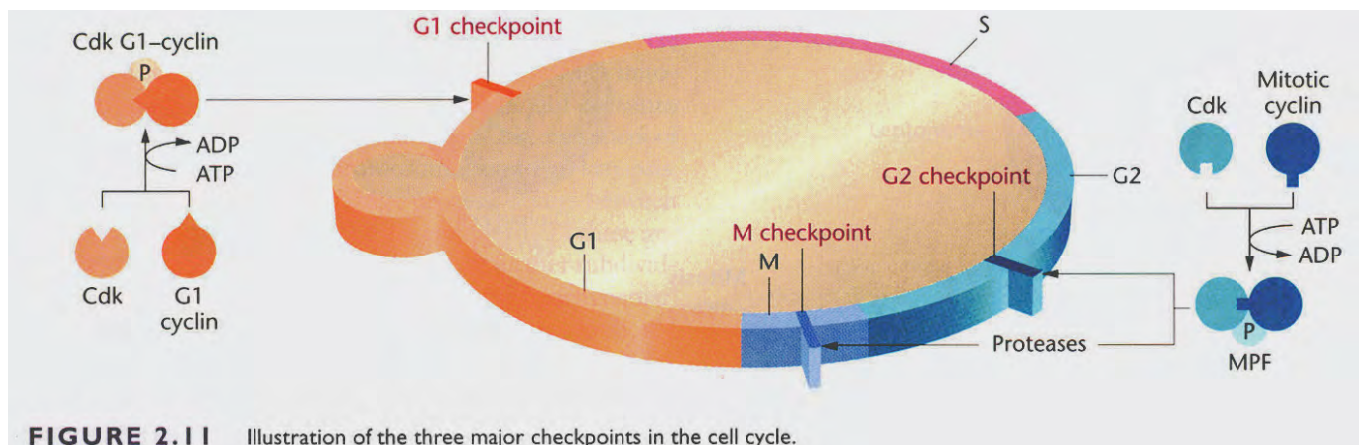
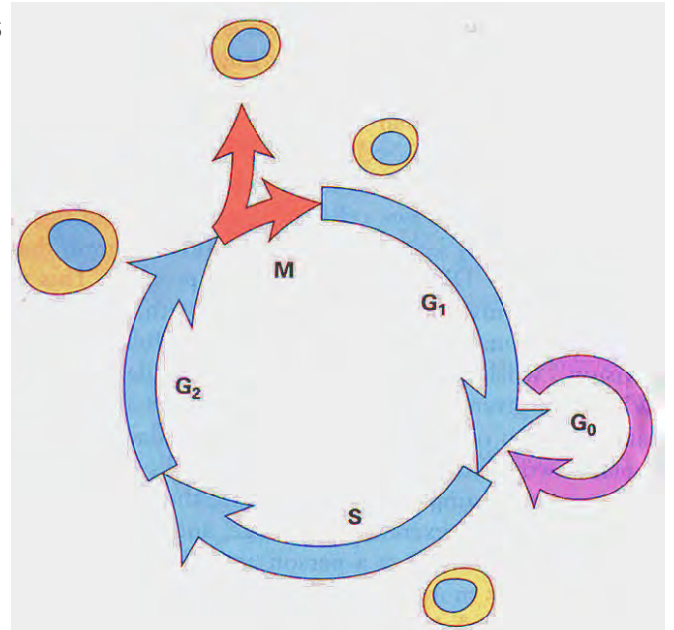
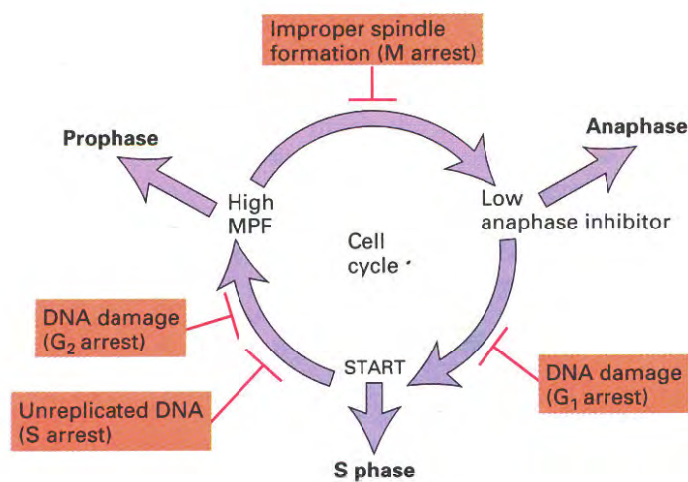


