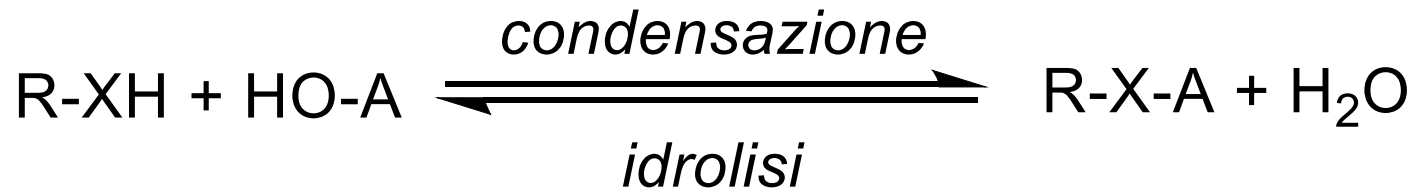
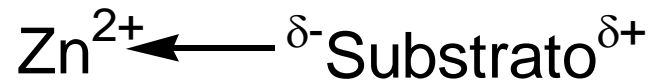


Zn²⁺ come acido di Lewis



X = NH, A = -CO-R

peptidasi, lattamasi, collagenasi

X = O, A = -CO-R

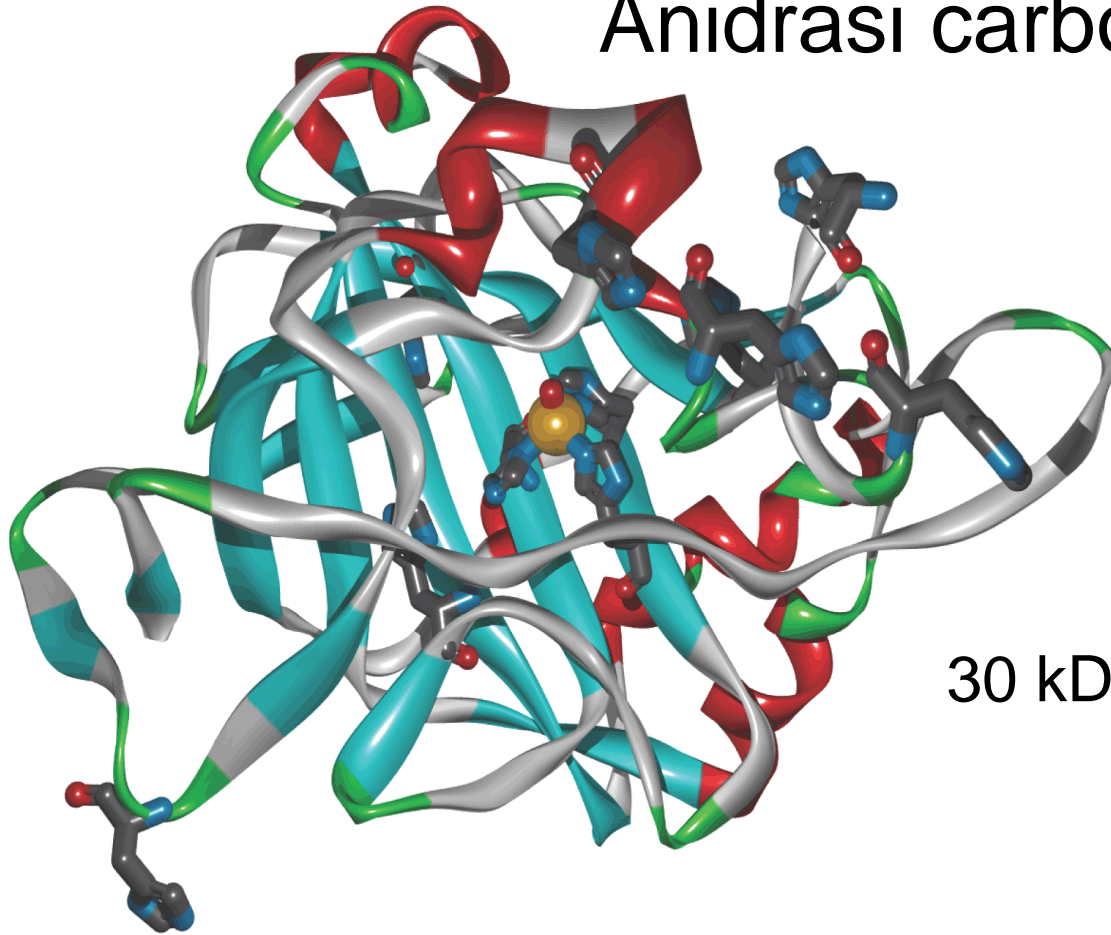
esterasi

X = O, A = PO₃²⁻

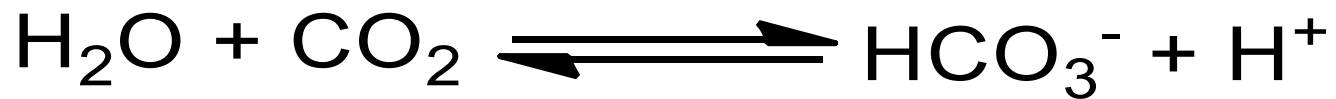
fosfatasi, nucleasi

- Esclusivamente Zn^{2+}
- d^{10} (no LFSE)
- Numeri di coordinazione e geometria flessibili
- Ruolo catalitico (acido di Lewis) o strutturale

Anidrase carbonica

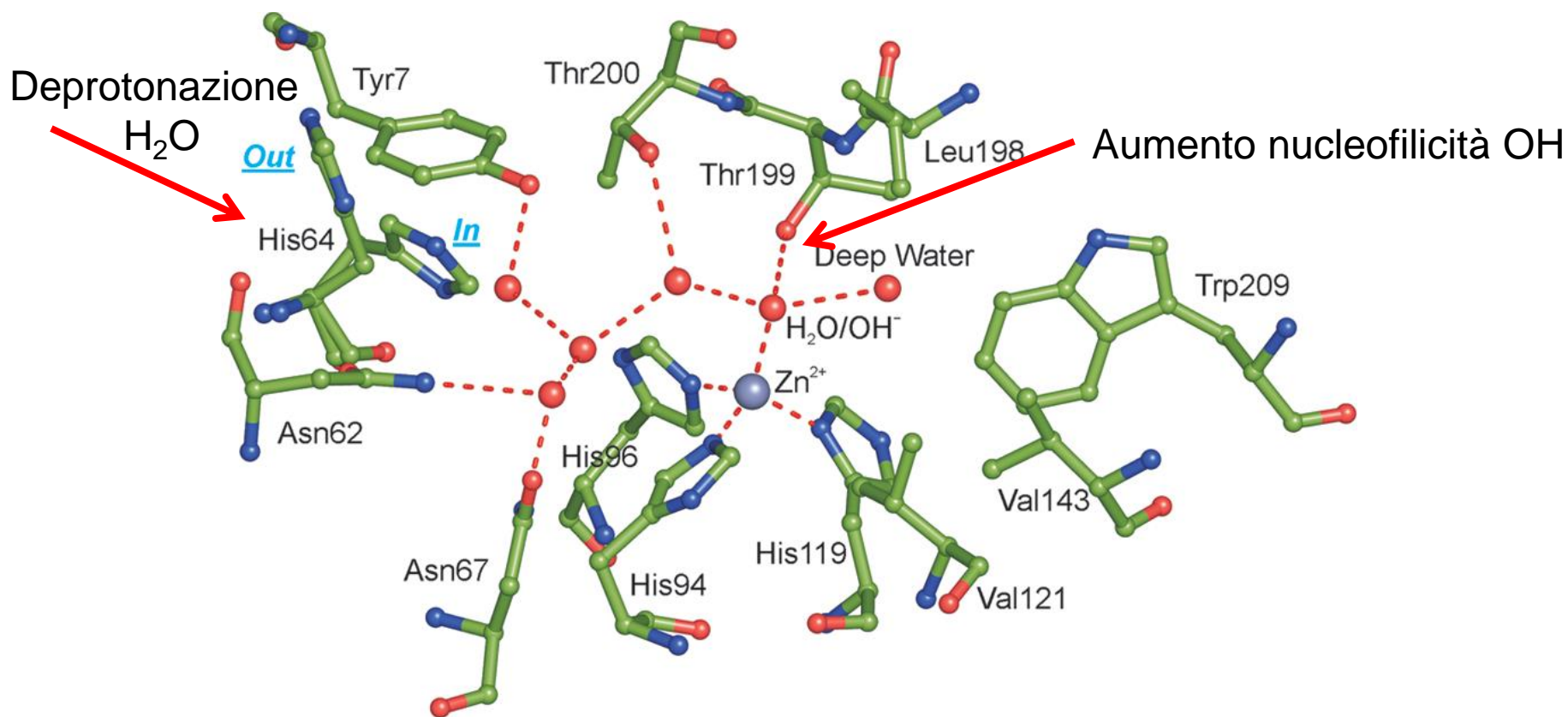
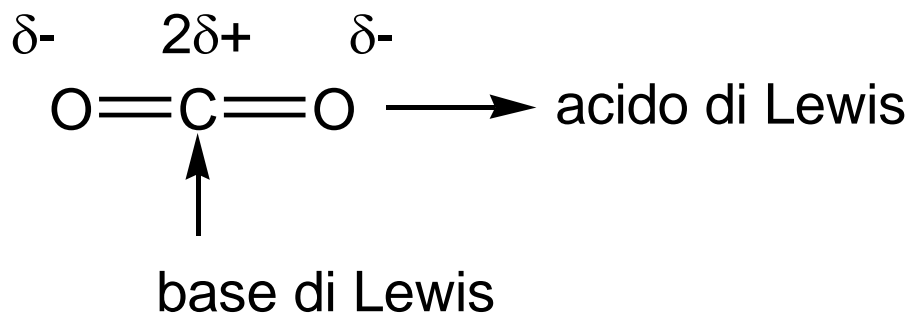


30 kDa, 259 a.a.

