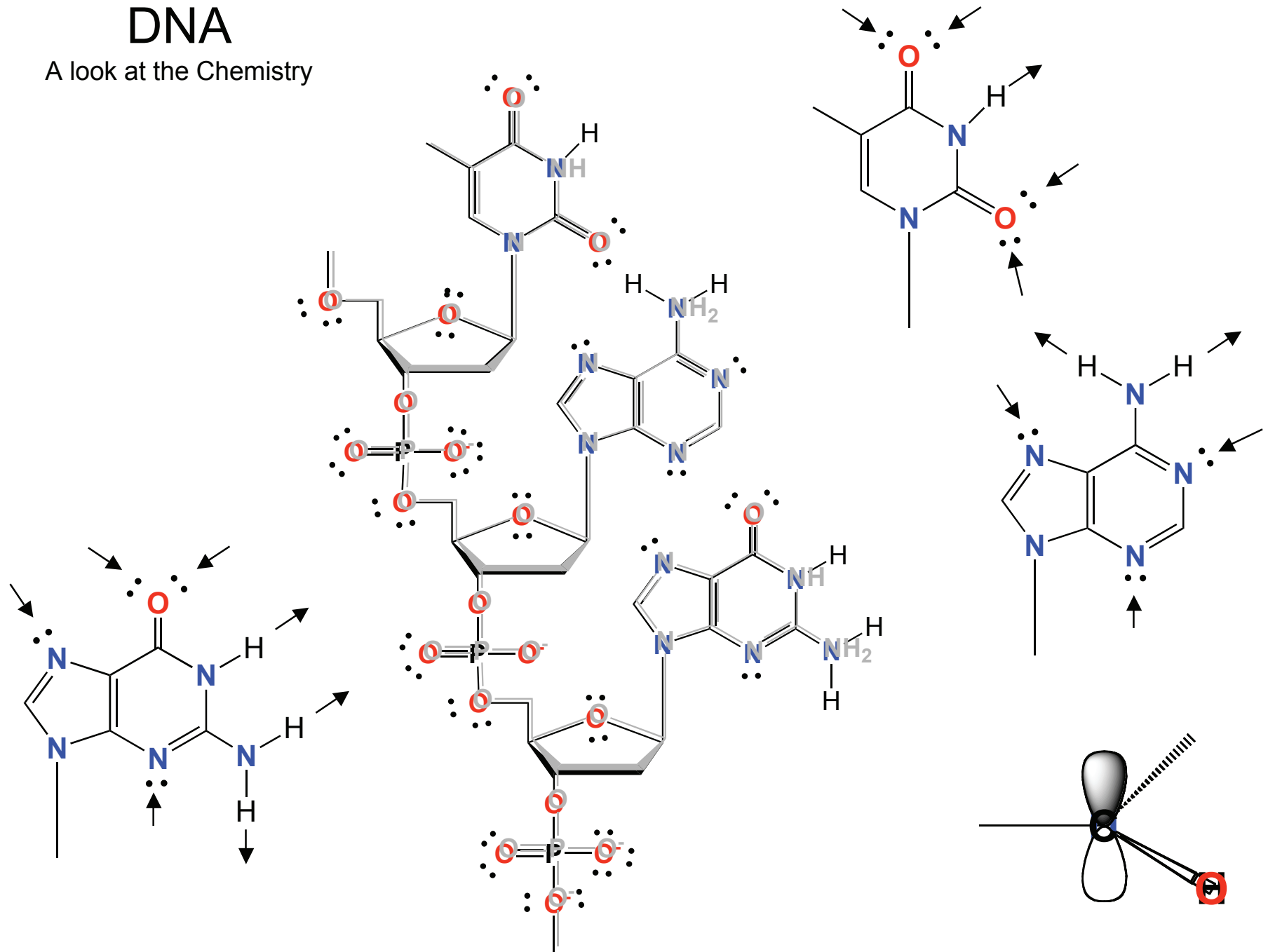
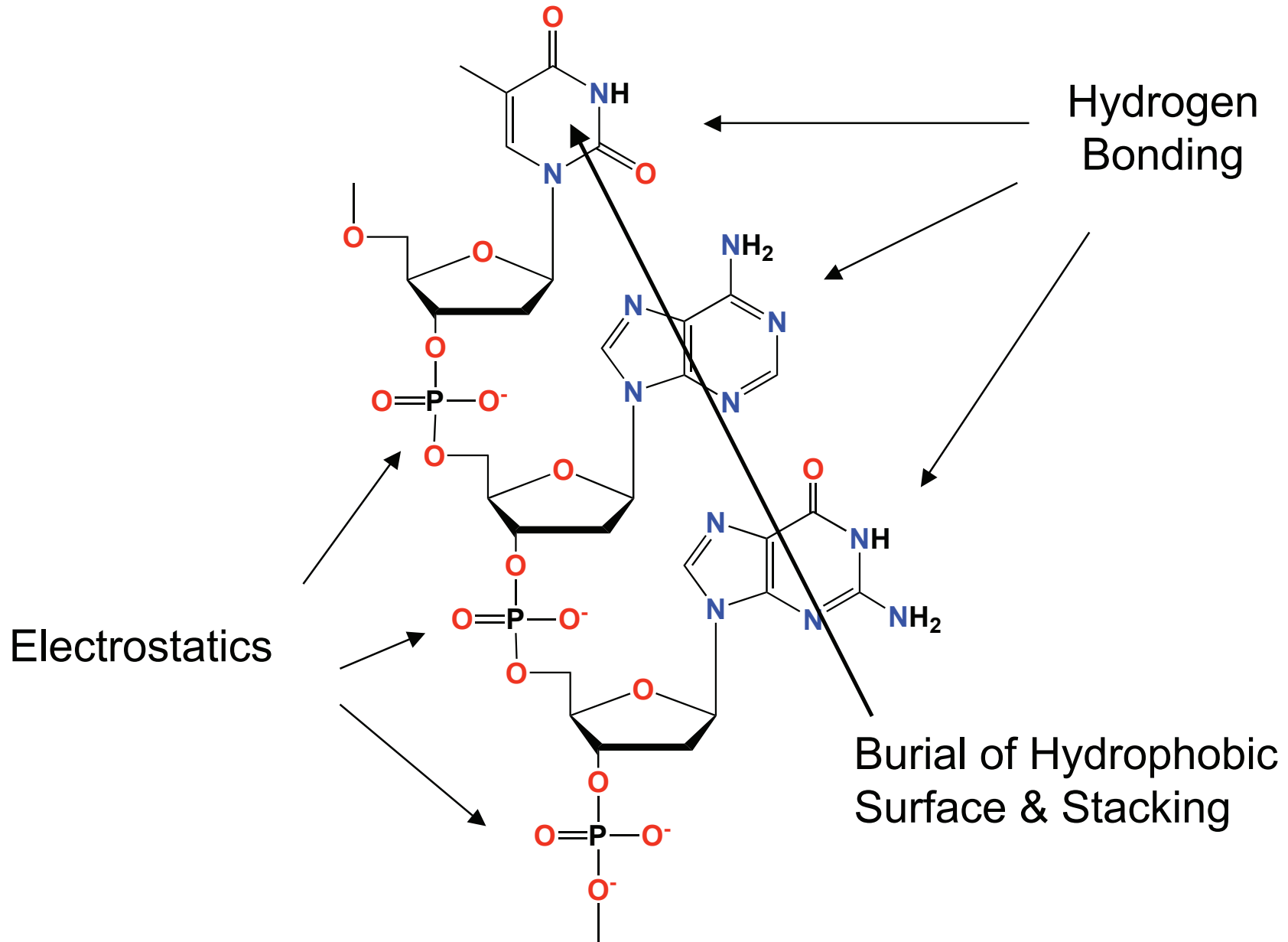