The cell cycle and associated checkpoints

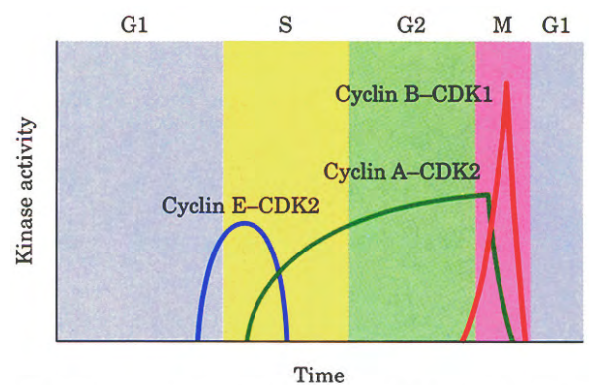
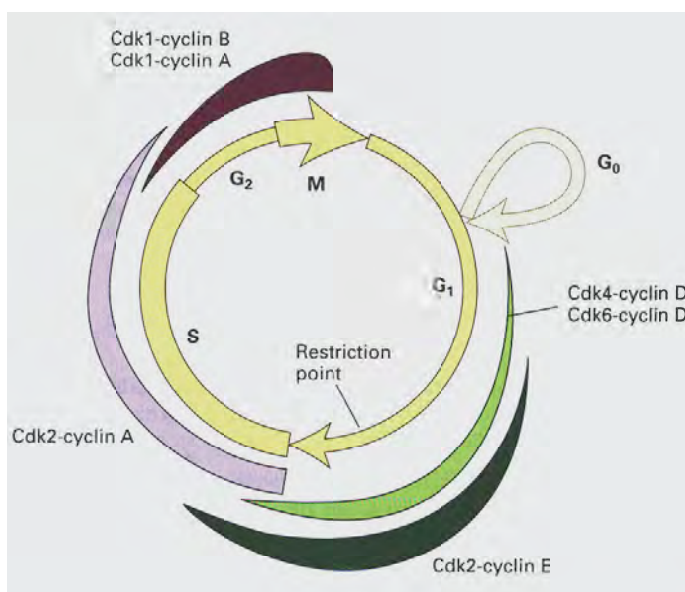
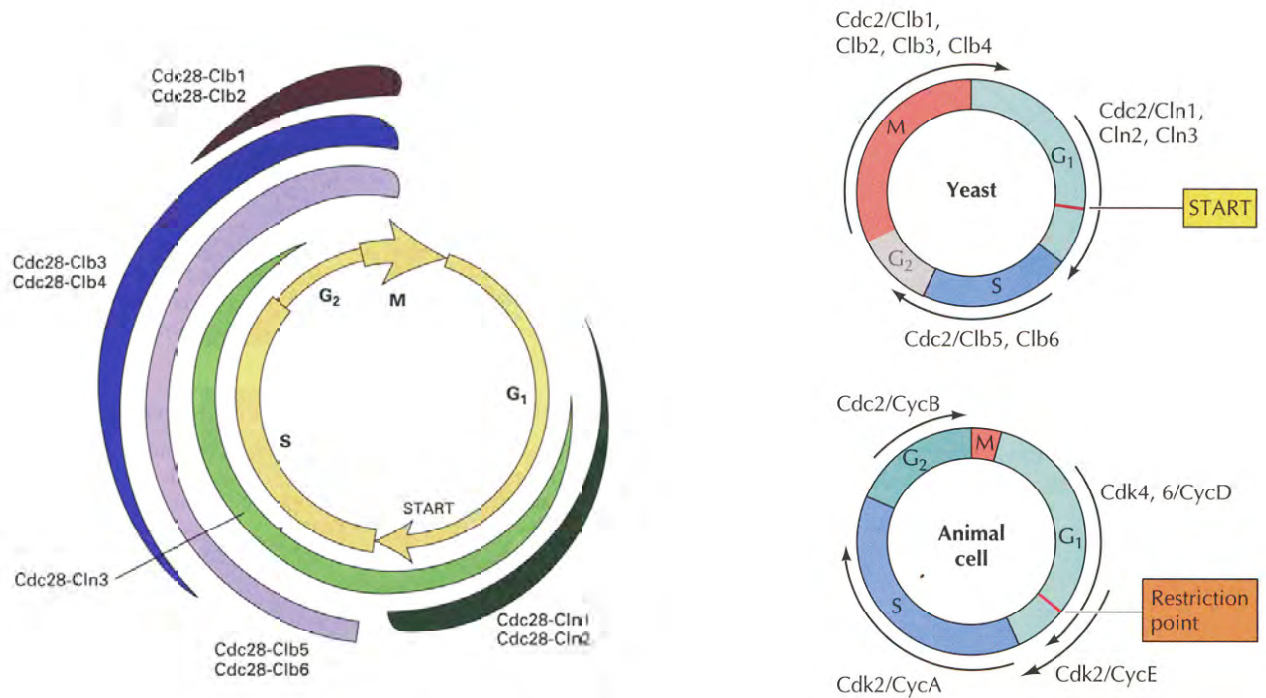