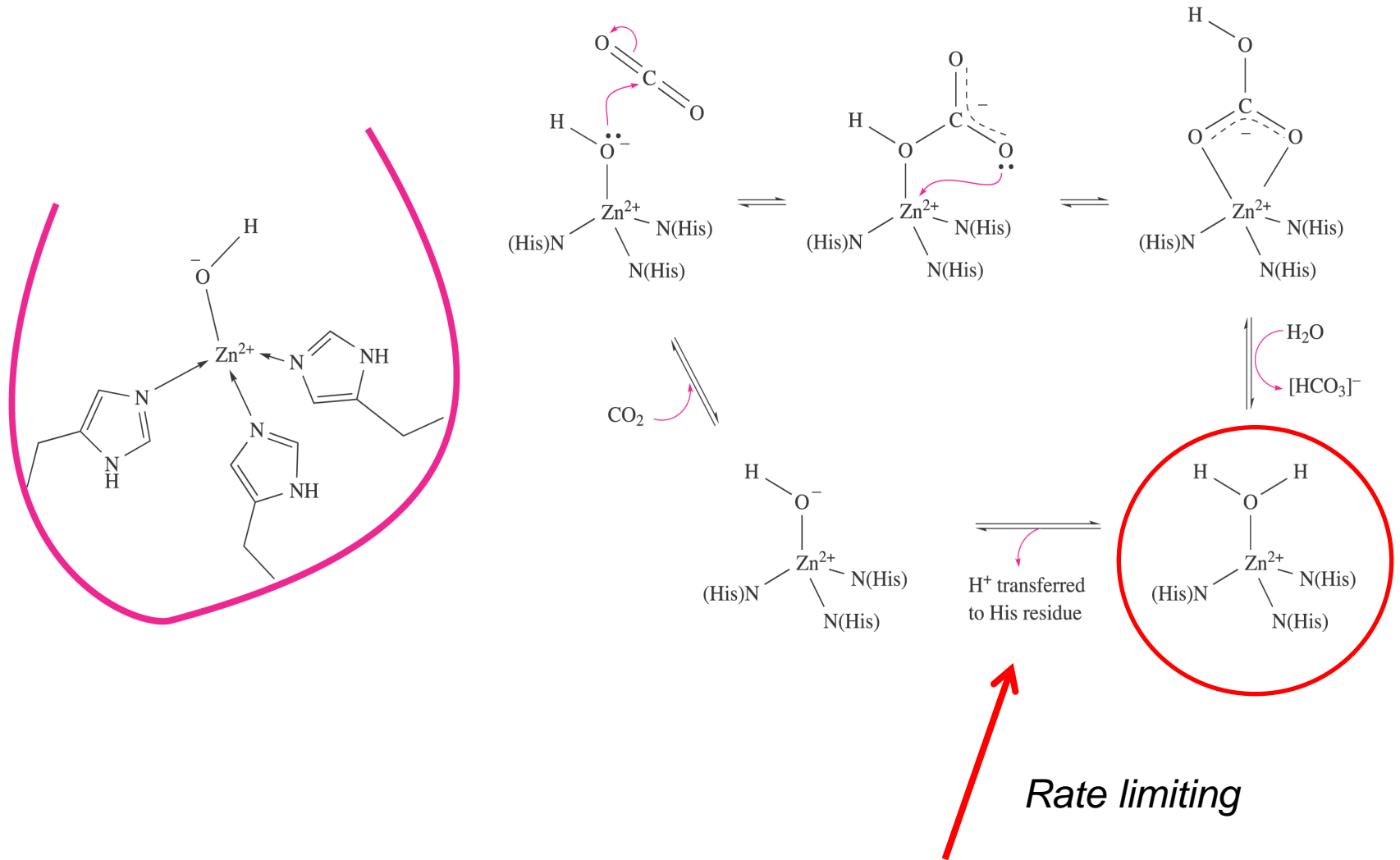


$$k \approx 10^{-1} \text{ s}^{-1} \rightarrow 10^6 \text{ s}^{-1}$$

Sito catalitico della anidraasi carbonica

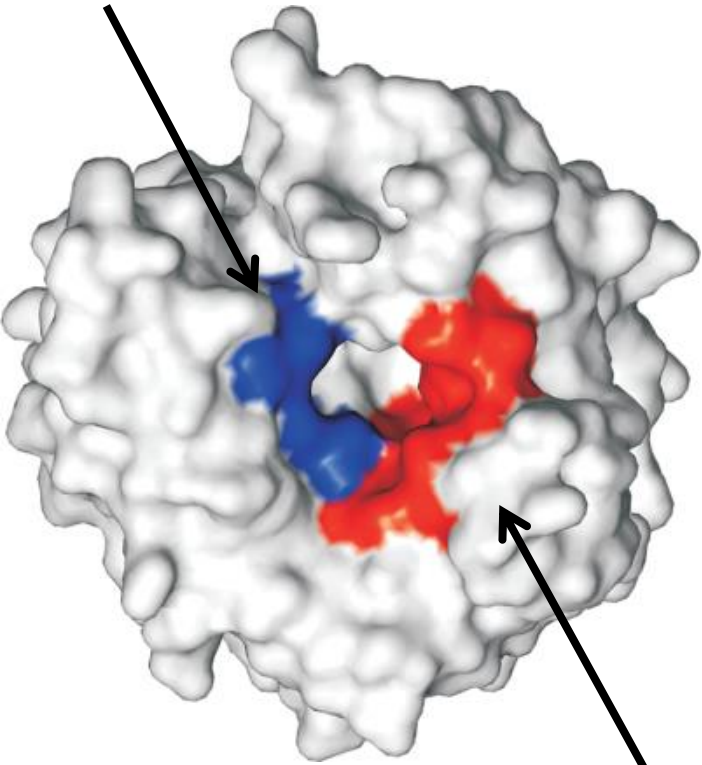


Ciclo catalitico della anidraasi carbonica

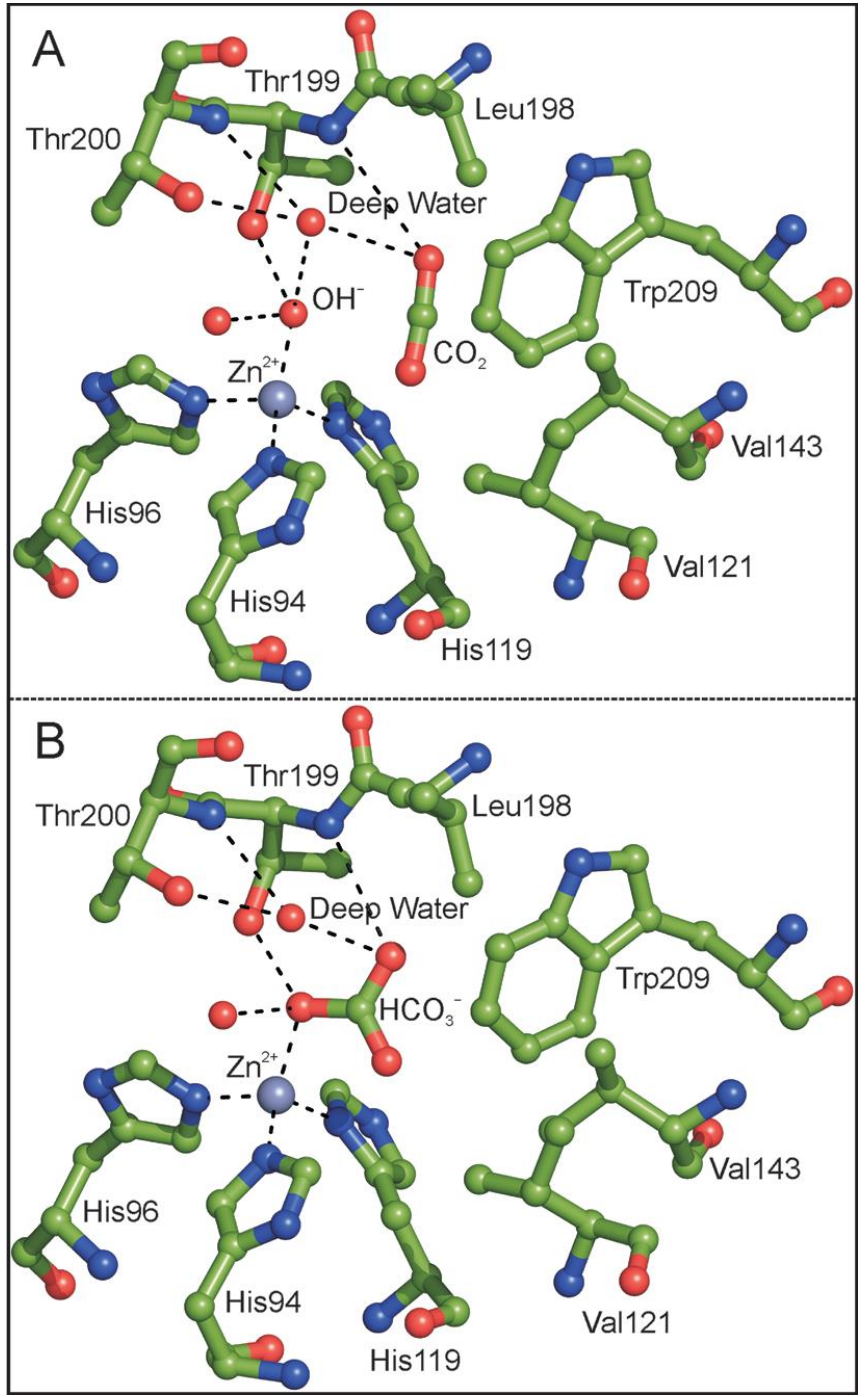


Cavità del sito catalitico nelle CA

Regione idrofilica

