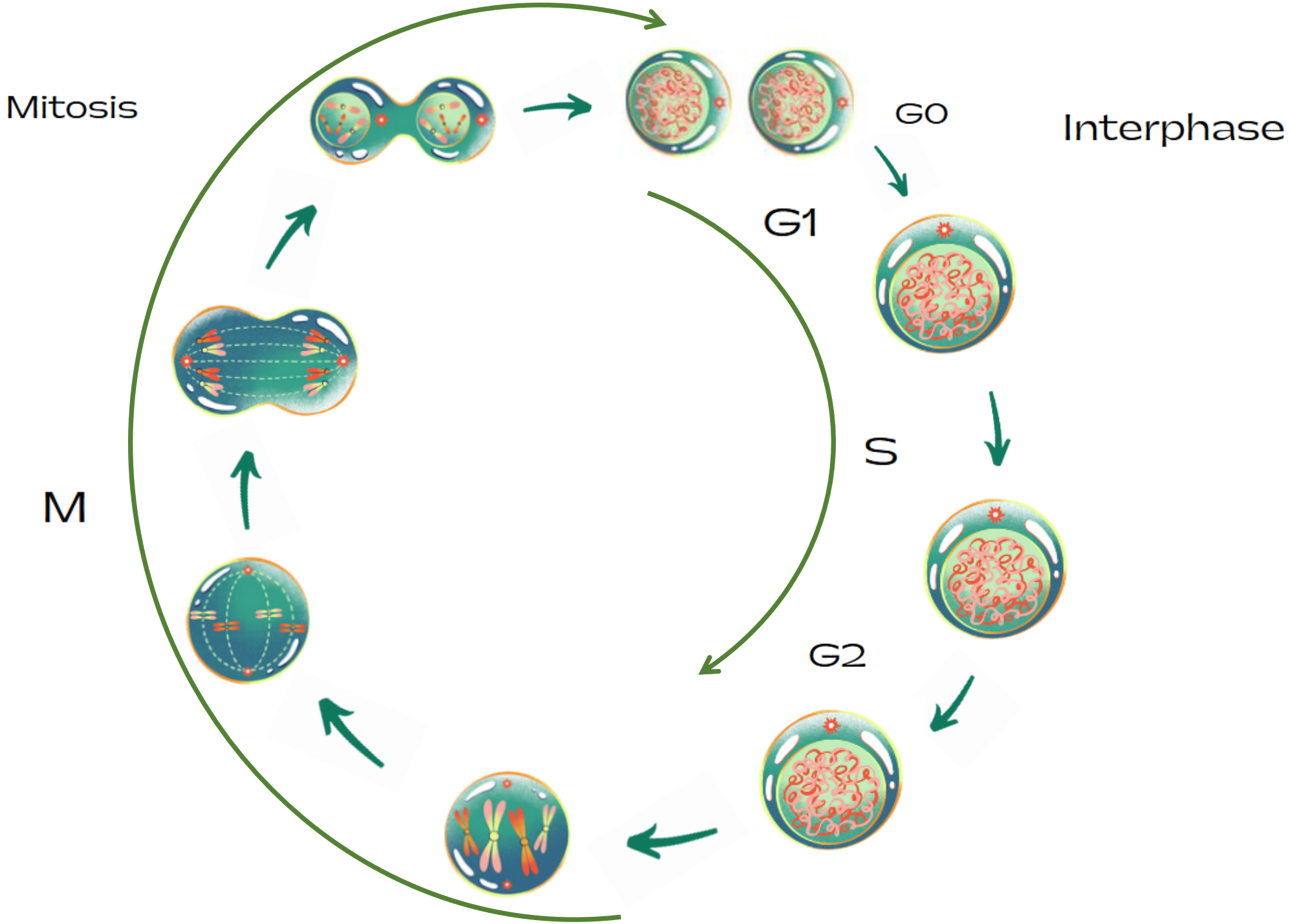
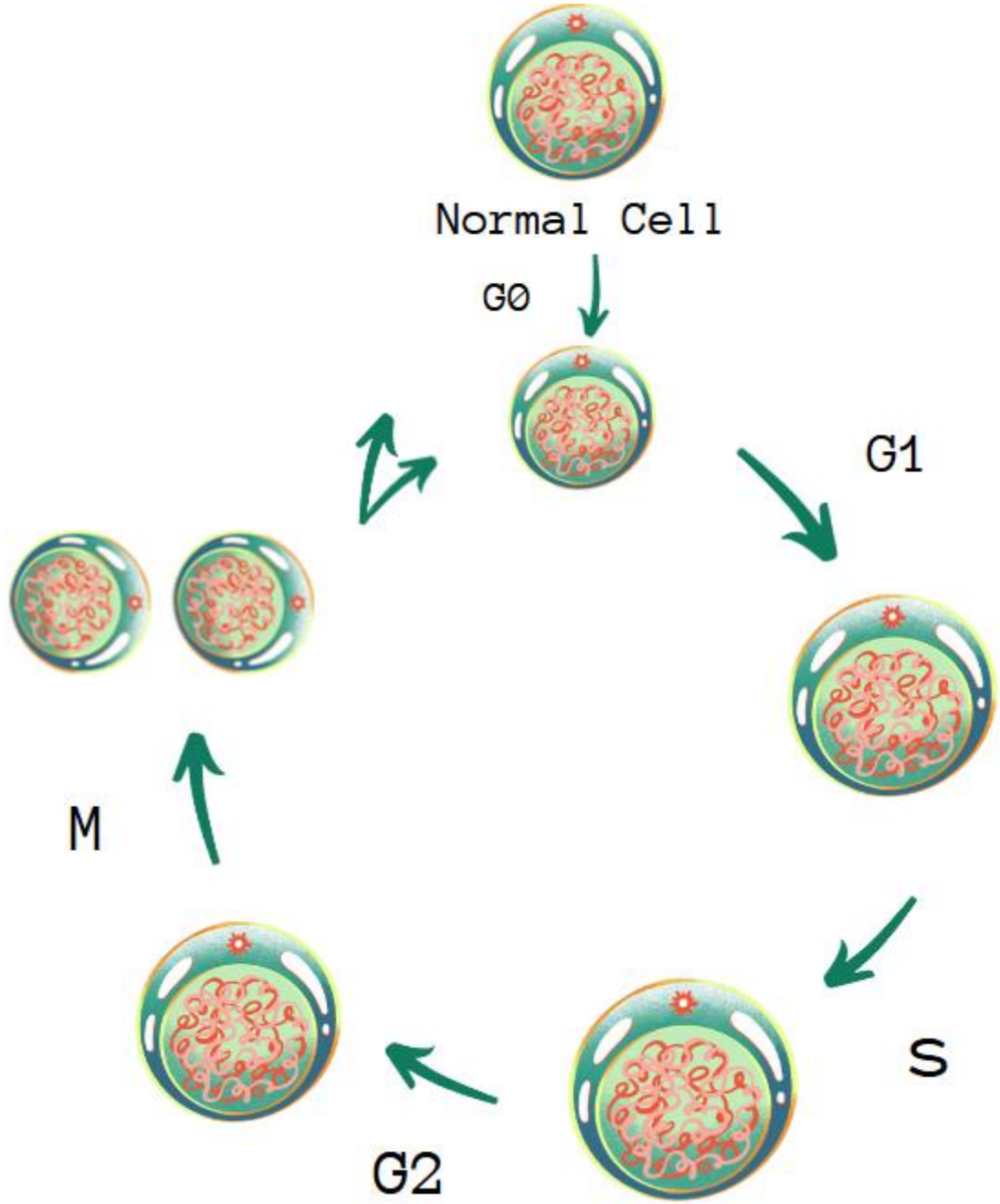