**FIGURE 2.11** Illustration of the three major checkpoints in the cell cycle.



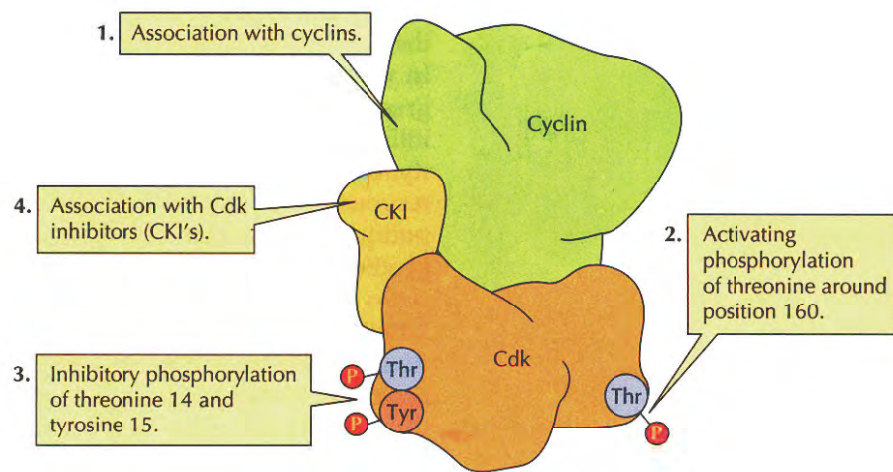
## The major players and their activities in the cell cycle

(Note the increased confusion caused by the different names in different organisms. Cdc28 is the yeast *S. cerevisiae* equivalent of cdc2 in the yeast *S. pombe*, which is much the same as cyclin A in animals. Furthermore, the first human cdk to be cloned was called (misleadingly) cdc2, but is now more regularly known as Cdk1. Be careful; the multitude of similar names in different organisms obscures underlying similarity and simplicity (well perhaps not simplicity).