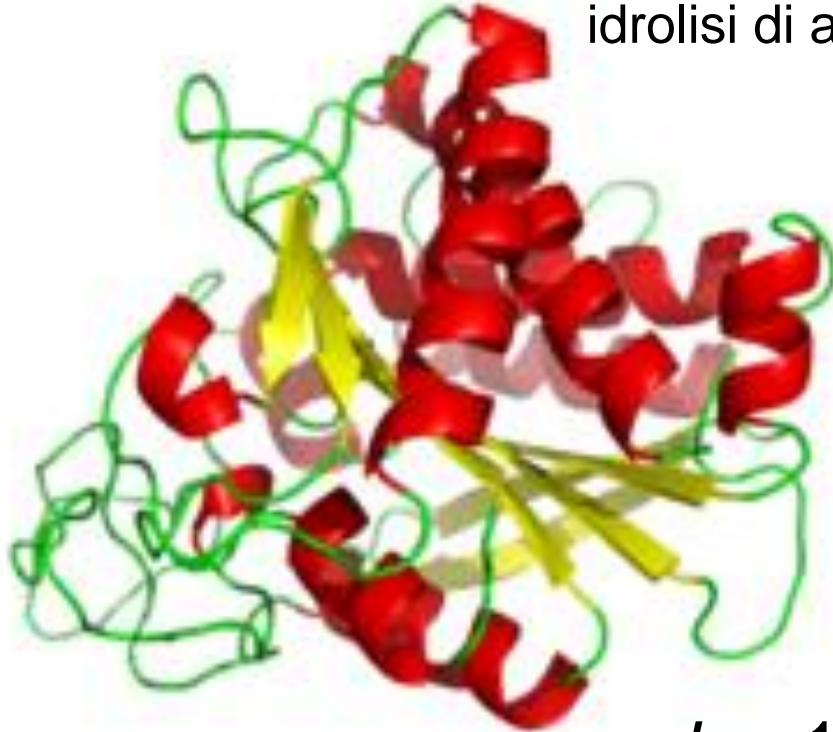


Regione idrofobica



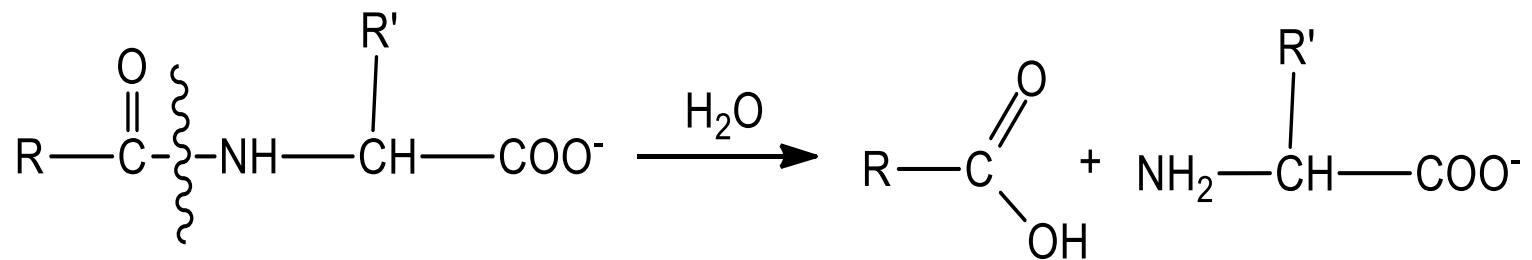
Carbossipeptidasi A (CPD A)

idrolisi di amminoacidi C-terminali

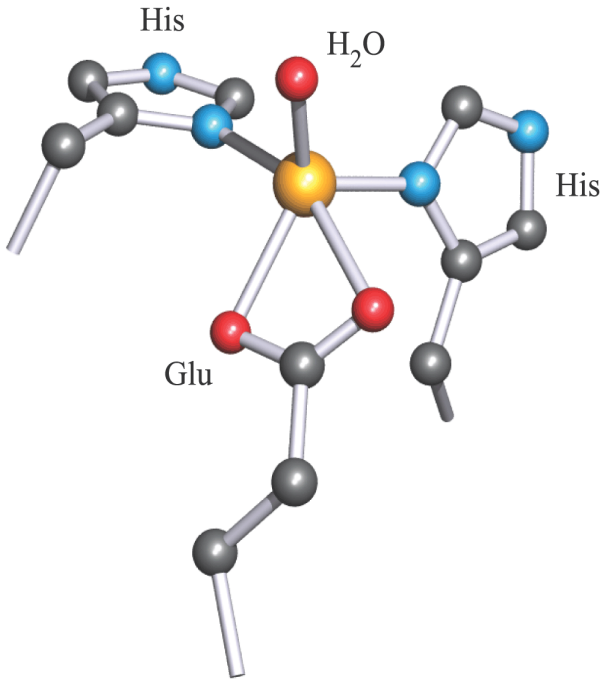


34 kDa, 300 a.a.

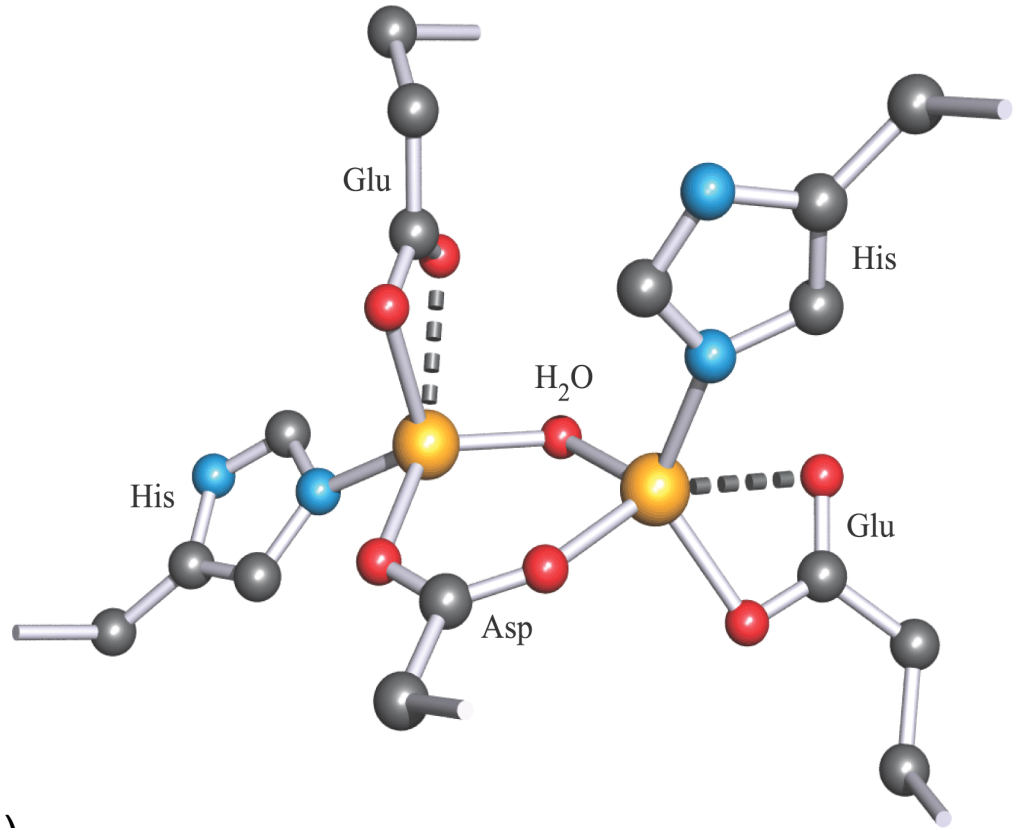
$$k \approx 10^{-11} \text{ s}^{-1} \rightarrow 10^4 \text{ s}^{-1}$$