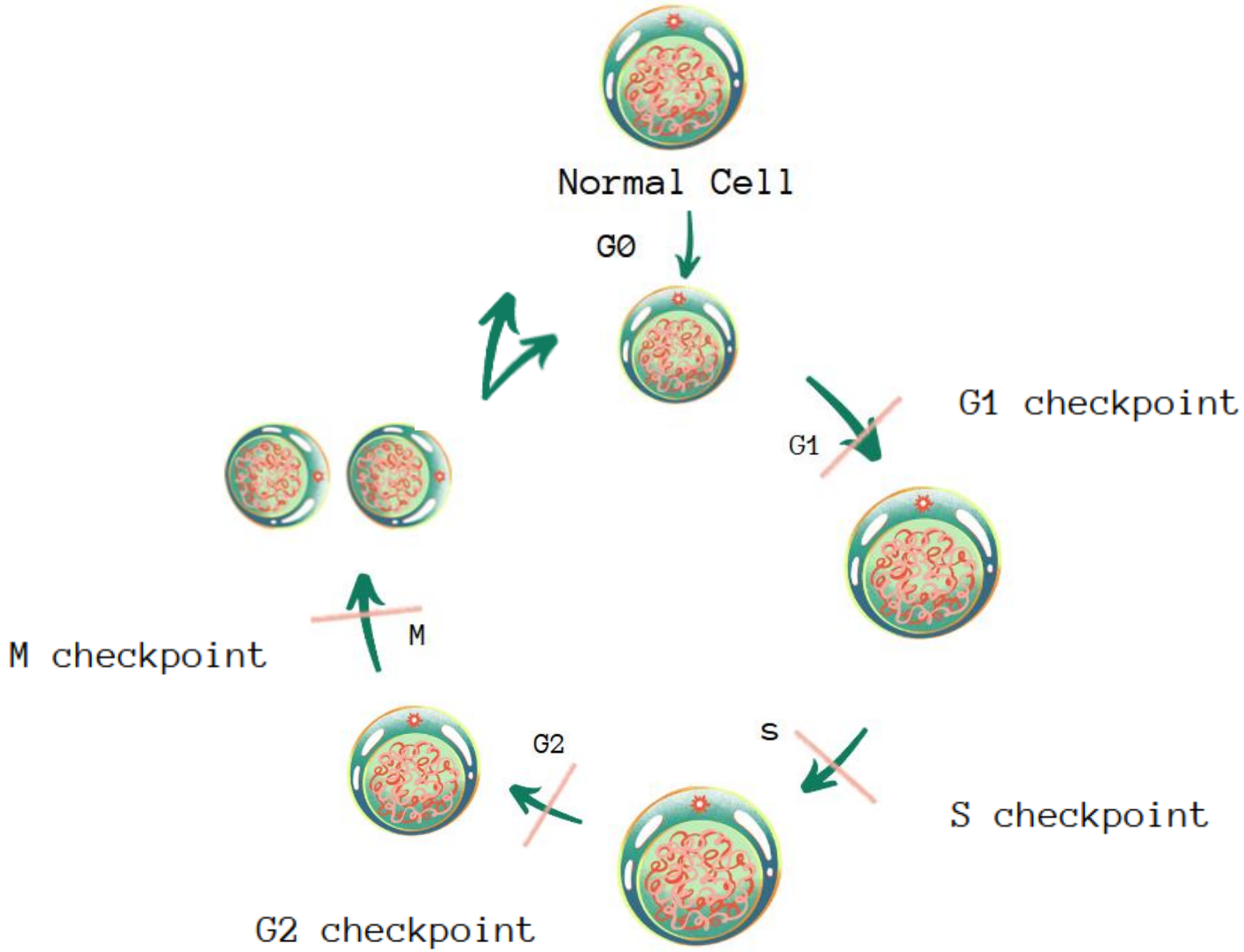
Revision Lecture