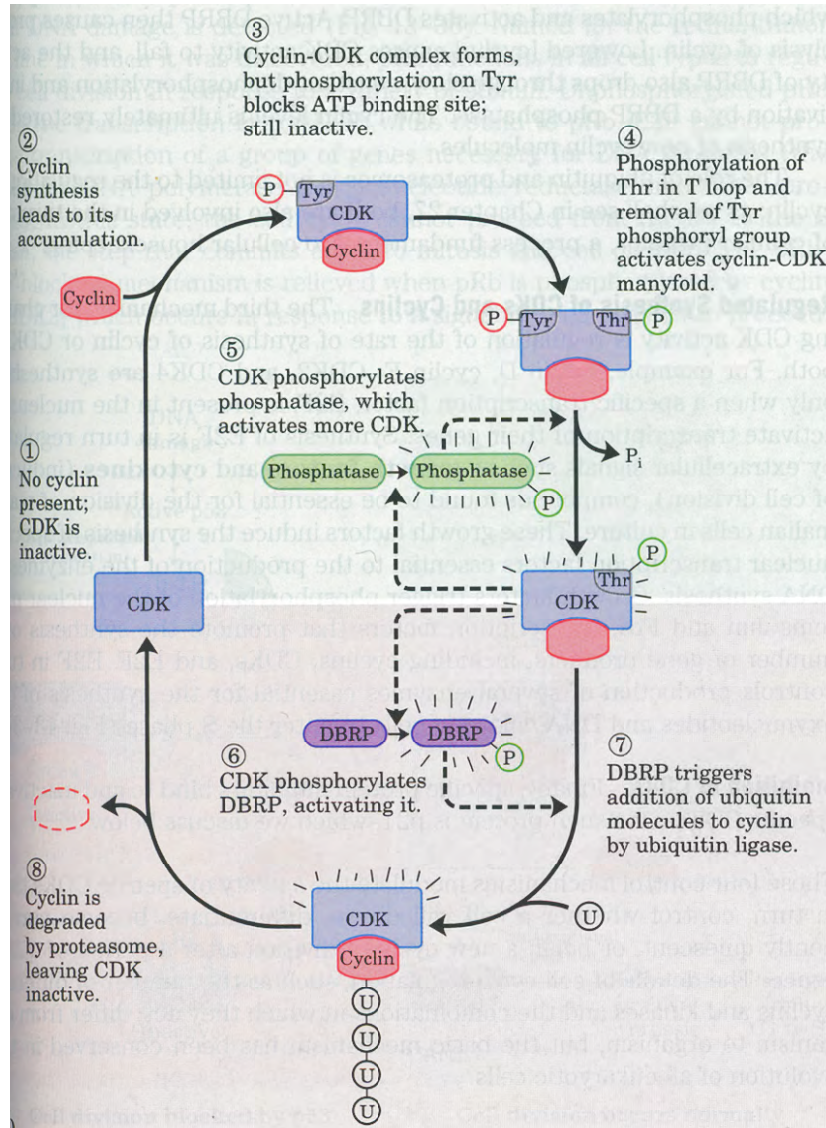
Variations in the activities of specific CDKs during the cell cycle in animals.

## How to modulate Cdk activities

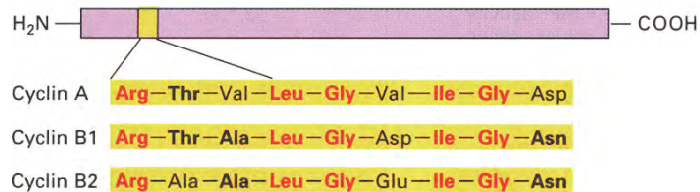




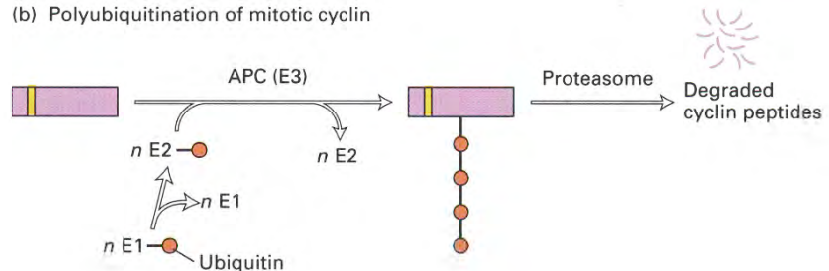
## Generic modulation of Cdk activity by cyclin degradation



