
(ABNORMAL CELL)
IL-10
MONOCYTE
IMUNOCOMPETENT
CELL (INACITIVE)
TAM
EAH: CTL & CTL
MALIGNANT
GF, MCP-1,VEGF AND MMP

TARIMO KASIH