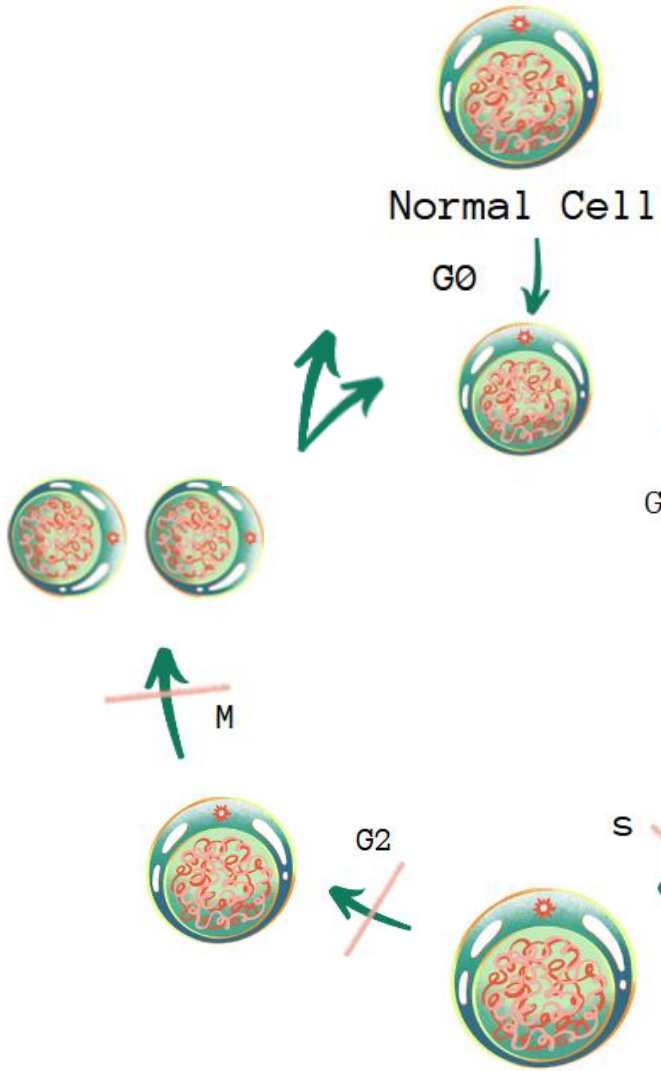
Nebras Melhem

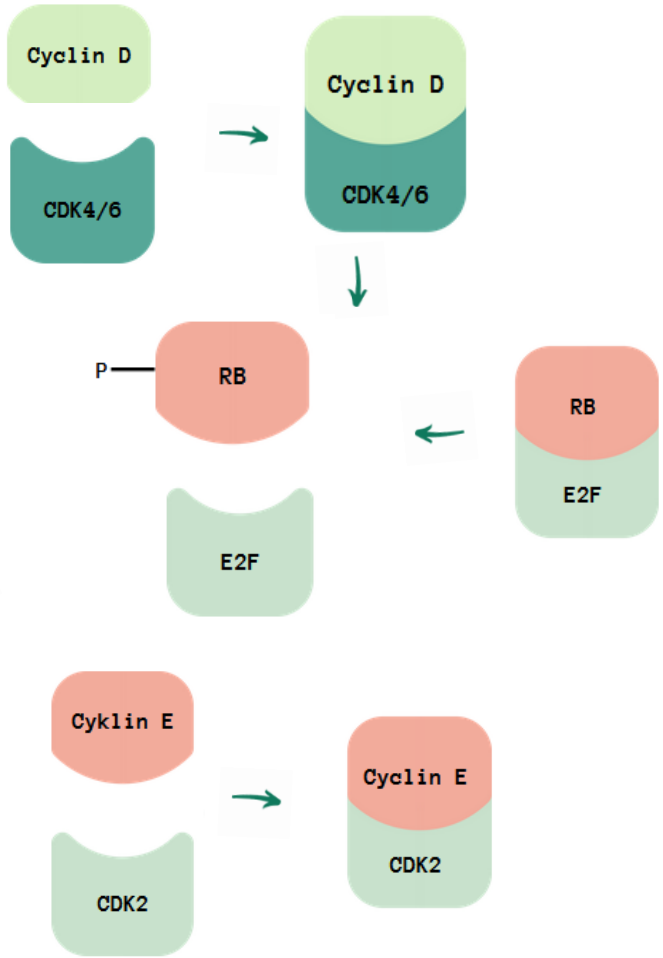

Mitosis
G0
Interphase
G1
S
M
G2

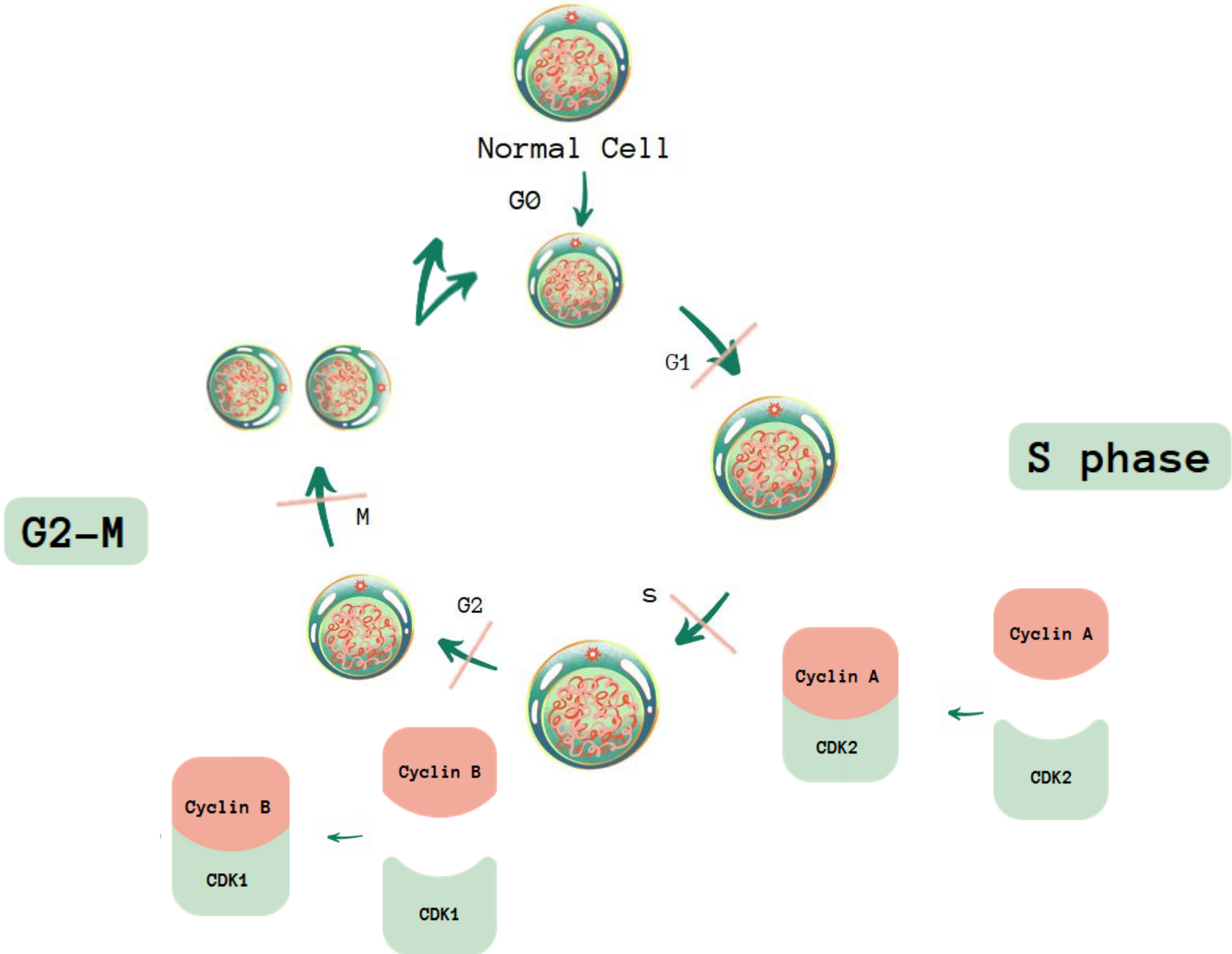

Normal Cell
G0
G1
S
G2
M


Normal Cell
G0
G1 checkpoint
G1
S
S checkpoint
G2
G2 checkpoint
M