Siti attivi di carbossipeptidasi

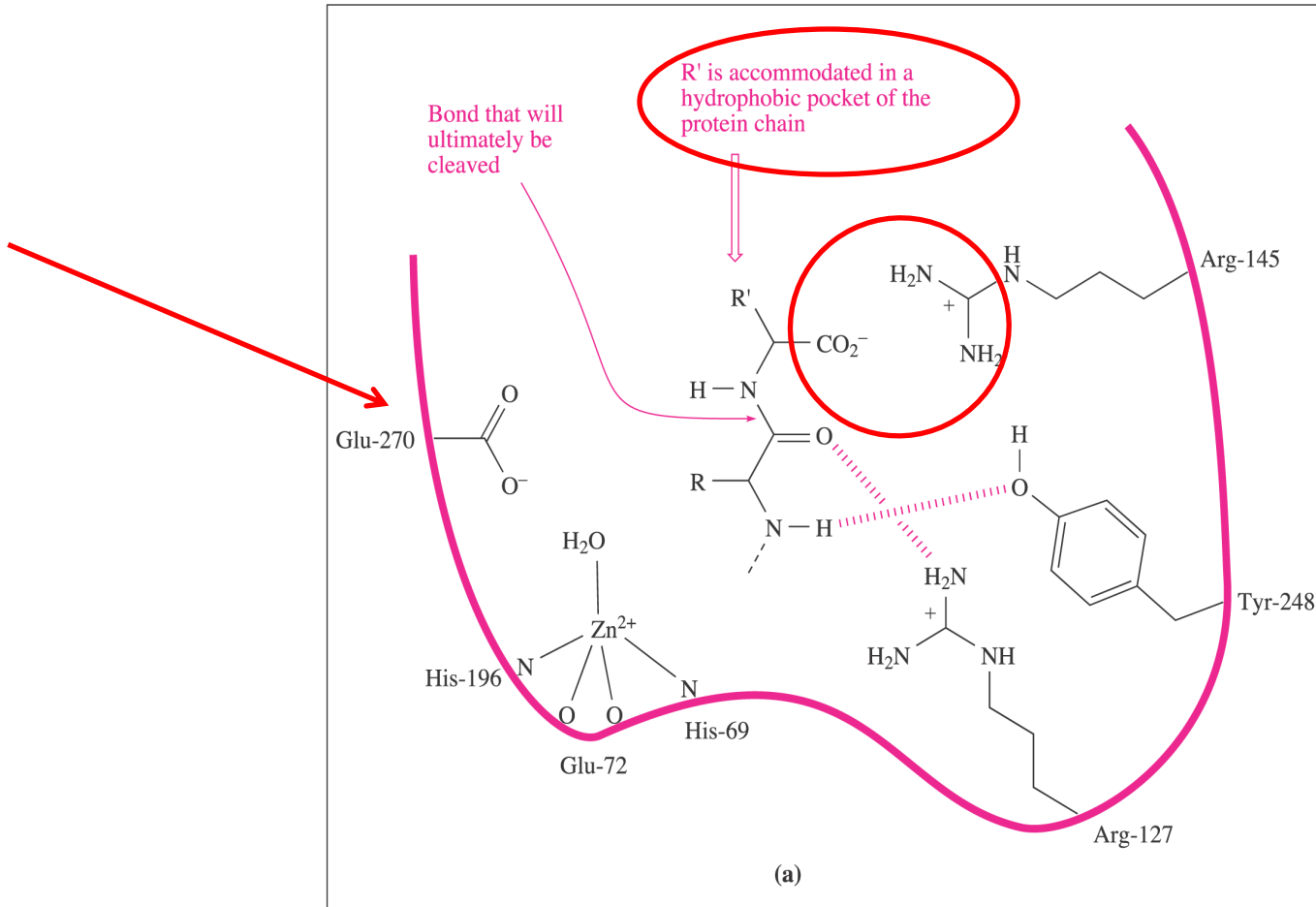


Carbossipeptidasi A (CPD A, bovino)

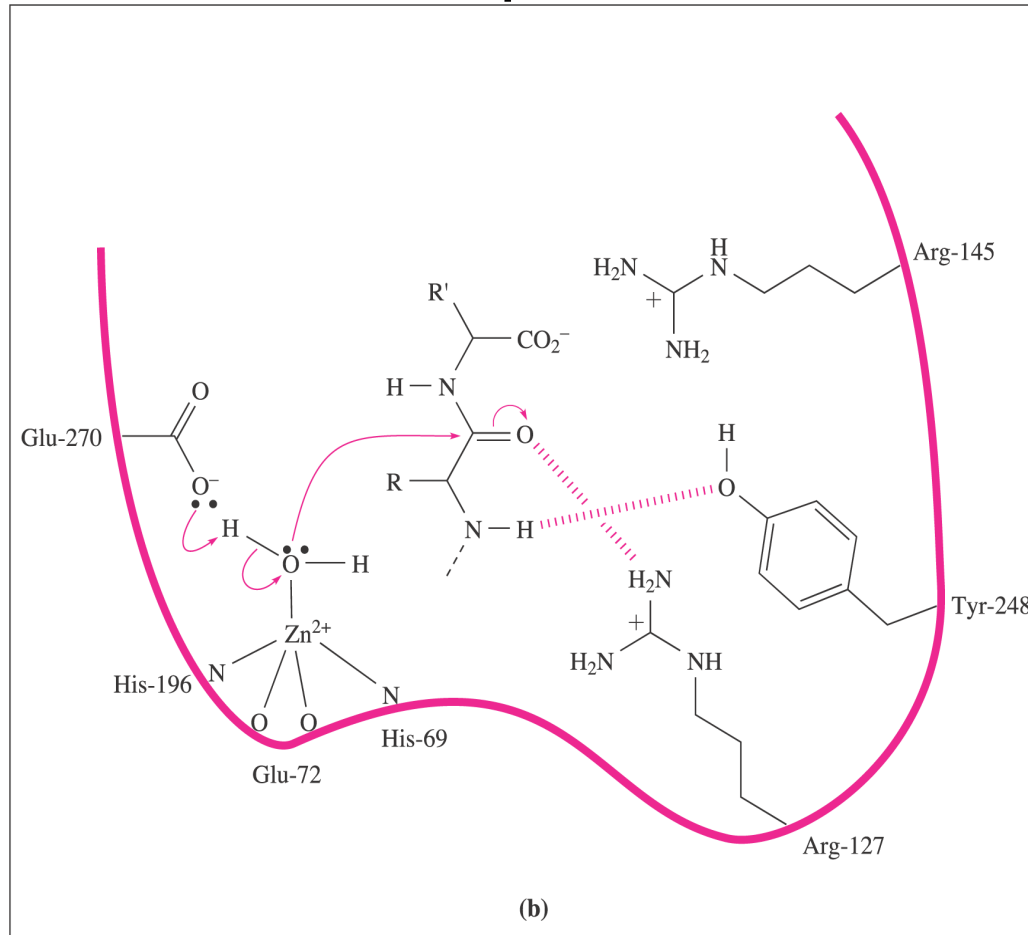


Carbossipeptidasi G2 (CPG2, batterio)

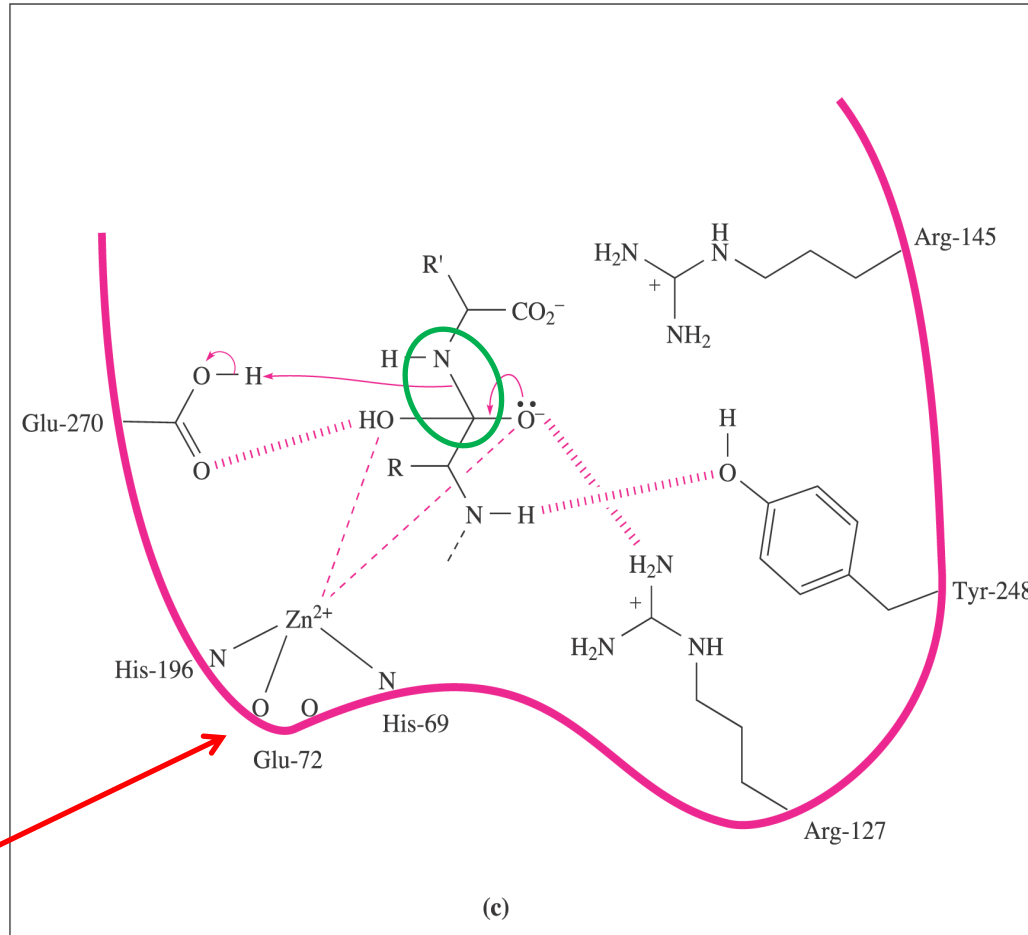
Posizionamento del substrato vicino al sito attivo della CPA