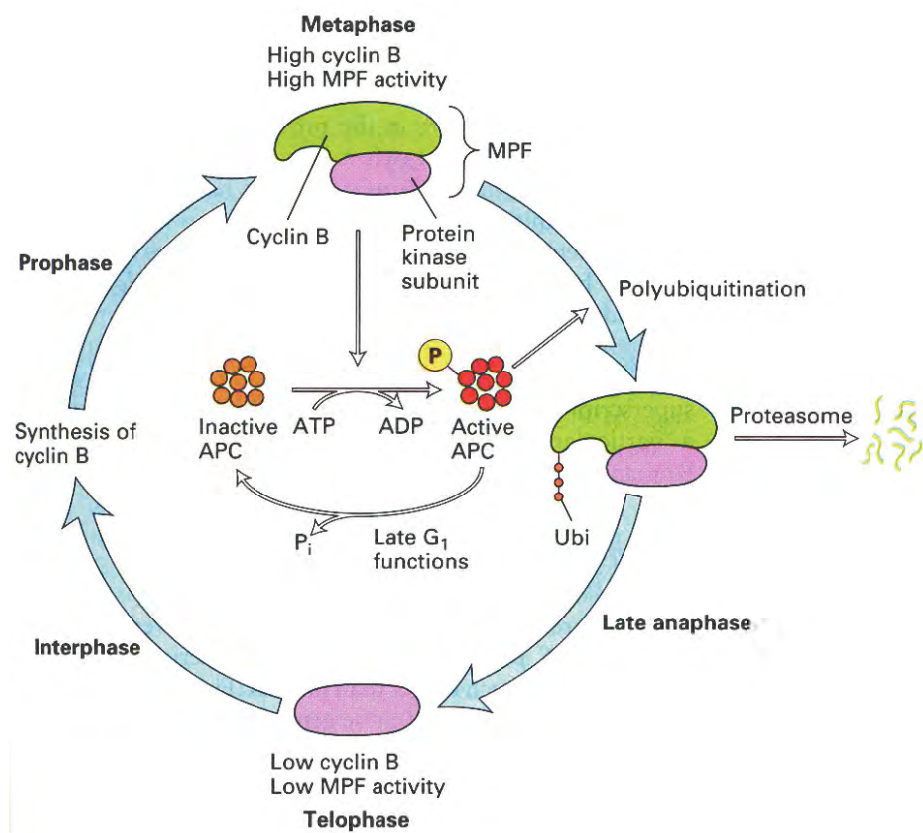
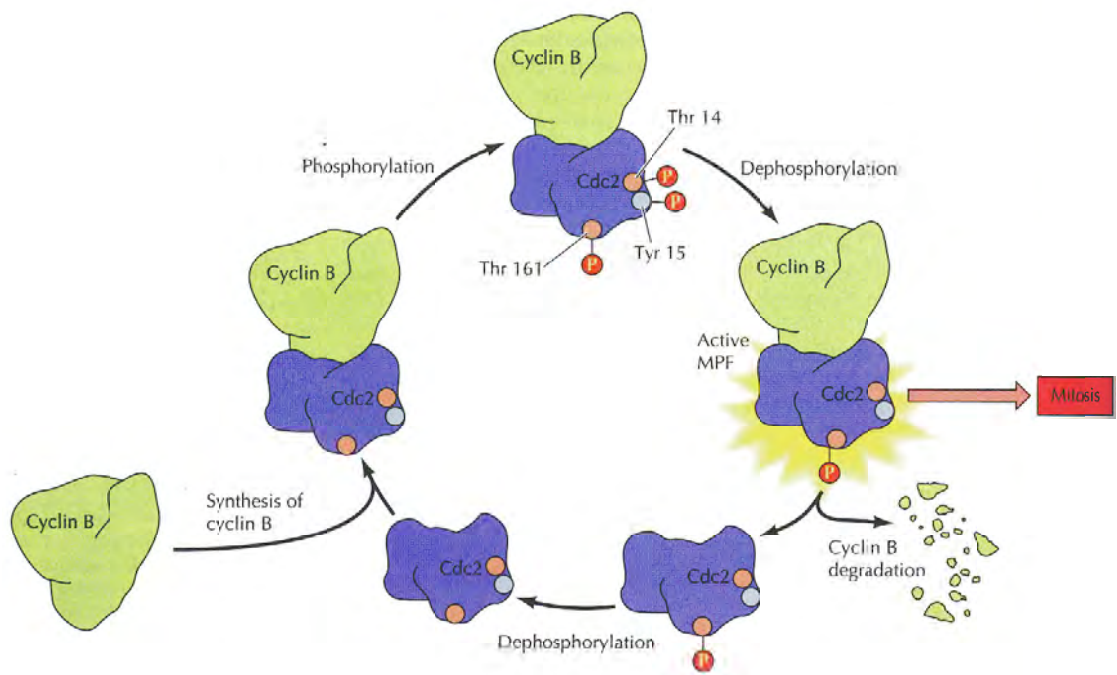
(a) Mitotic cyclin destruction box