M checkpoint

G1-S

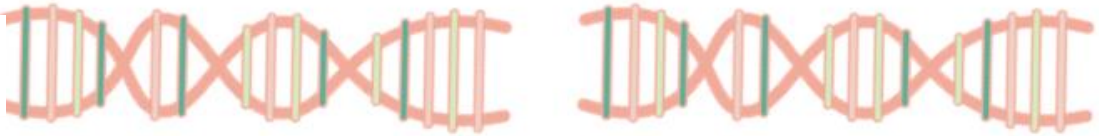

Normal Cell
G0
G1
S
G2
M


Cyclin D
CDK4/6
Cyclin D
CDK4/6
P
RB
RB
E2F
E2F
Cyklin E
CDK2
Cyclin E
CDK2

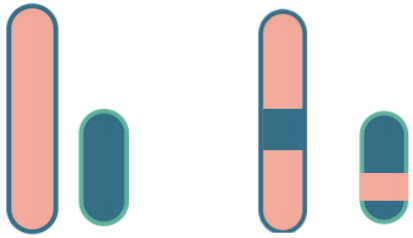

Normal Cell
G0
G1
S
G2
M
G2–M
S phase
Cyclin A
CDK2
Cyclin A
CDK2
Cyclin B
CDK1
Cyclin B
CDK1

Oncogene formation:

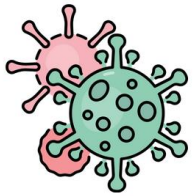
1. Point mutation



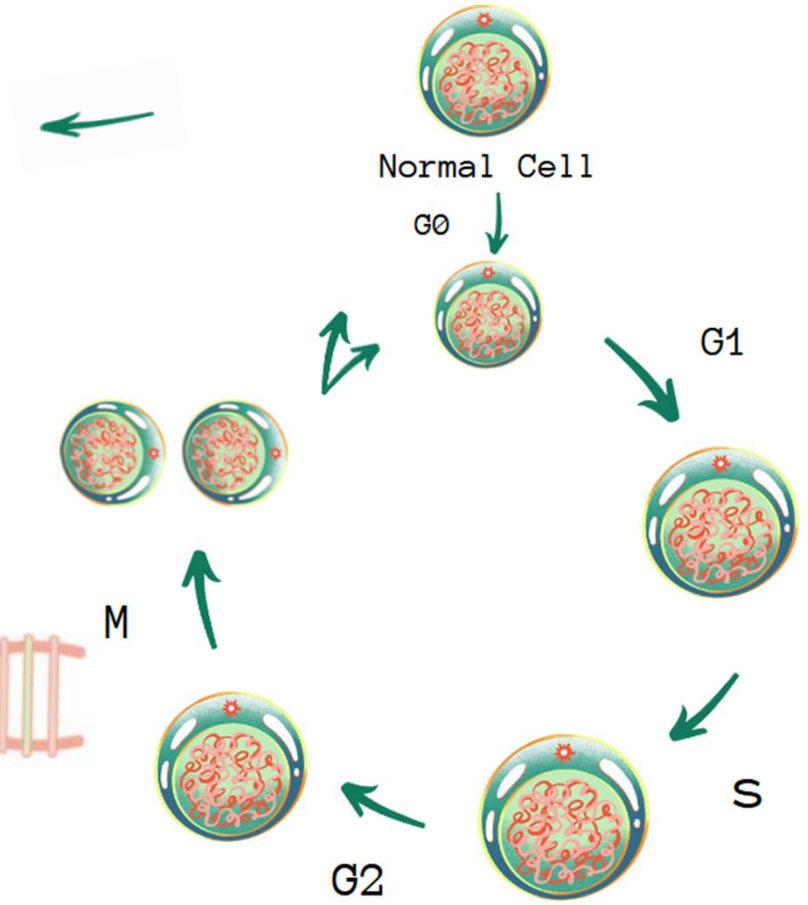
2. Gene amplification



3. Chromosomal Translocation



4. Insertion mutagenesis



Uncontrolled Cell Growth:

