11.6 Regulation of Transcription Factor Activity (p. 481-484)

1. expression and activity of TF
2. nuclear receptors
3. ligand dependent activation

How do different cells transcribe different genes?

1. TF expression
   - Extracellular signals
     - Extracellular signals

2. TF activity
   - proteins
   - hormones

Nuclear Receptors:
1. bind hormone
2. activate (usually) txn

Nuclear Receptor Response Elements

| Homodimers | (a) GRE | 5' AGAACAC(N)_3 TGTTCT 3' |
|           | 3' TCTTG(N)_3 ACAAGA 5' |
|           | (b) ERE | 5' AGGTCA(N)_3 TGACCT 3' |
|           | 3' TCCAGT(N)_3 ACTGGA 5' |
|           | (c) VDRE | 5' AGGTCA(N)_3 AGGTCA 3' |
|           | 3' TCCAGT(N)_3 TCCAGT 5' |
| Heterodimers | (d) TRE | 5' AGGTCA(N)_4 AGGTCA 3' |
|           | 3' TCCAGT(N)_4 TCCAGT 5' |
|           | (e) RARE | 5' AGGTCA(N)_5 AGGTCA 3' |
|           | 3' TCCAGT(N)_5 TCCAGT 5' |
Heterodimeric nuclear receptors:
1. nuclear
2. bind DNA
3. repress txn in absence of ligand.
4. activate txn upon binding ligand. How?

Homodimeric nuclear receptors:
1. - ligand = cytoplasmic
2. + ligand = nuclear translocation
3. activation of txn. How?

11.7 Regulated elongation and termination of transcription (p. 485-486)
1. termination after PolyA
2. anti-termination (HIV)
   - Tat protein binds TAR RNA element
   - recruitment of kinase
   - elongation permitted
3. Pol II pausing (HSP genes)
   - Pol II transcribes, then pauses
   - binding of activated HSTF to prom-prox of hsp gene
   - elongation proceeds