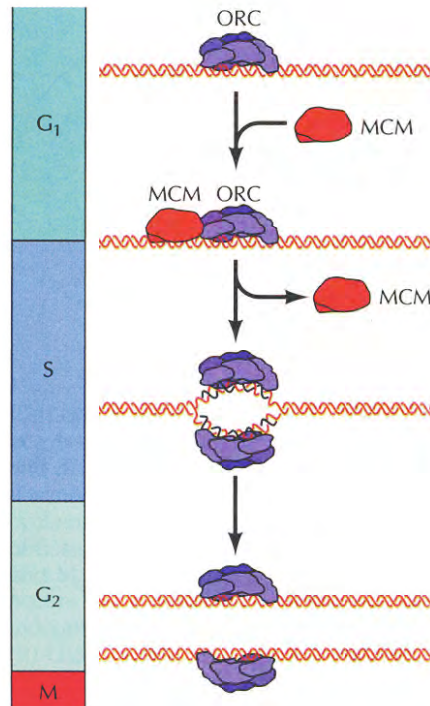
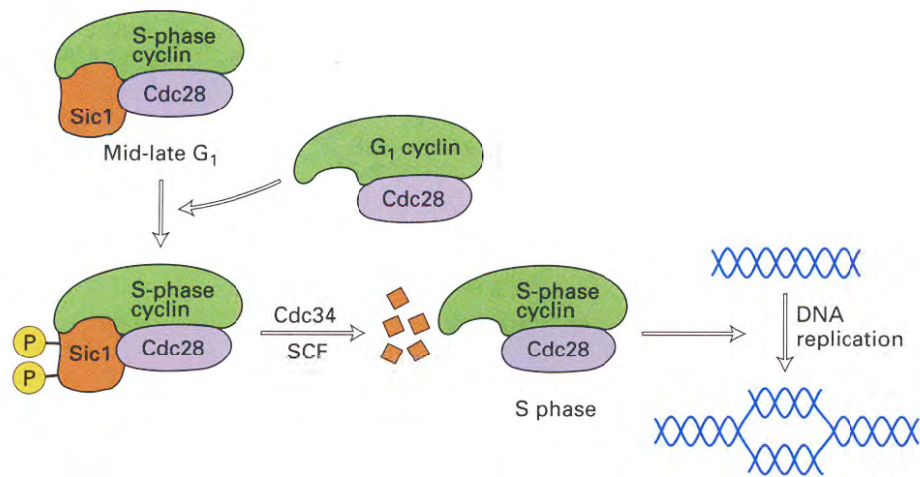
(b) Polyubiquitination of mitotic cyclin