DNA

A look at the Chemistry



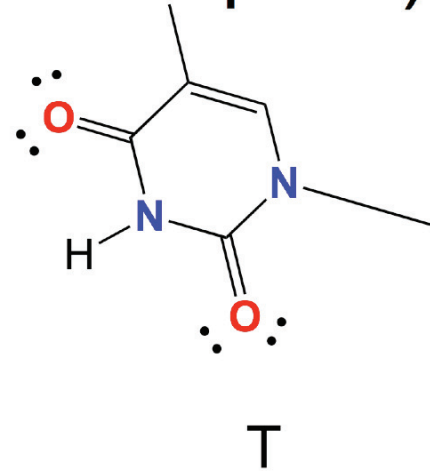
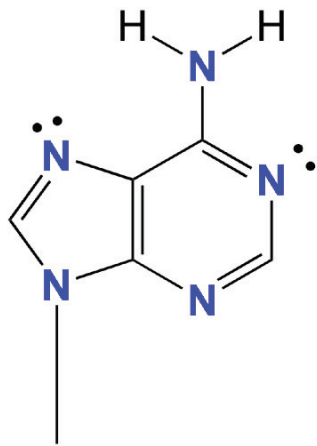
What forces are important?



Base Pairing

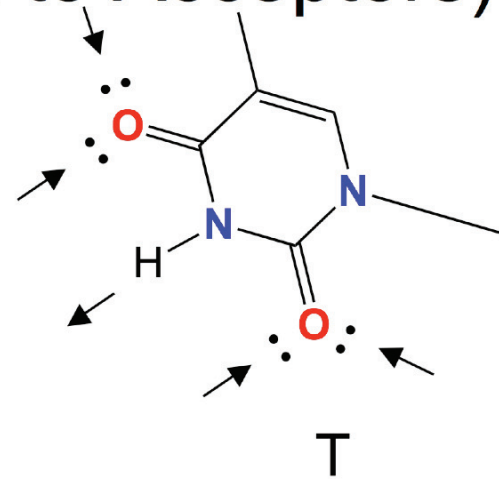
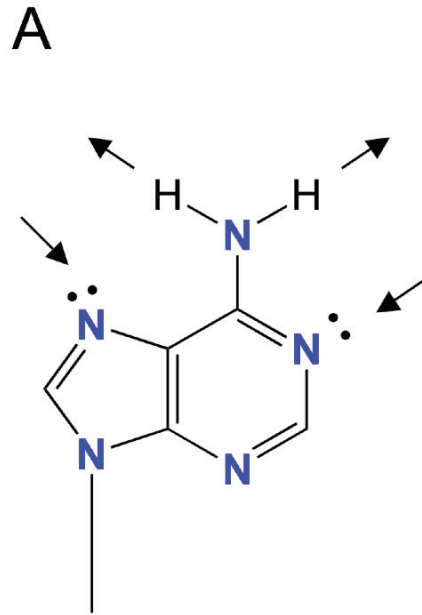
(Donors matched to Acceptors)

A



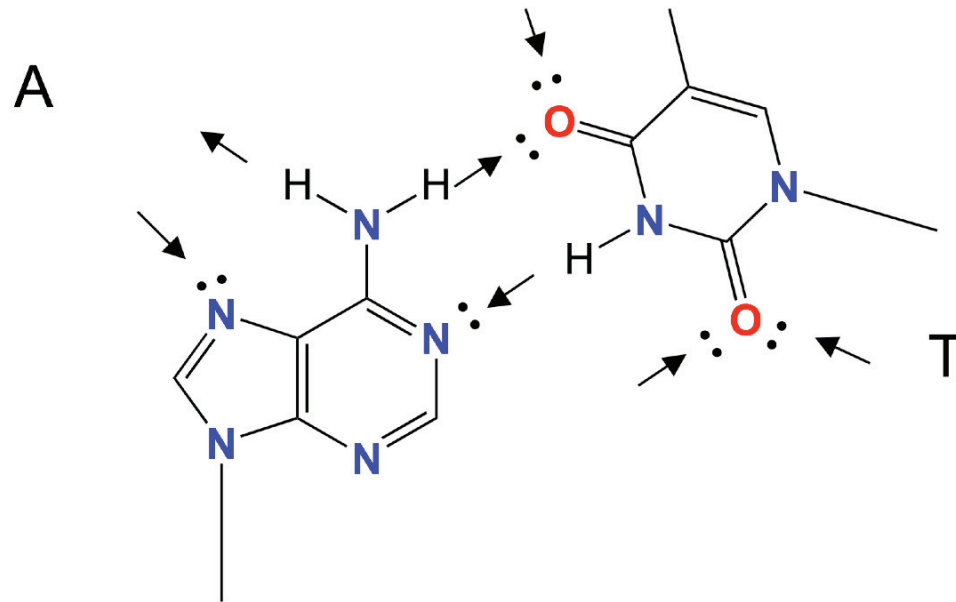
Base Pairing

(Donors matched to Acceptors)



Base Pairing

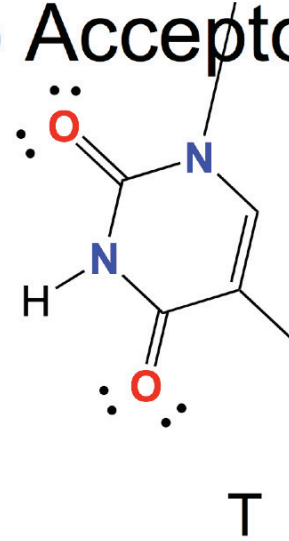
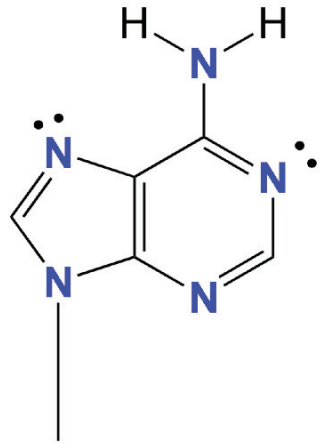
(Donors matched to Acceptors)



Base Pairing

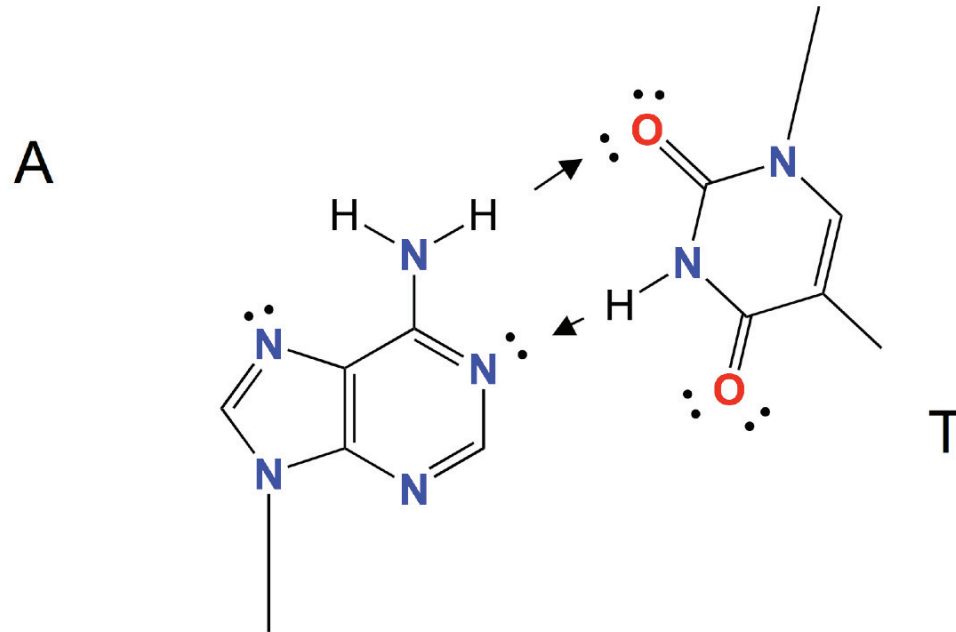
(Donors matched to Acceptors)