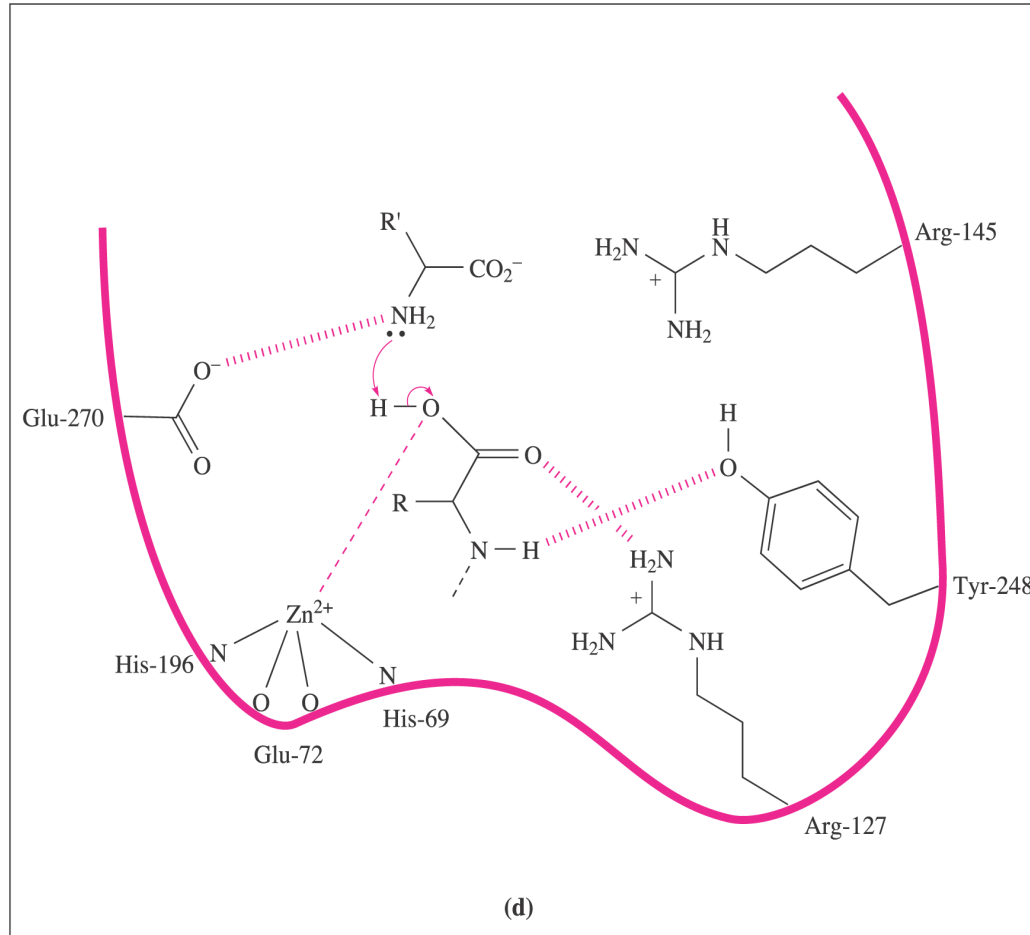
Deprotonazione dell'acqua e attacco nucleofilo



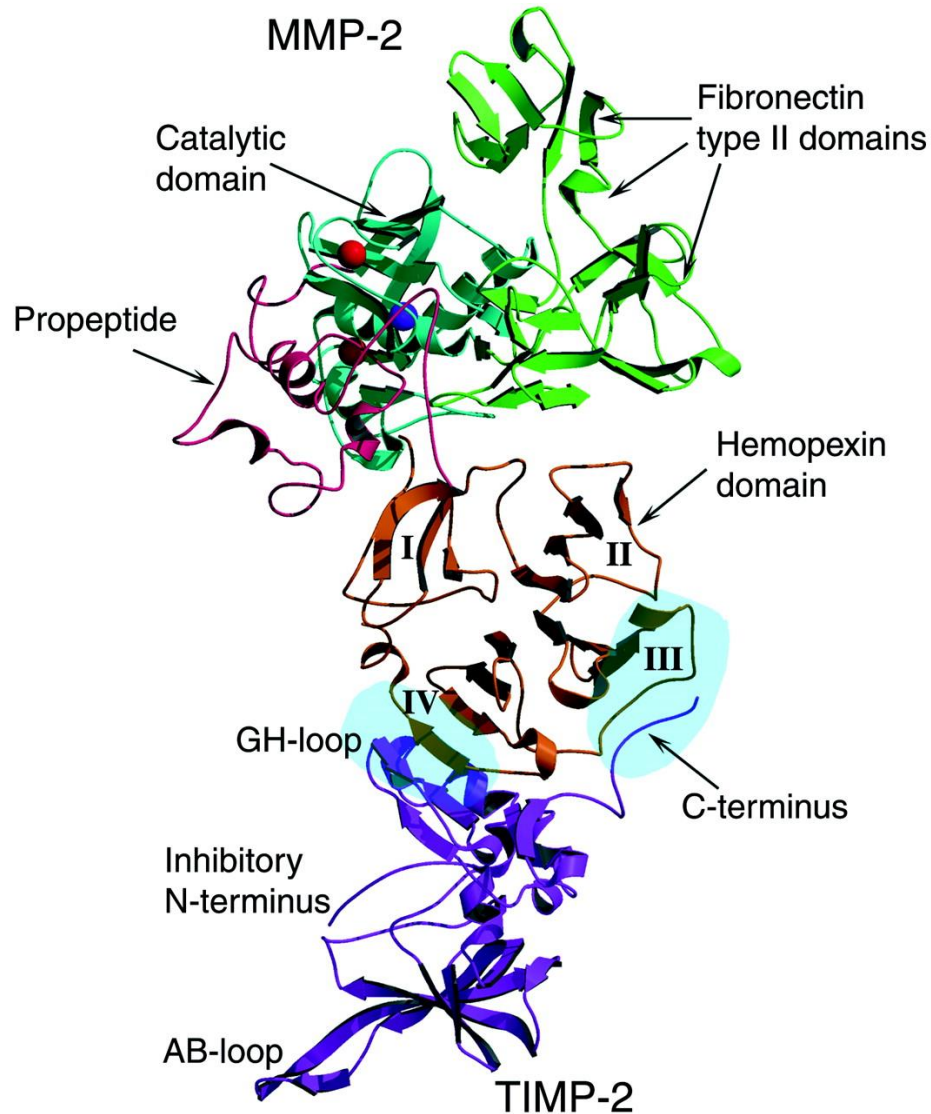
Rottura del legame peptidico C-N



Trasferimento di un protone con formazione di NH_3^+ e del carbossilato



Matrix Metalloproteinases (MMPs) + Tissue Inhibitors of Metalloproteinases (TIMPs)