## MPF activity in animals



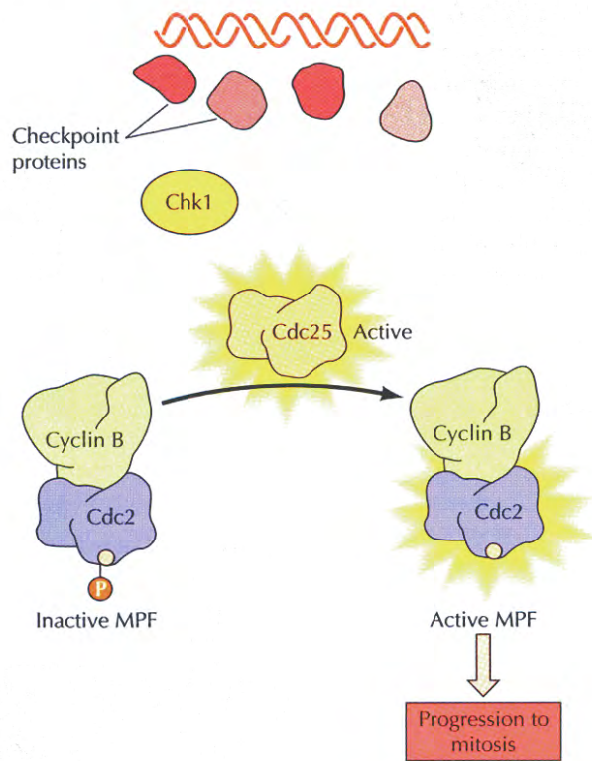
## S-phase regulation



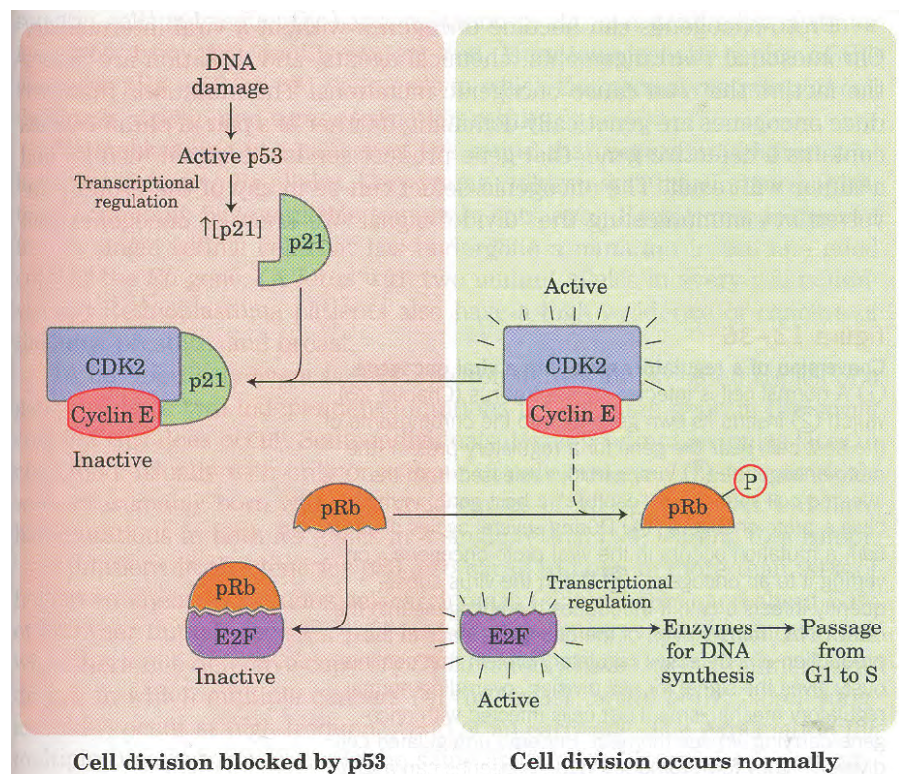
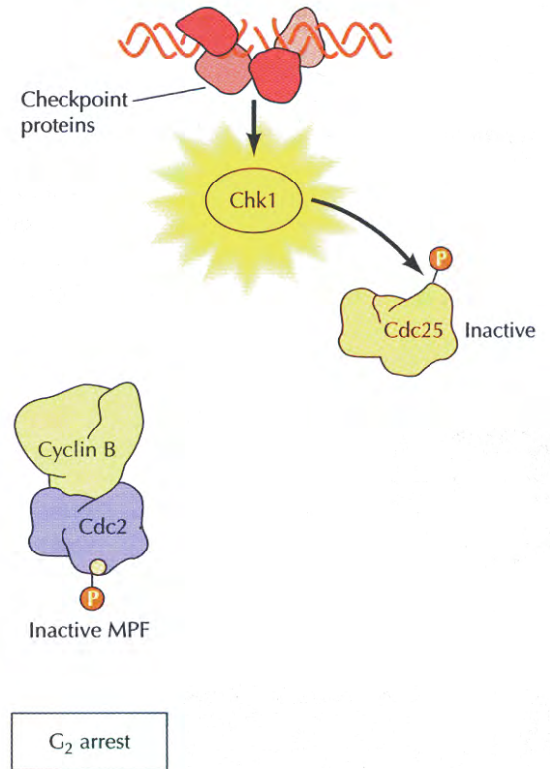