A



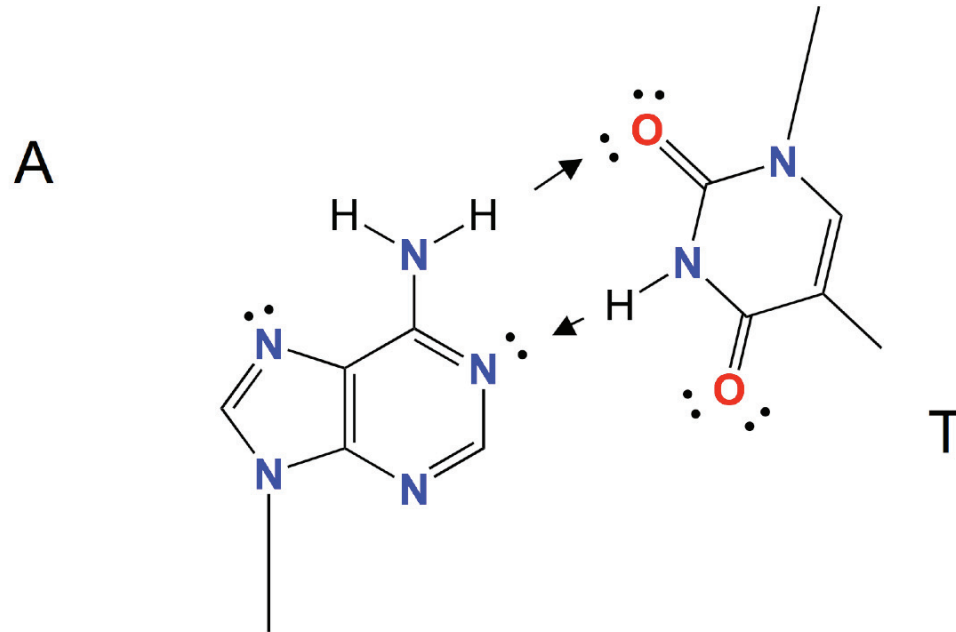
Base Pairing

(Donors matched to Acceptors)



Base Pairing

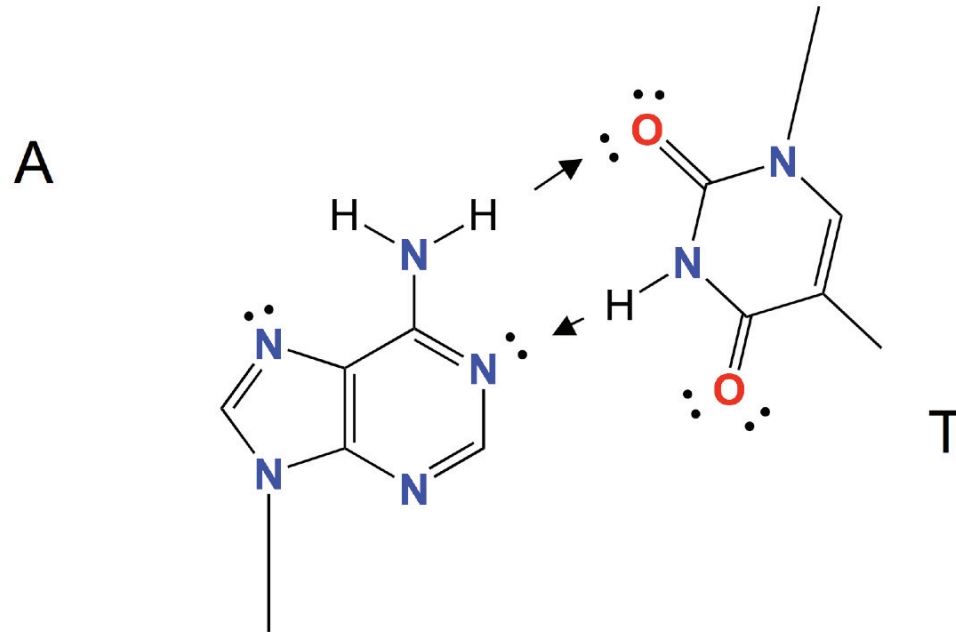
(Donors matched to Acceptors)



Good base pairing

Base Pairing

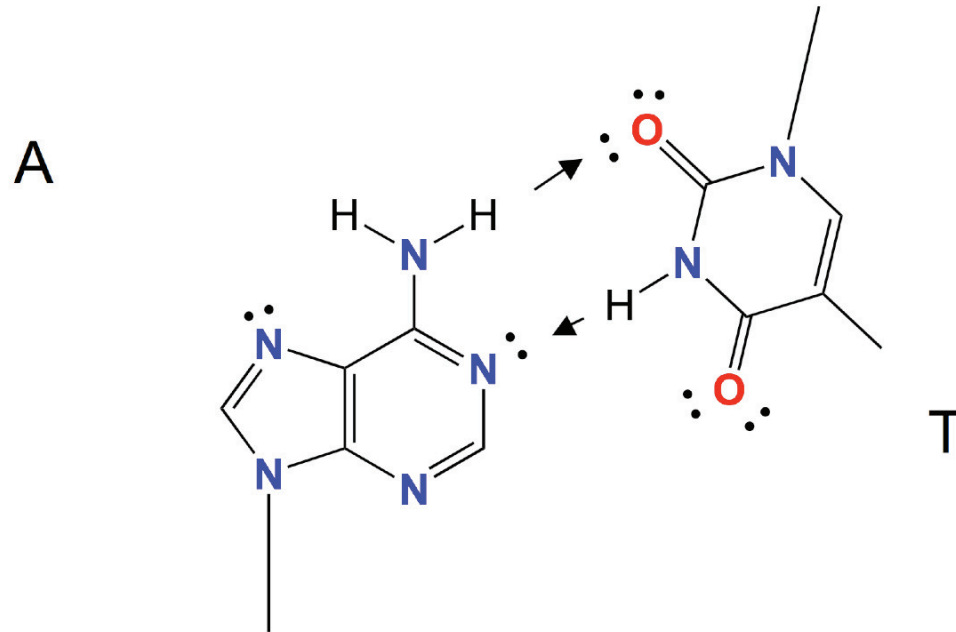
(Donors matched to Acceptors)



Good base pairing
Watson-Crick facing

Base Pairing

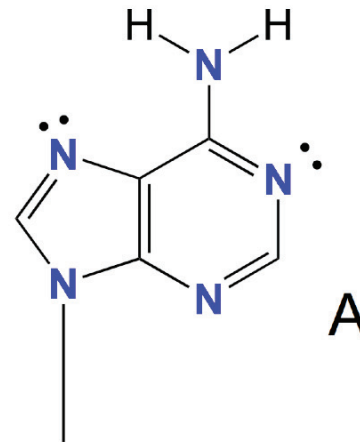
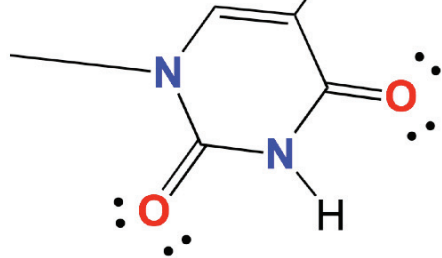
(Donors matched to Acceptors)



