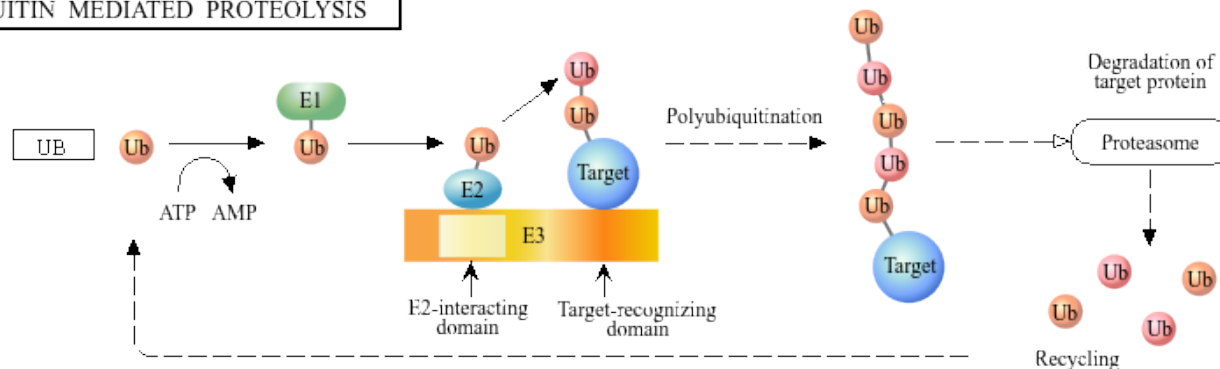


UBIQUITIN MEDIATED PROTEOLYSIS



E1
(Ubiquitin-activating enzyme)

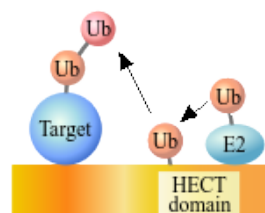
| | | | |
|------|-------|-------|-------|
| UBE1 | UBE1A | UBE1B | UBE1C |
|------|-------|-------|-------|

E2
(Ubiquitin-conjugating enzyme)

| | | | | | | | | |
|-------|--------|--------|-------|--------|--------|--------|--------|-------|
| UBE2A | UBE2B | UBE2C | UBE2D | UBE2E | UBE2F | UBE2G1 | UBE2G2 | UBE2H |
| UBE2I | UBE2J1 | UBE2J2 | UBE2K | UBE2L3 | UBE2L6 | UBE2M | UBE2N | UBE2O |
| UBE2Q | UBE2R | UBE2S | UBE2U | UBE2W | UBE2Z | AFCLCN | | |

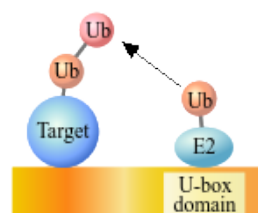
E3
(Ubiquitin ligase)

HECT type E3



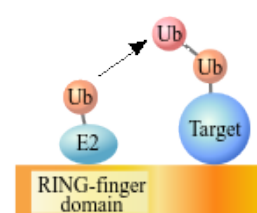
| | | | | |
|------|-------|--------|---------|---------|
| E6AP | UBE3B | UBE3C | Straupf | Itch |
| WWP1 | WWP2 | TRIP12 | NEDD4 | ARF-BP1 |
| EDD1 | HERC1 | HERC2 | HERC3 | HERC4 |

U-box type E3



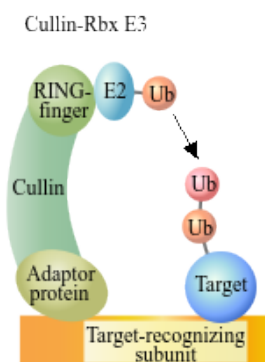
| | | |
|-------|-------|------|
| UBE4A | UBE4B | CHIP |
| CYC4 | PRP19 | UIP5 |

single RING-finger type E3



| | | | | | | |
|-------|--------|--------|--------|--------|--------|-------|
| Mdm2 | CBL | Parkin | SHAH-1 | PML | TRAF6 | MEKK1 |
| COP1 | PIRHR2 | cIAPs | PIAS | SYVN | NHLRC1 | AIRE |
| MGRN1 | BRCA1 | FANCL | MID1 | Trim32 | Trim37 | |

multi subunit RING-finger type E3



| | RING finger | Cullin | Adaptor protein | Target recognizing subunit |
|--------------|-------------|--------|-----------------|----------------------------|
| SCF complex | RBX1 | Cul1 | Skp1 | F-box |
| ECV complex | RBX1 | Cul2 | EloB EloC | WHLbox |
| Cul3 complex | RBX1 | Cul3 | | BTB |
| Cul4 complex | RBX1 | Cul4 | DDB1 | DCAF |
| ECS complex | RBX2 | Cul5 | EloB EloC | SOC3box |
| Cul7 complex | RBX1 | Cul7 | Skp1 | Fbxw8 |

| | RING finger | Cullin | Adaptor protein | Target recognizing subunit | Other subunits |
|-------|-------------|--------|-----------------|----------------------------|---|
| Apc/C | Apc11 | Apc2 | ? | Cdc20 Cdh1 | Apc1 Apc3 Apc4 Apc5 Apc6 Apc7 Apc8 Apc9 Apc10 Apc12 Apc13 Apc15 Apc16 |