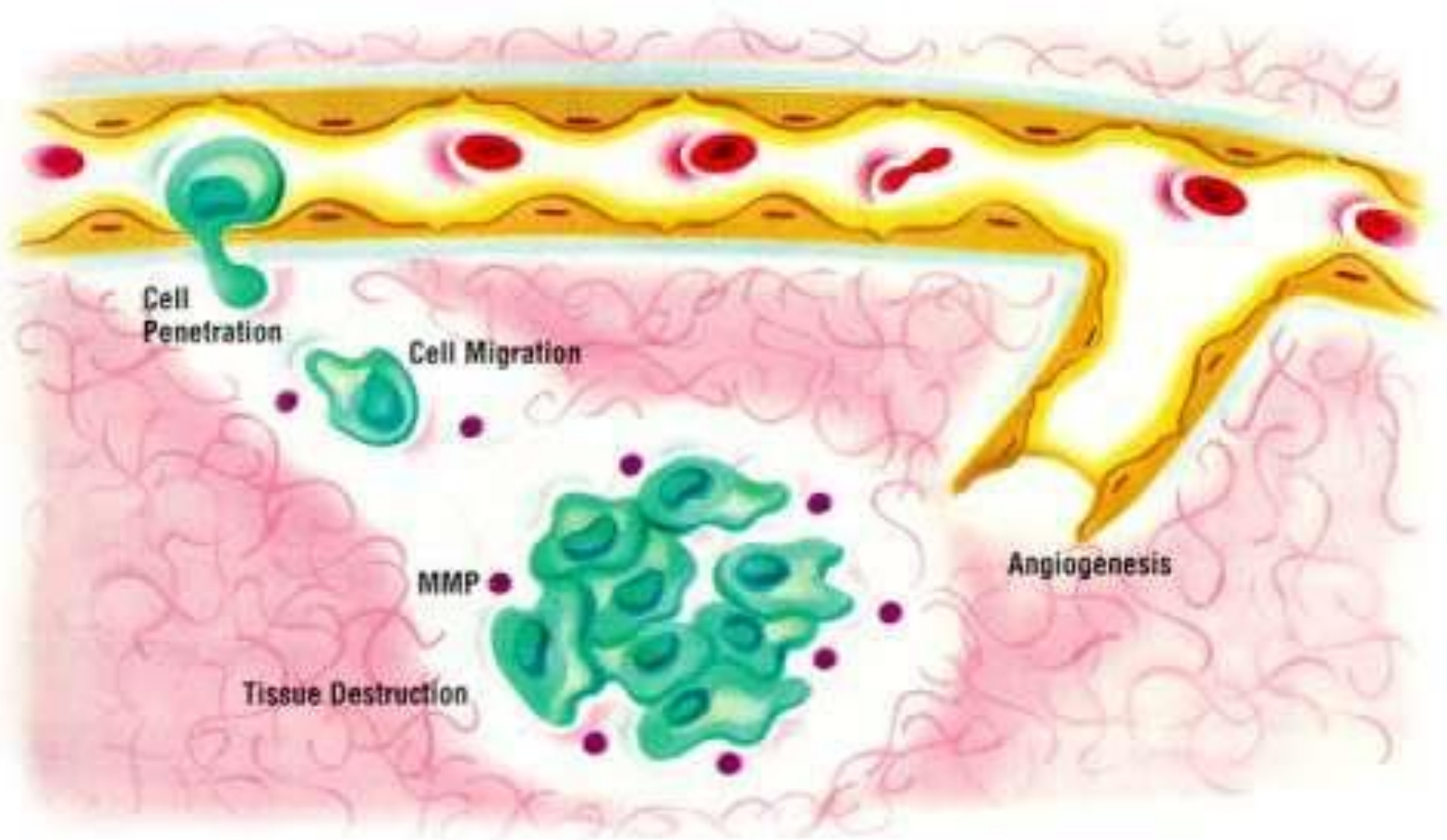


● = Zn

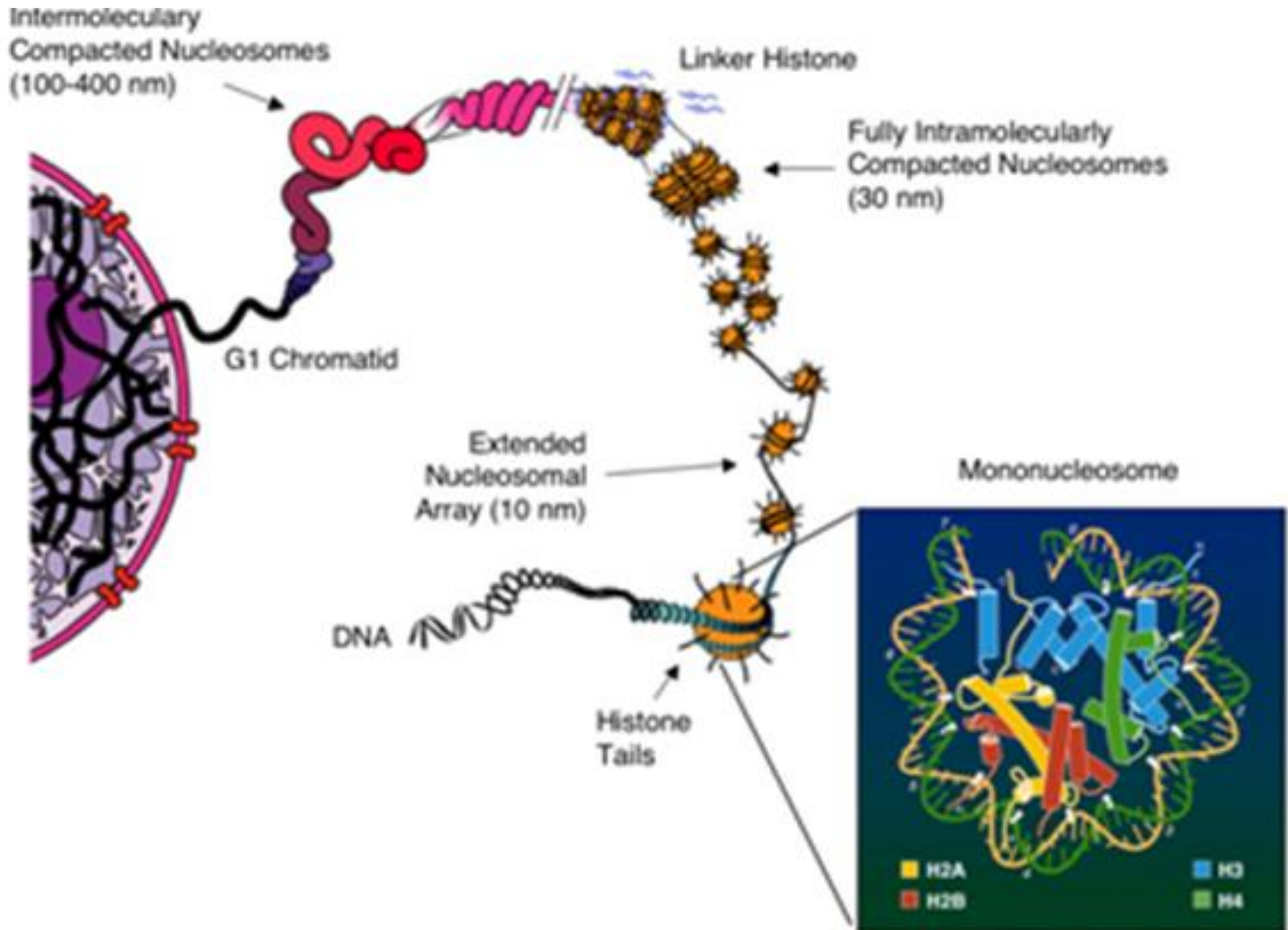
● = Ca

Zinco-endoropeptidasi,
degradano le proteine
che costituiscono le
matrici extracellulari

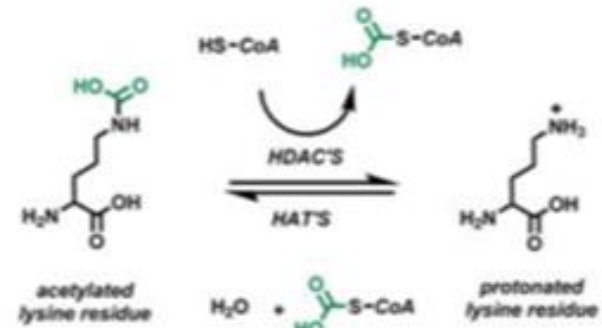
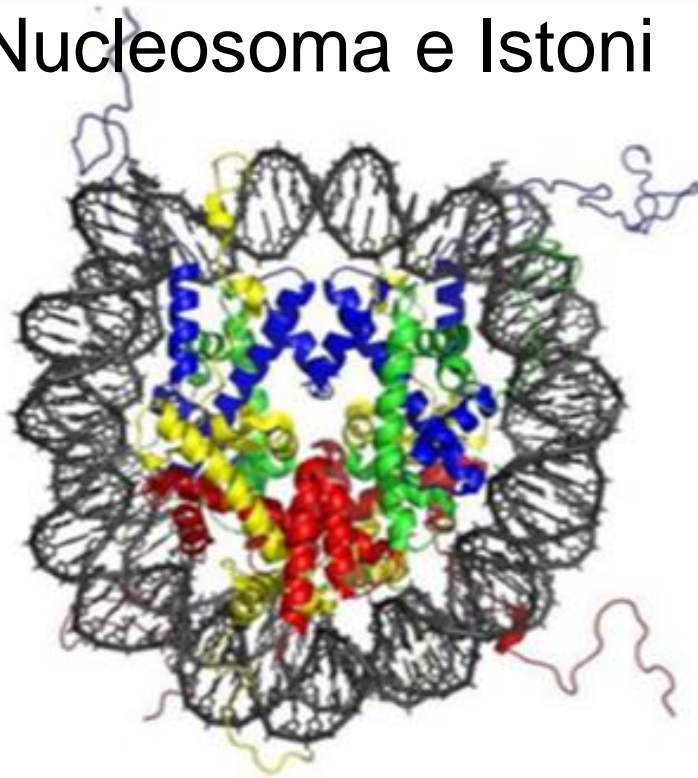
Processo metastatico favorito da MMP