Good base pairing
Watson-Crick facing
but *Anti-Watson-Crick* orientation

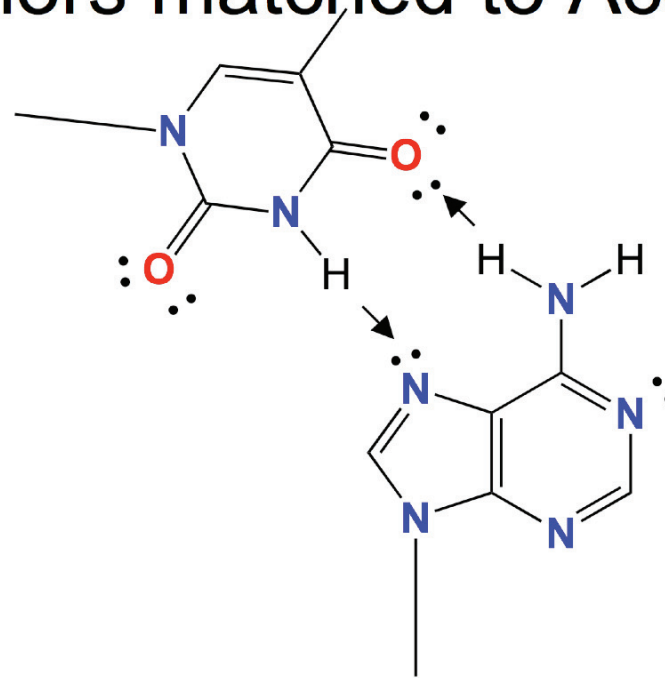
Base Pairing

(Donors matched to Acceptors)



Base Pairing

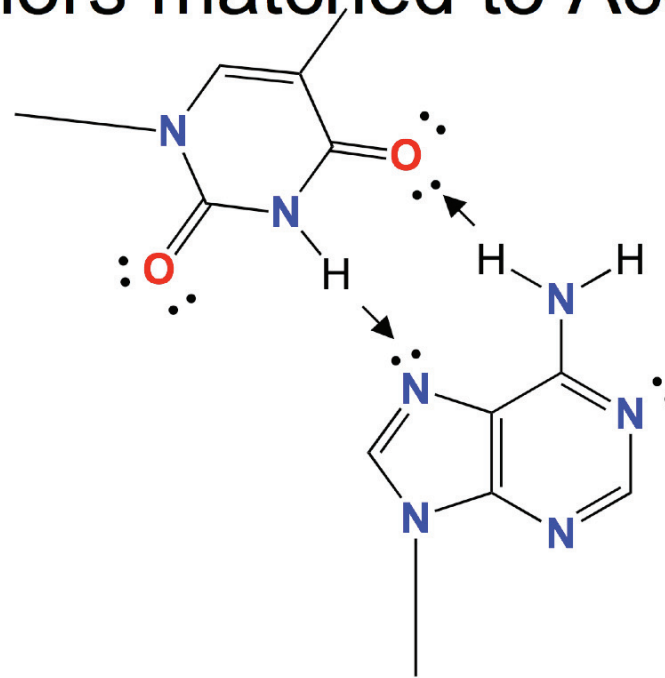
(Donors matched to Acceptors)



A

Base Pairing

(Donors matched to Acceptors)