# DNA damage checkpoints

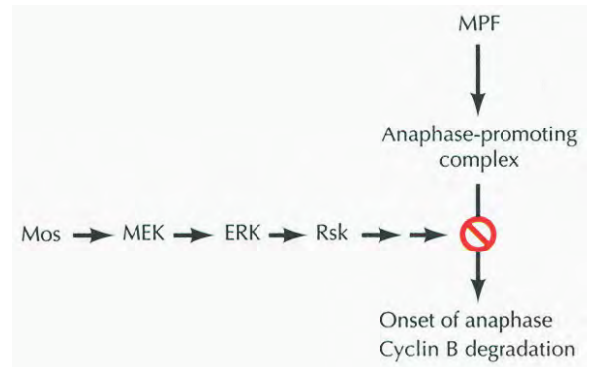
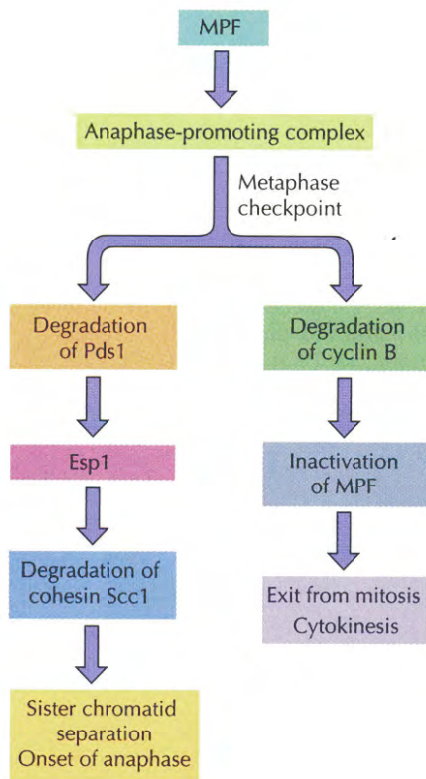
Replication completed



Unreplicated or damaged DNA



## Mitotic checkpoint (M arrest)



## Oncogenes and the cell cycle