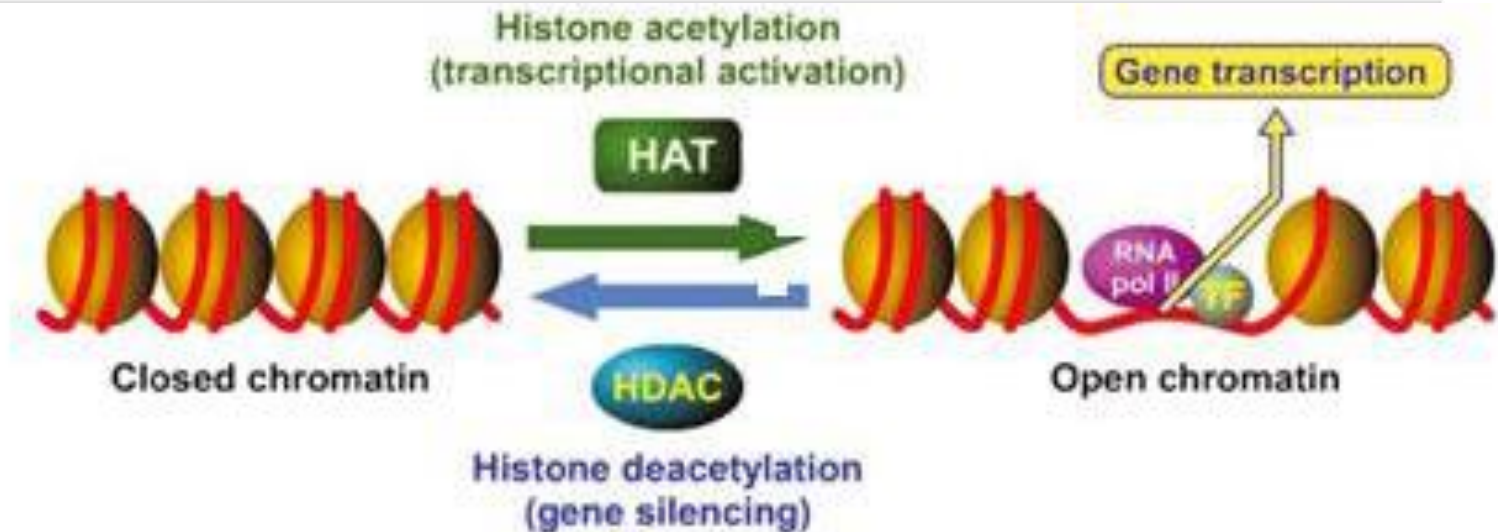
Cromatina, Nucleosomi e Istoni



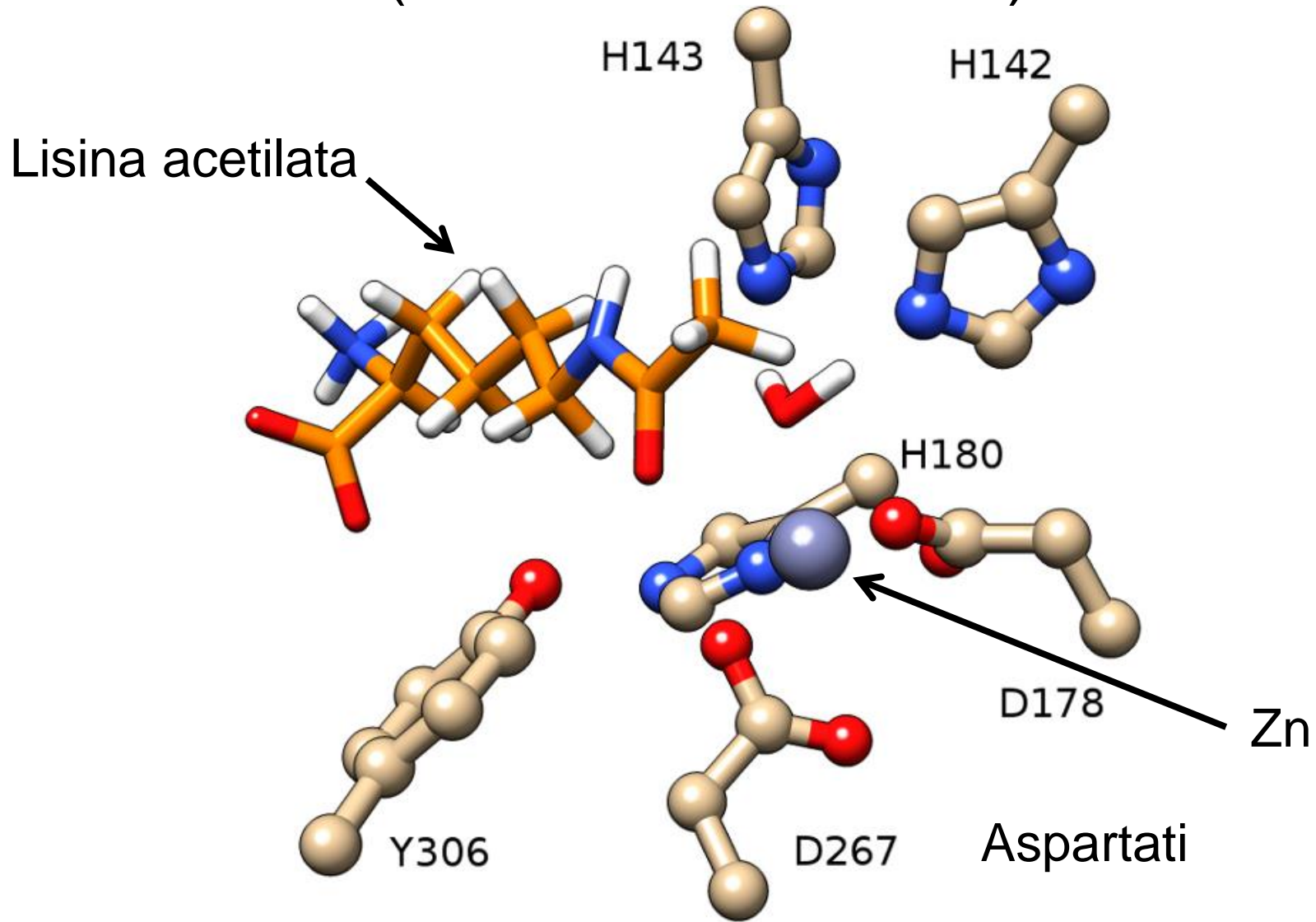
Nucleosoma e Istoni



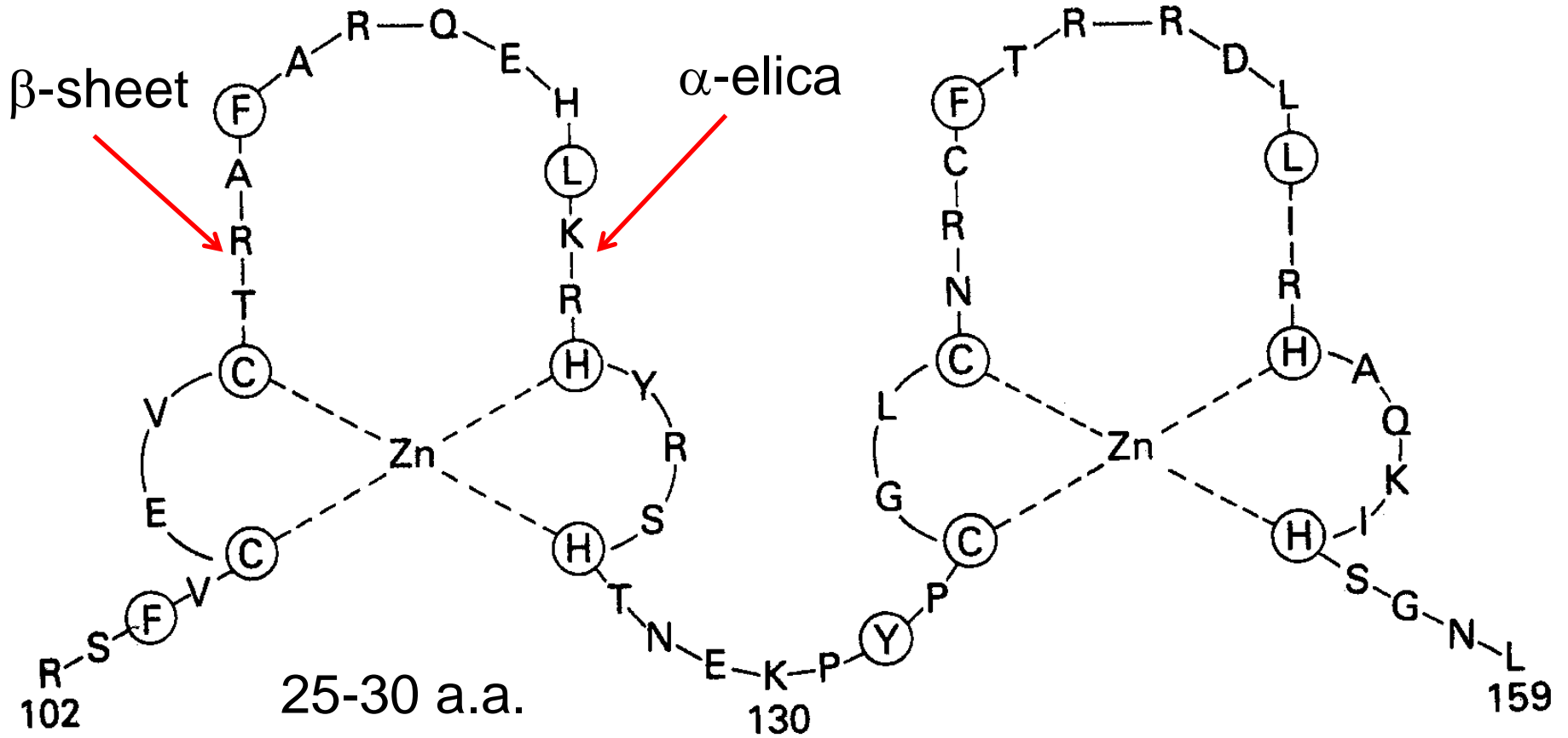
acetilazione e deacetilazione degli istoni