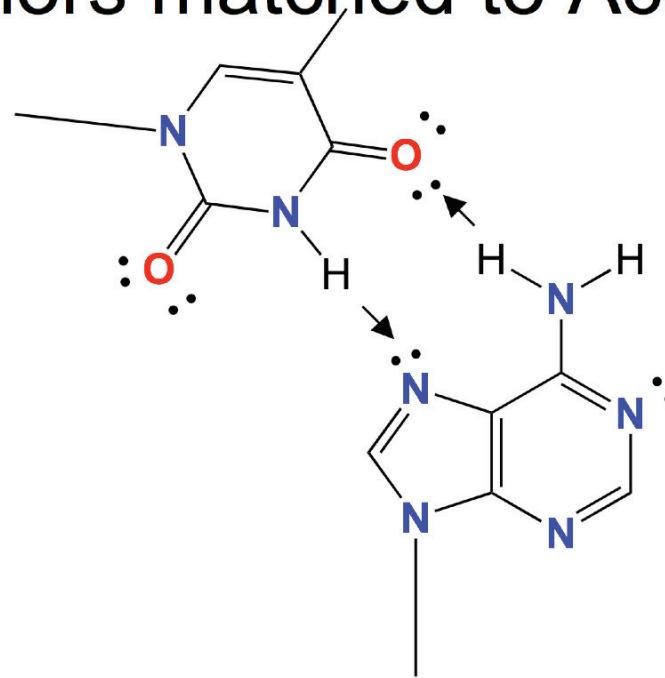


A

Good base pairing

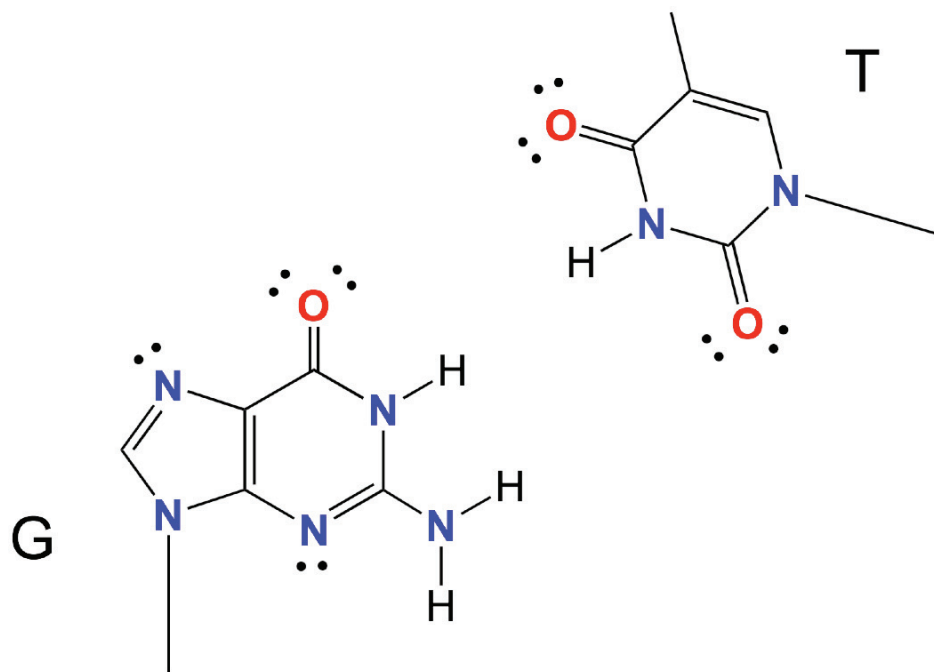
Base Pairing

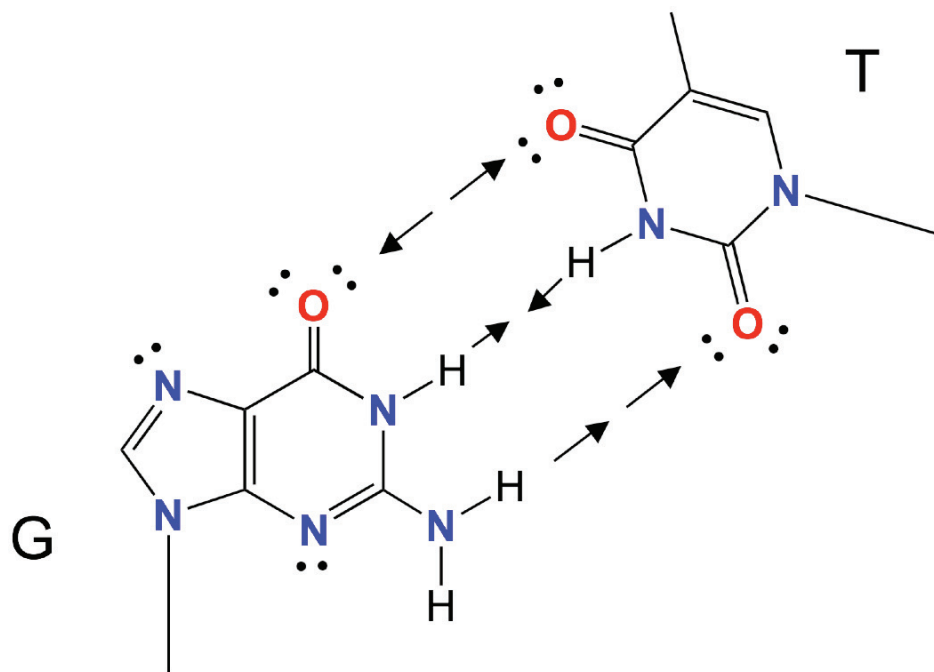
(Donors matched to Acceptors)

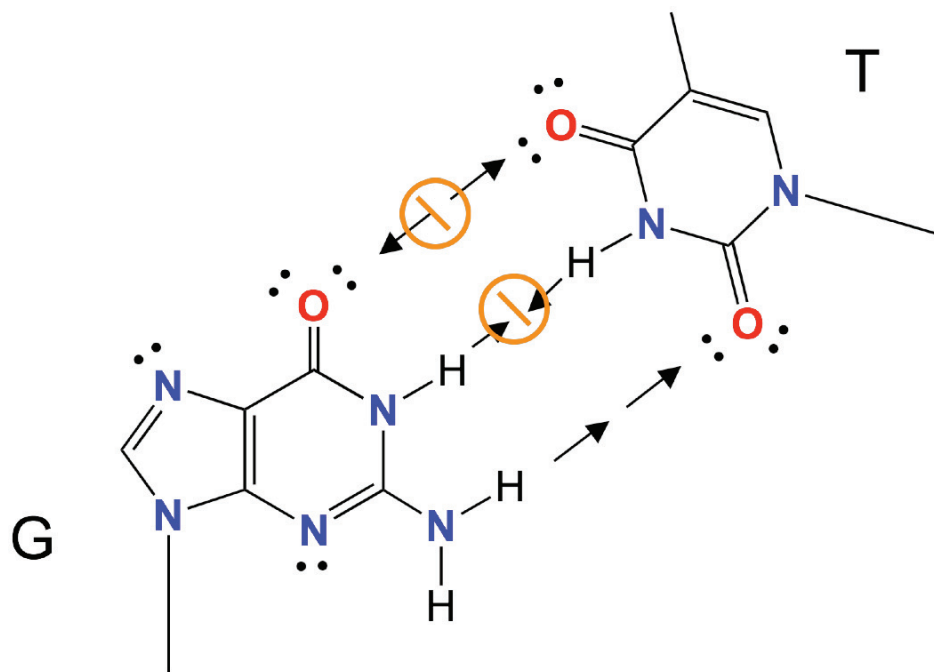


A

Good base pairing
WC-Hoogsteen facing

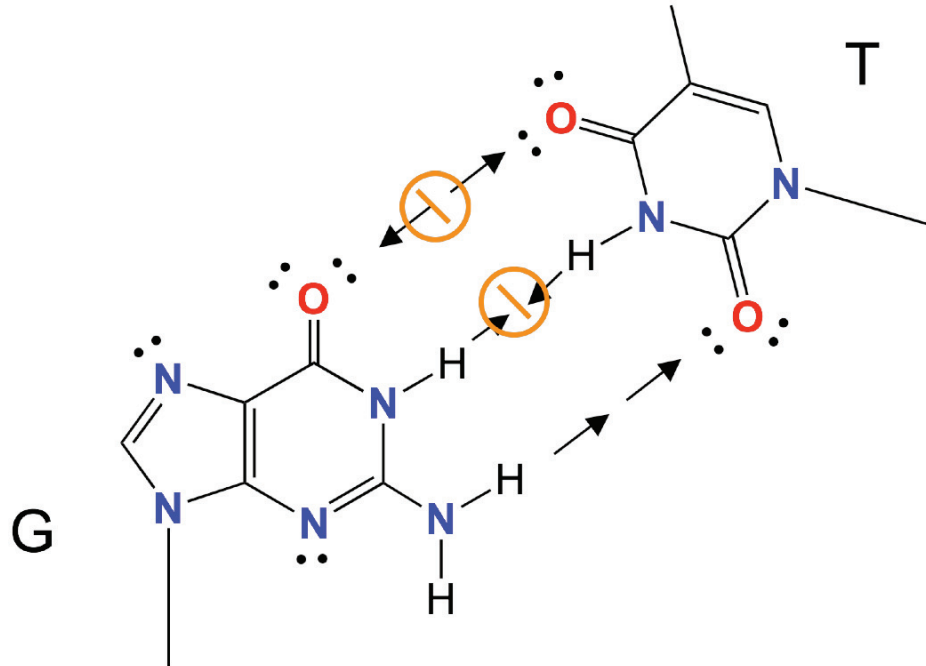






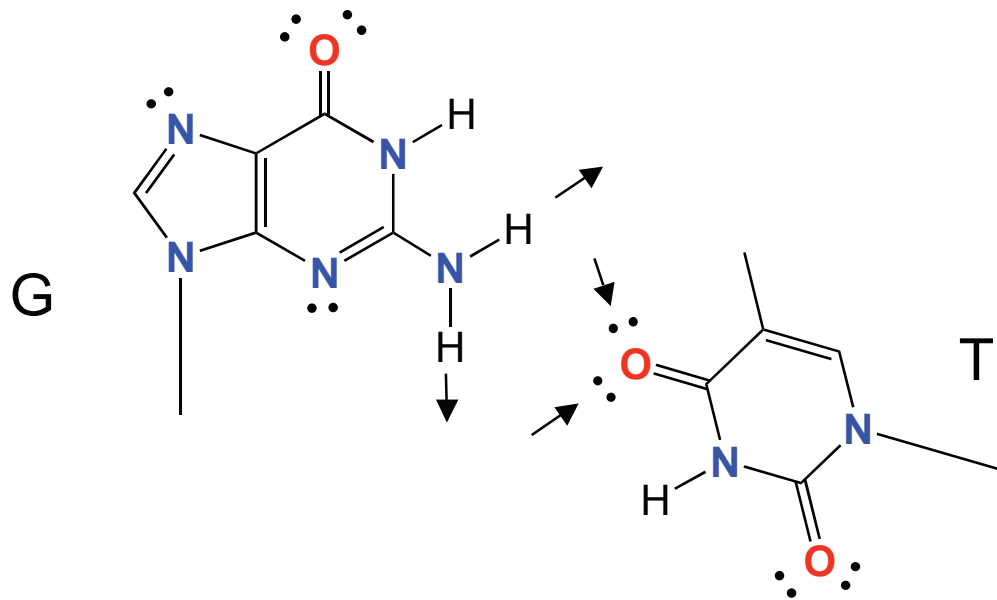
Bad Base Pairing

(Donors *not* matched to Acceptors)