Oncogenes

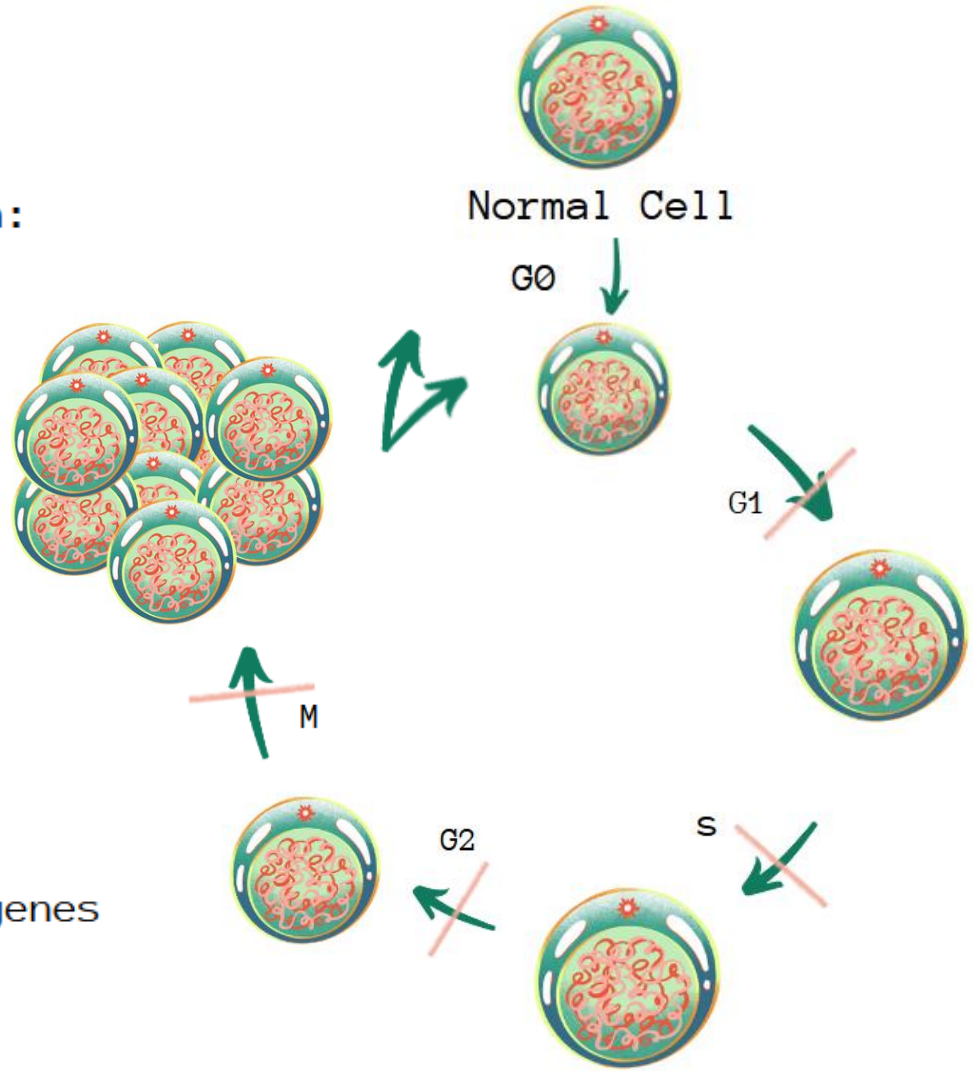
RAS Gene

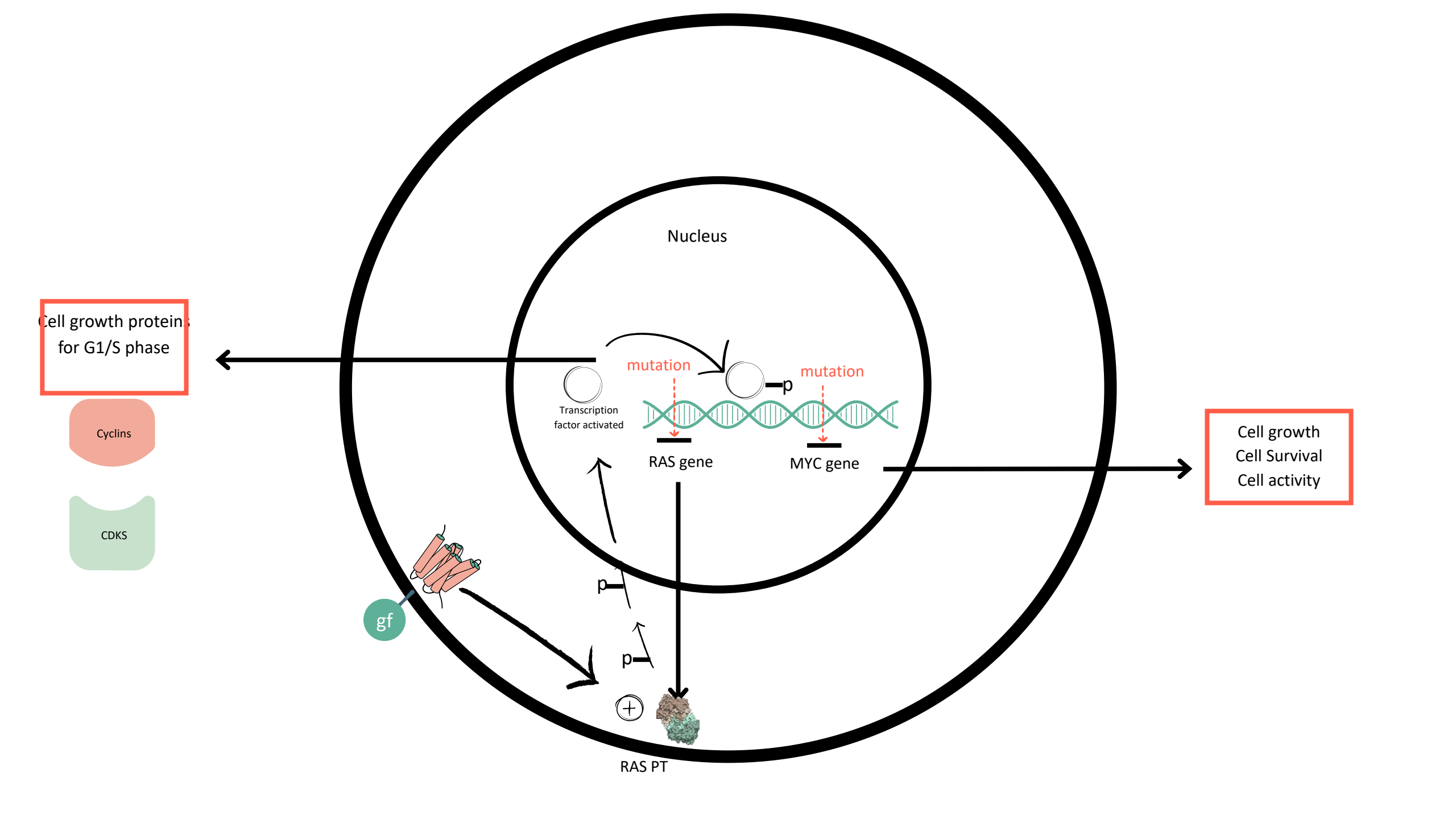
MYC Gene

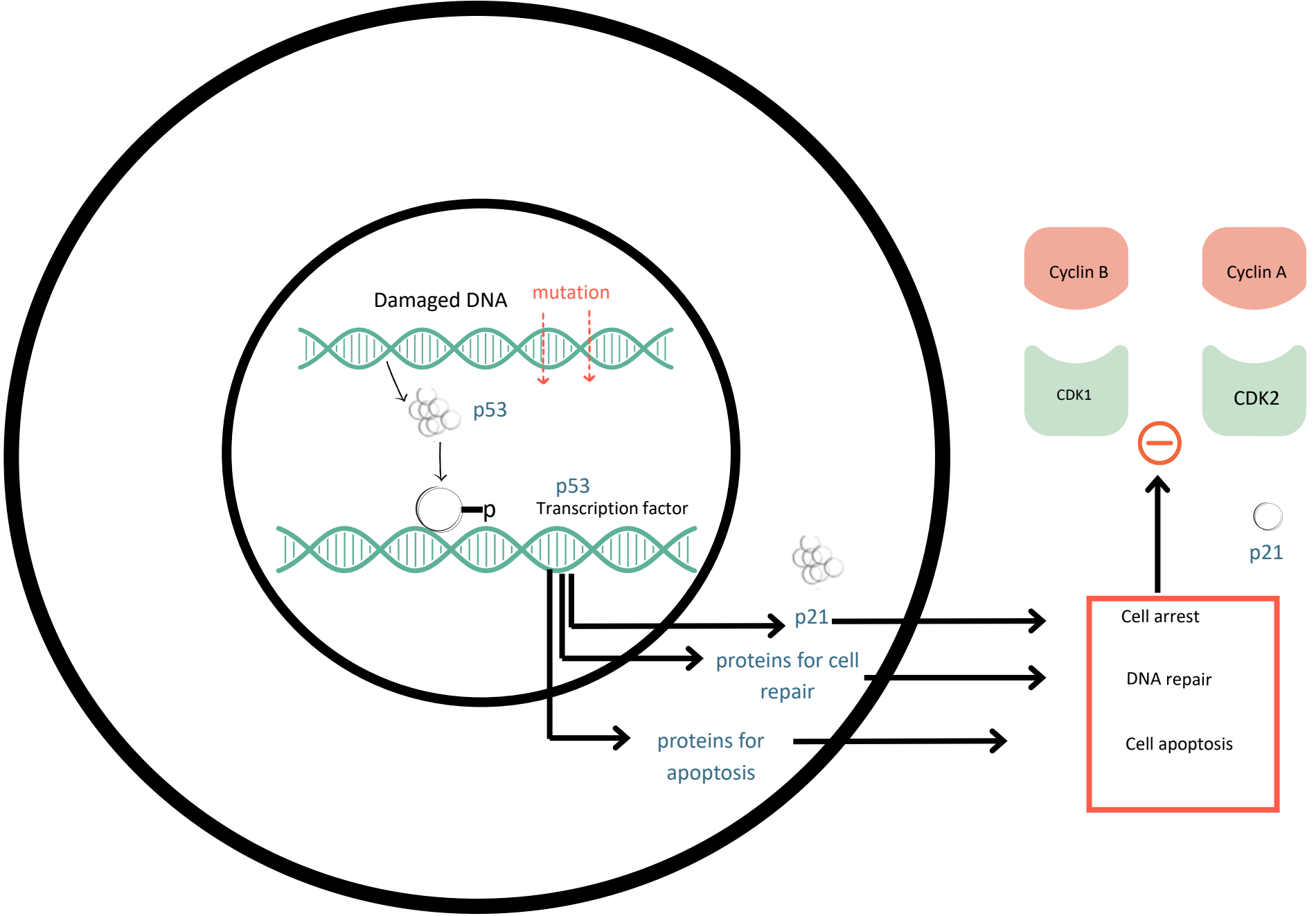
Tumor suppressor genes

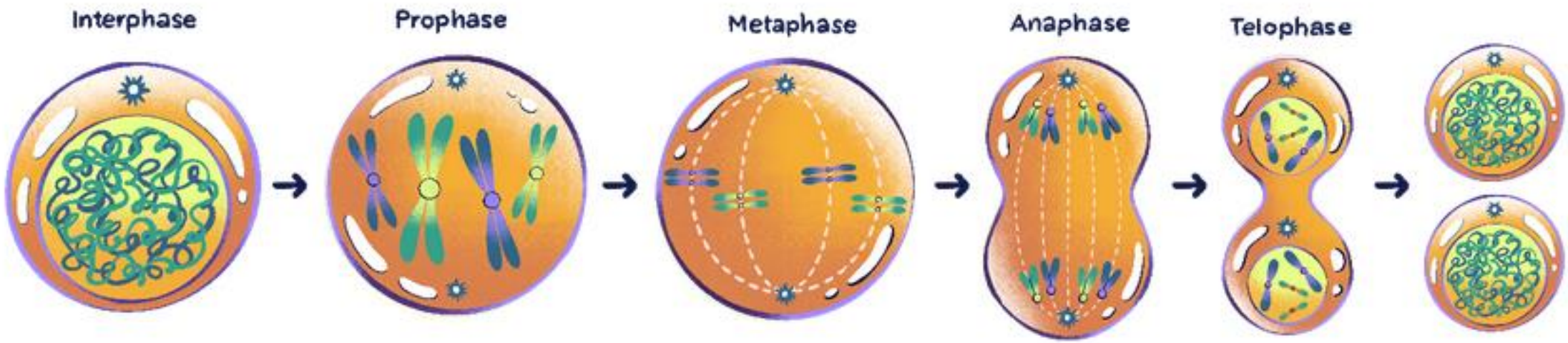
p53

BRCA 1/2




Cell growth protein
for G1/S phase
Cyclins
CDKS
Nucleus
mutation
mutation
p
Transcription
factor activated
RAS gene
MYC gene
Cell growth
Cell Survival
Cell activity
gf
p
p
RAS PT


Damaged DNA
mutation
p53
p
p53
Transcription factor
p21
proteins for cell repair
proteins for apoptosis
Cyclin B
Cyclin A
CDK1
CDK2
p21
Cell arrest
DNA repair
Cell apoptosis


Interphase
Prophase
Metaphase
Anaphase
Telophase