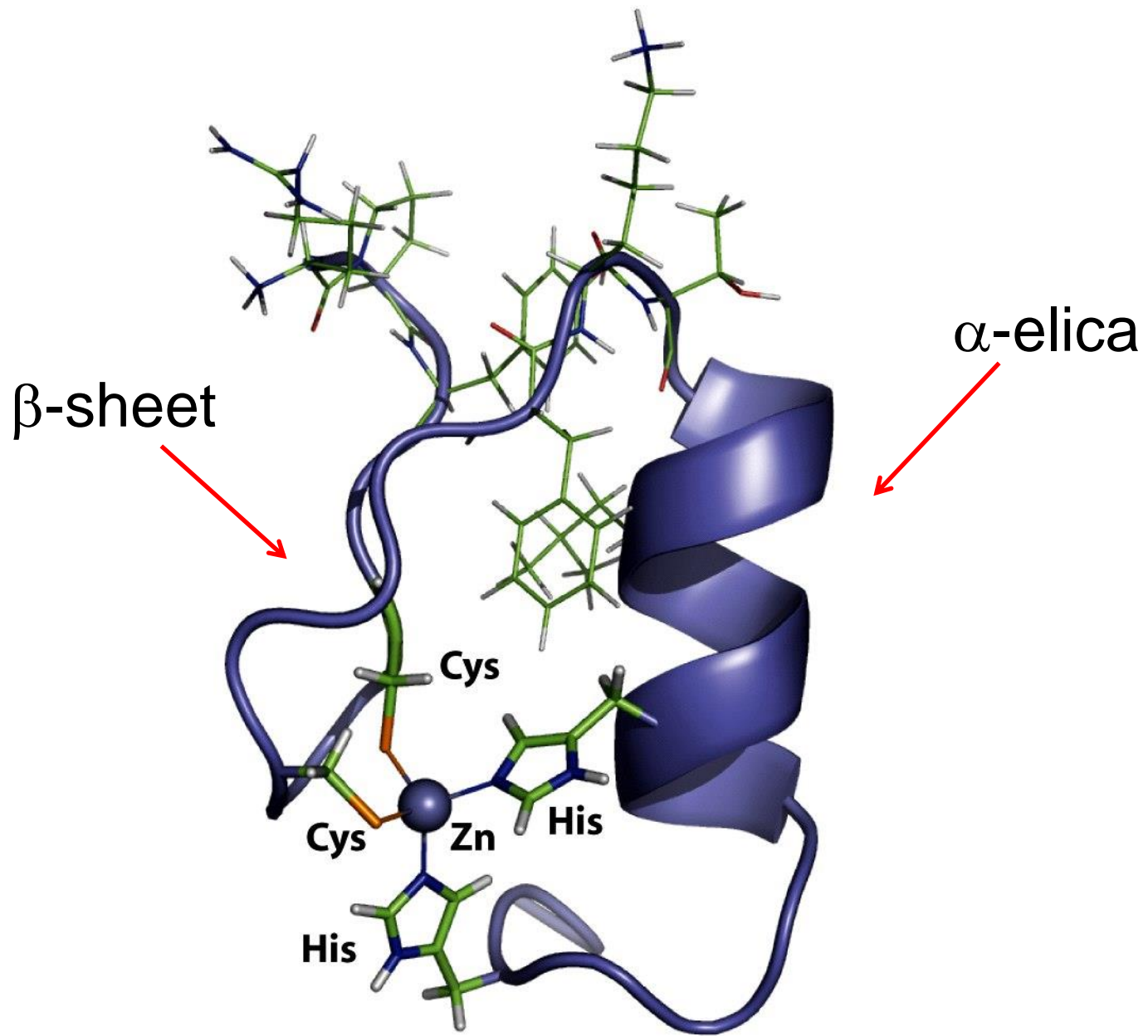
Sito attivo di HDAC8 (istone-deacetilasi 8)

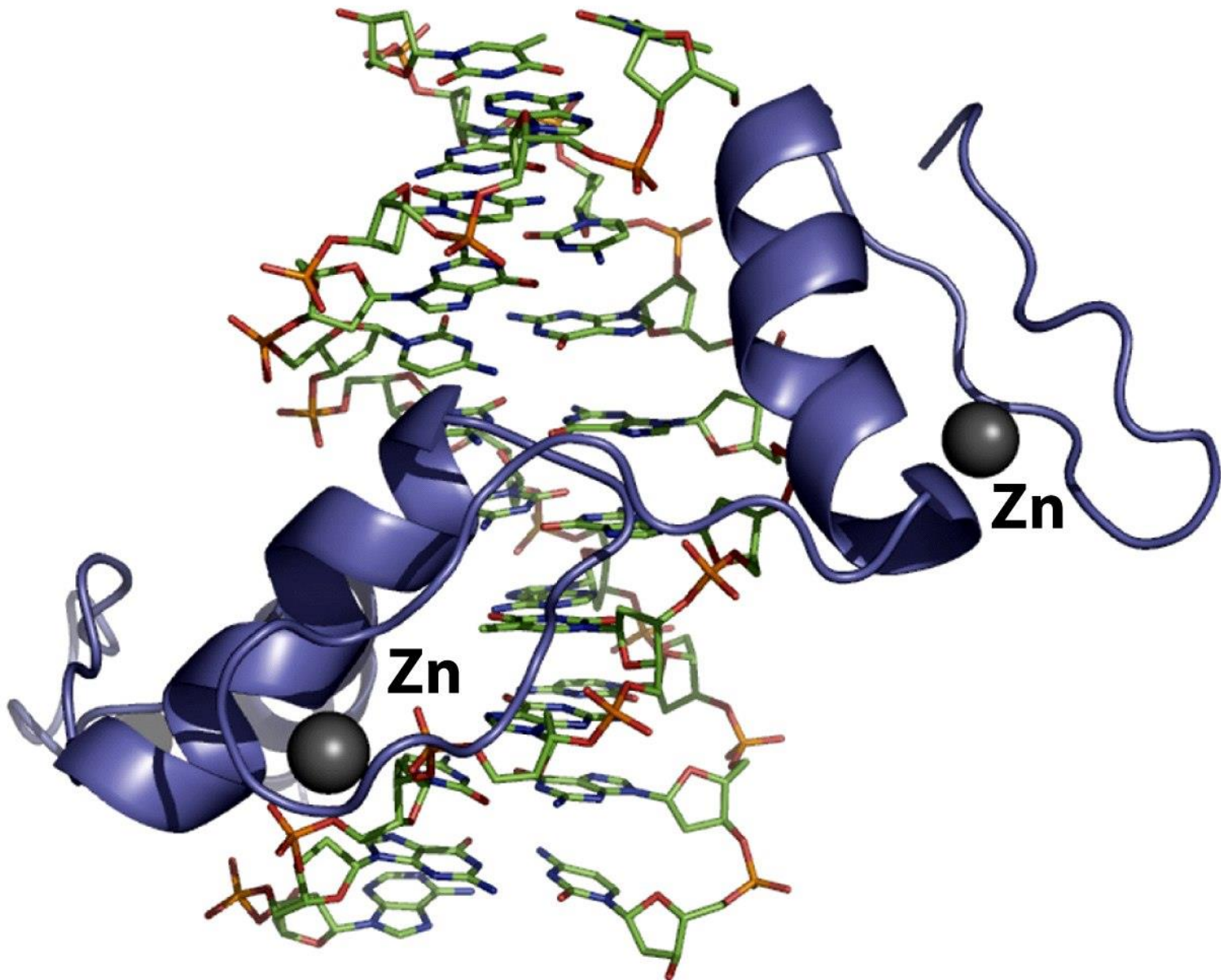


Zinc fingers



gene regulatory proteins e transcription factors





Interazione di zinc-fingers con DNA