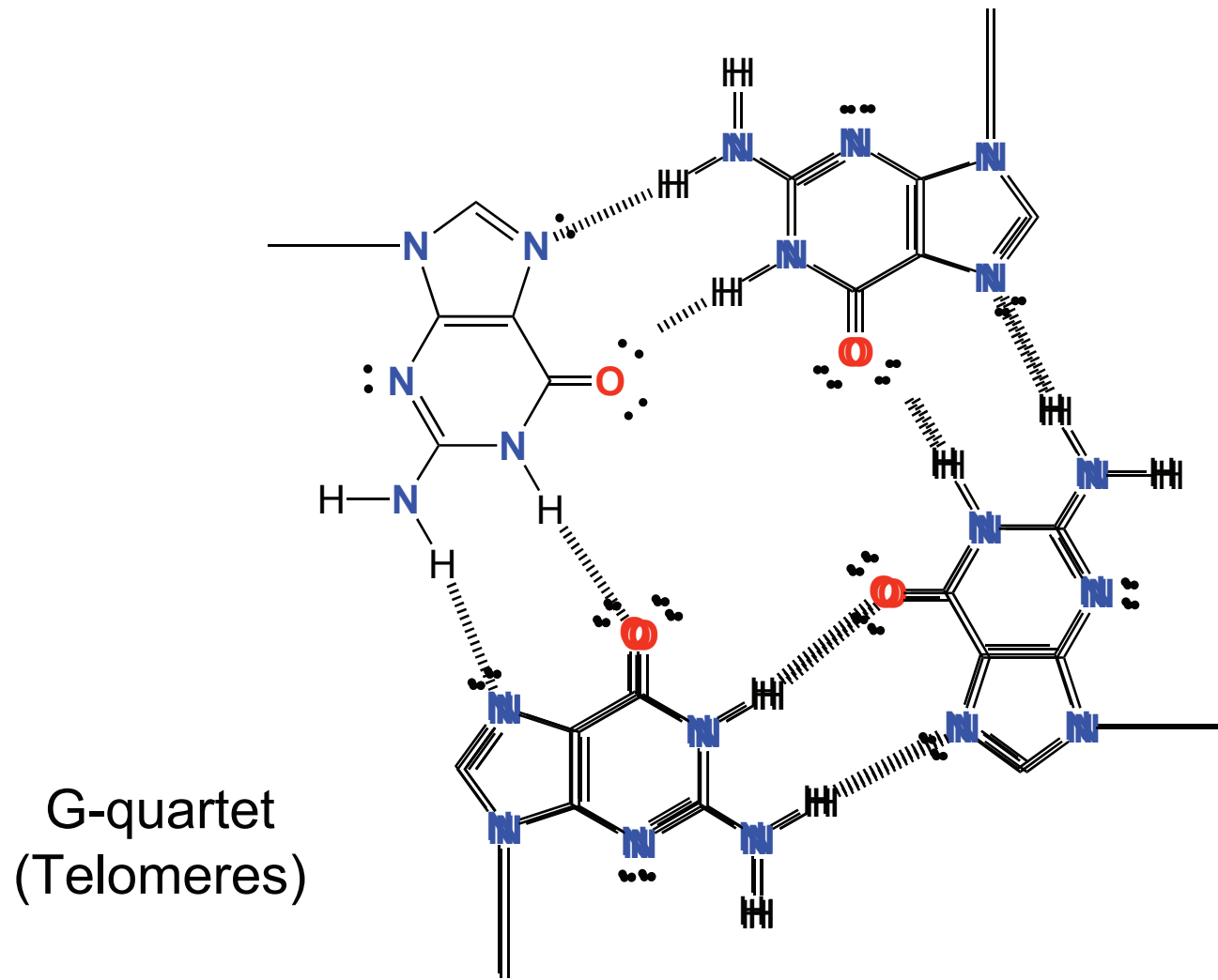


Bad Base Pairing

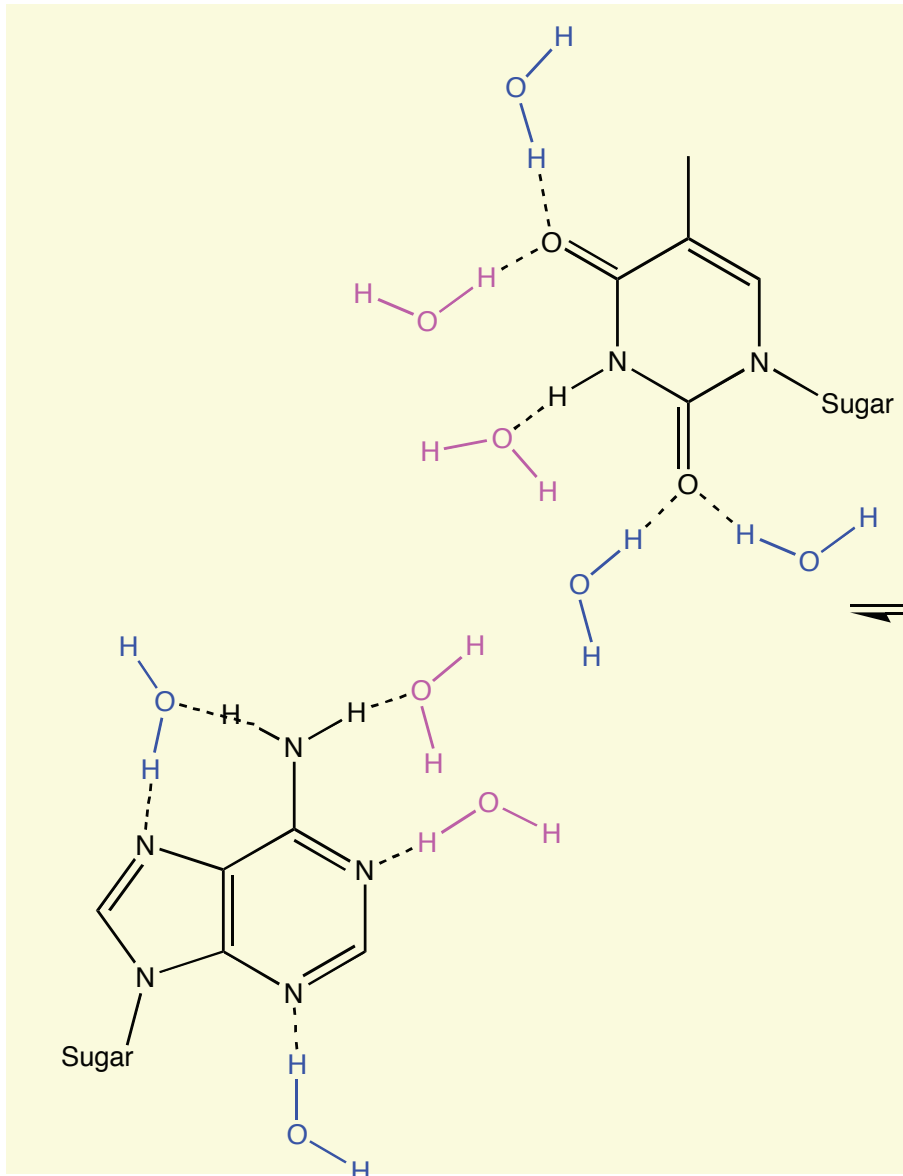
(Donors to Acceptors with *terrible angles*)



