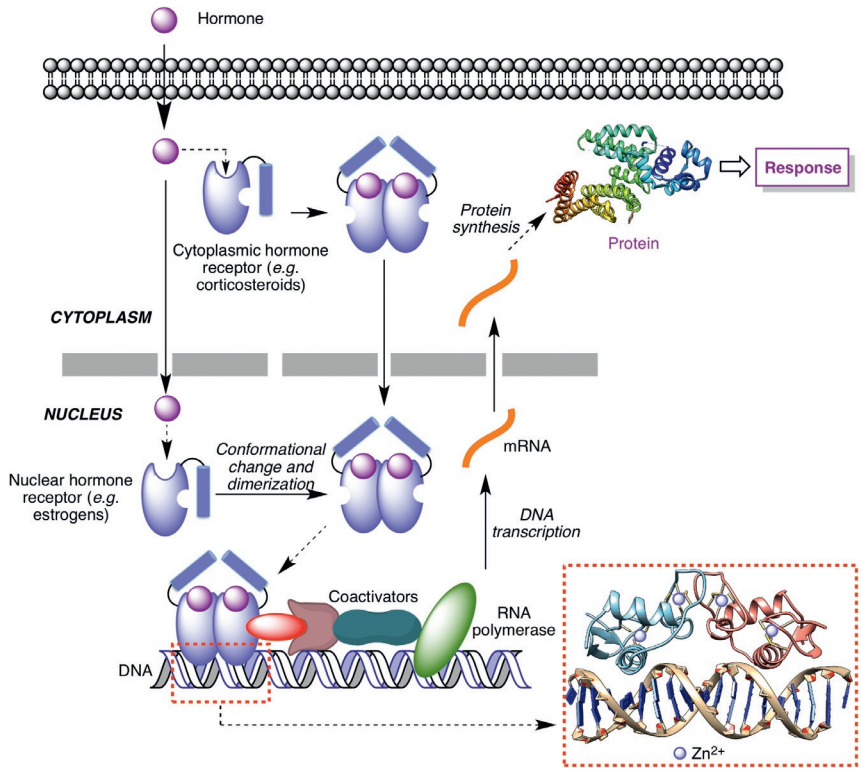
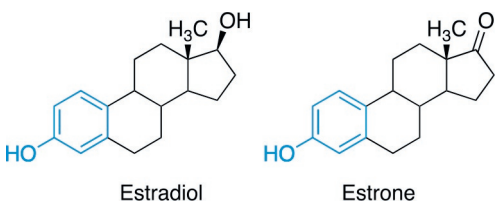


FIGURE 3.1

Sequence of events associated with steroid hormone activity. The structure of the estrogen receptor bound to DNA was generated from Proten Data Bank, reference 1HCQ and displayed with Chimera 1.8.1.

structural feature that differentiates these compounds from other steroidal hormones is an aromatic A ring bearing a phenol functional group.



Although early models proposed that the estrogen receptors (ERs) were cytoplasmic and were translocated to the nucleus after binding to the estrogen molecules, subsequent studies with monoclonal antibodies revealed that ERs were located in the nucleus.

Regulation of gene transcription by estrogens involves regions of DNA called estrogen response elements (EREs) that bind to several nuclear proteins (coactivators), forming a multi-subunit transcriptional complex. Occupation of the steroid binding domain in the receptor by the hormone is followed by receptor dimerization, which is essential for DNA binding. Upon estrogen recognition,