Wild (but good) Base Pairing

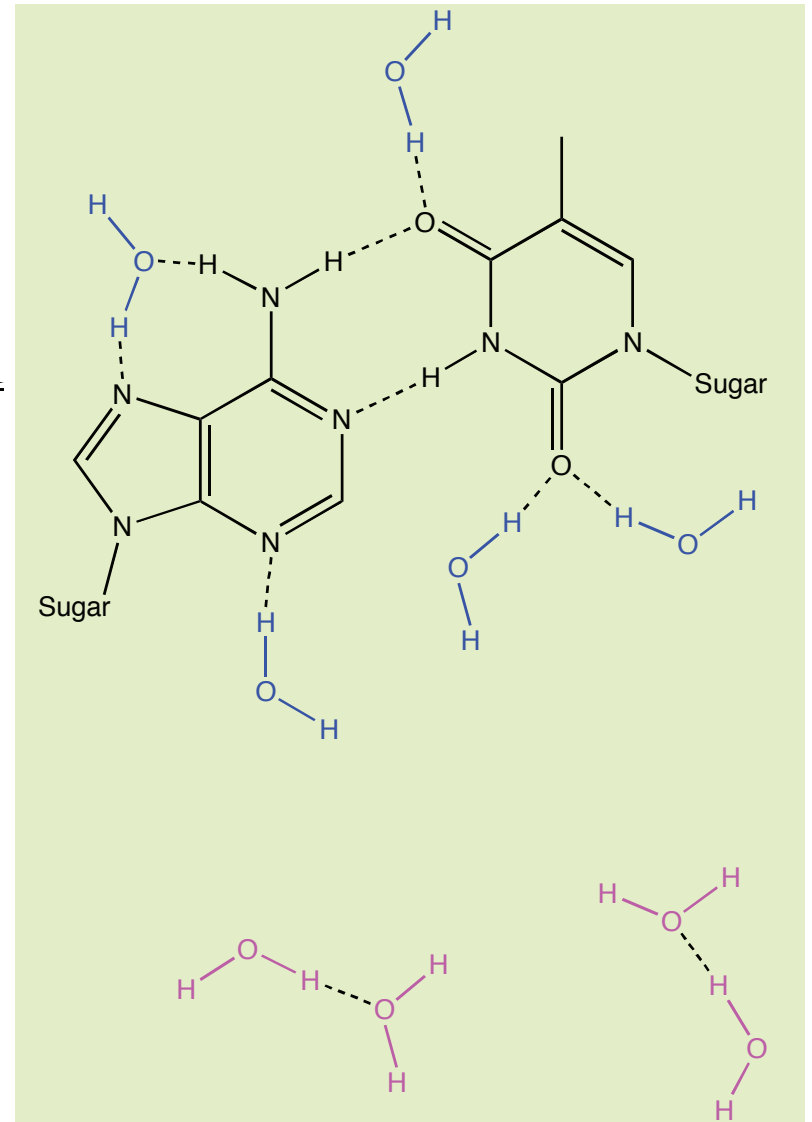


AT Base Pair

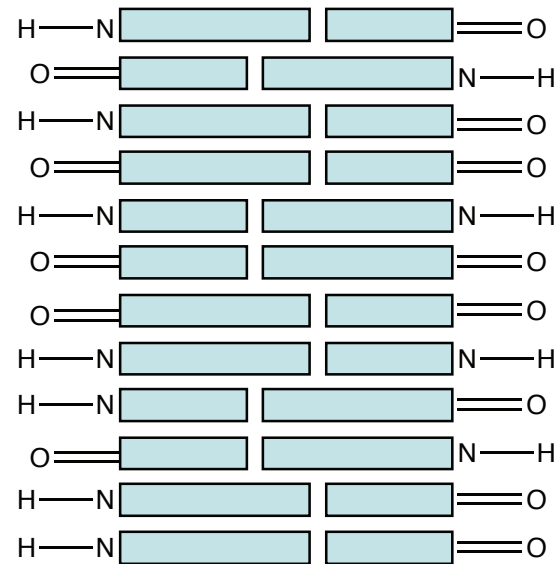
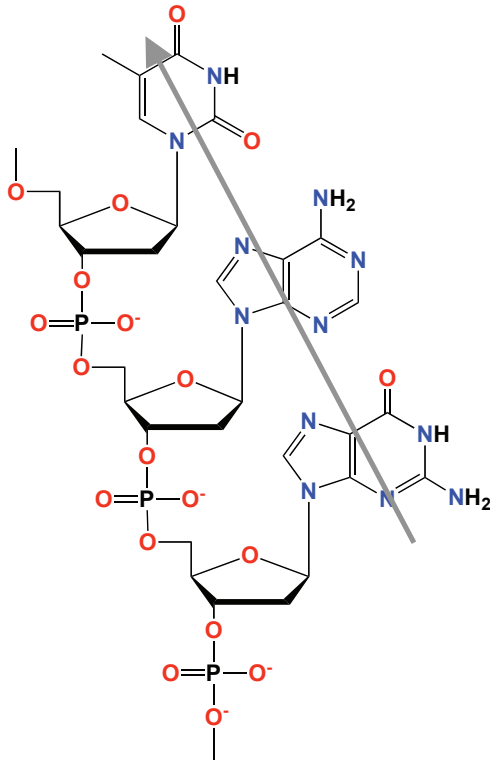


Ten H-Bonds

Ten H-Bonds

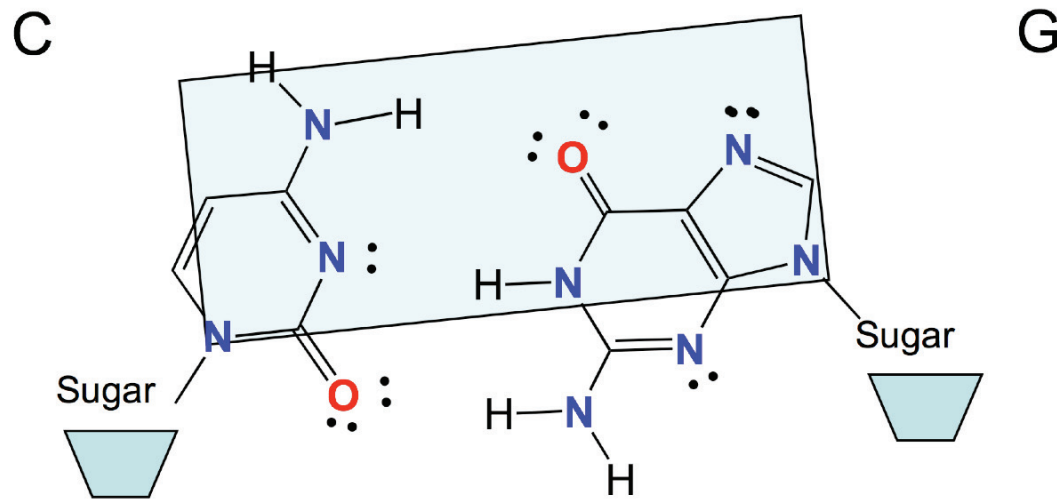


Burial of hydrophobic surface drives helix formation (hydrophobic core / stacking interactions)

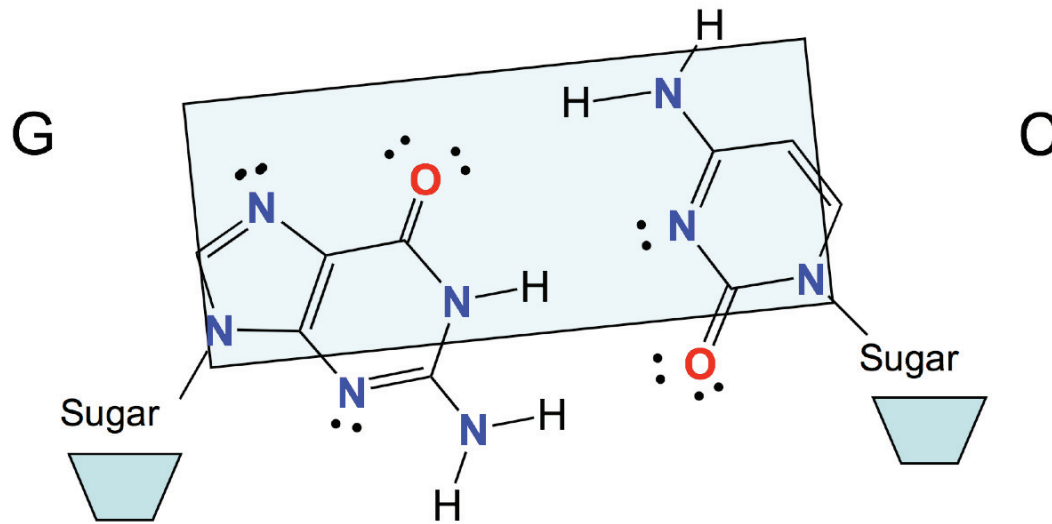


Flat faces are nonpolar
Edges are very polar (can H-bond)

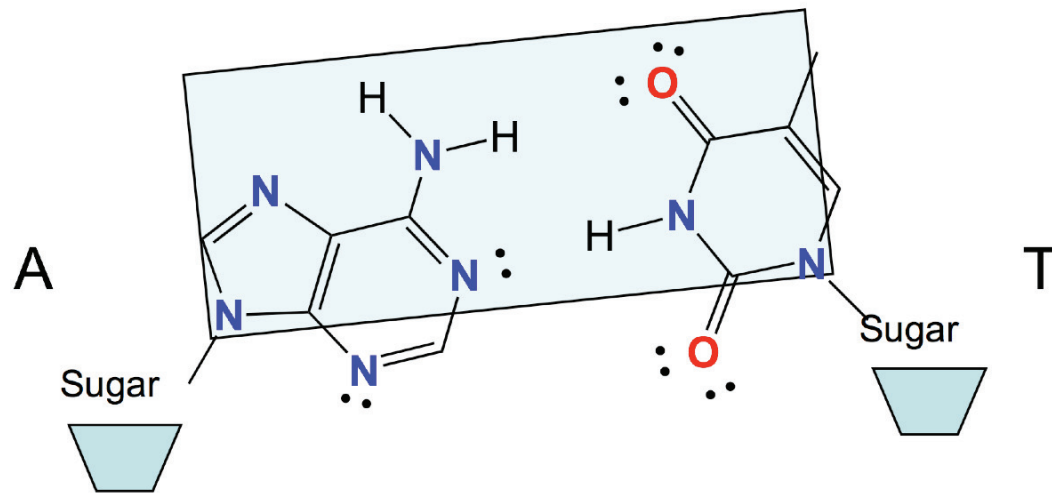
Why is Watson-Crick so good?



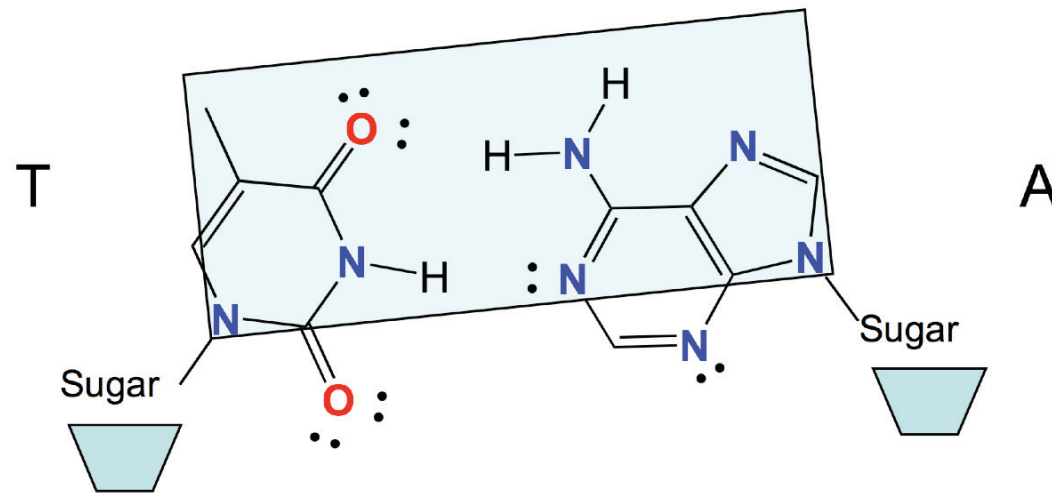
Why is Watson-Crick so good?

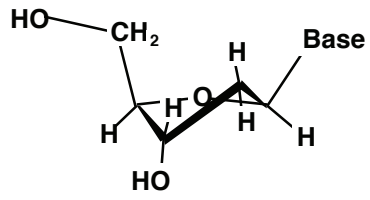


Why is Watson-Crick so good?

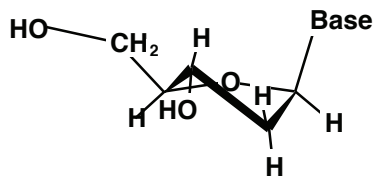


Why is Watson-Crick so good?



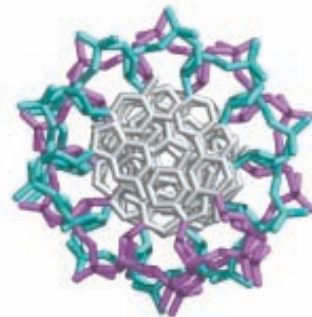
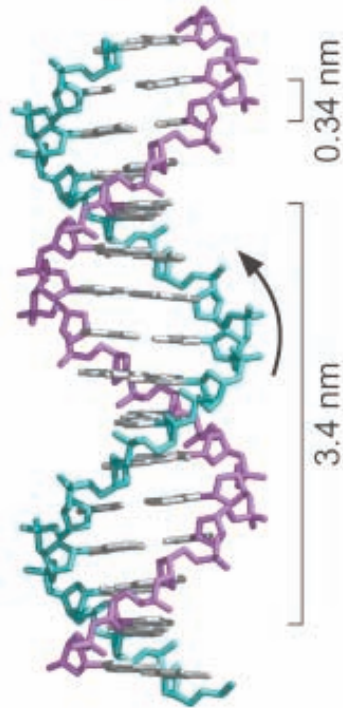


C2' endo - C3' exo

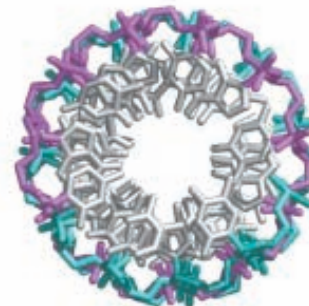
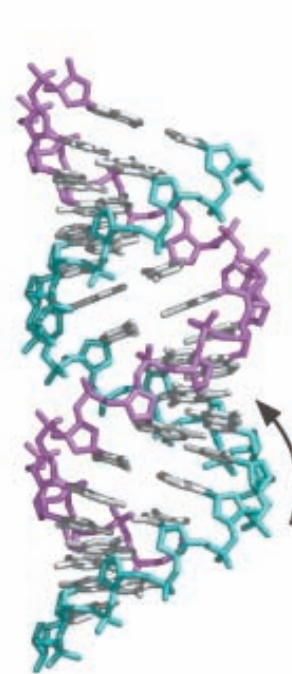


C2' exo - C3' endo

a B DNA



b A DNA



c Z DNA

