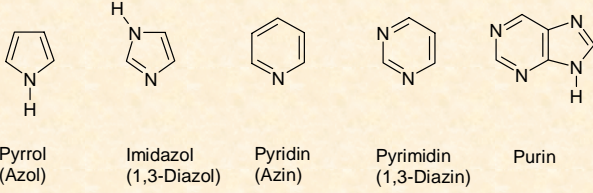


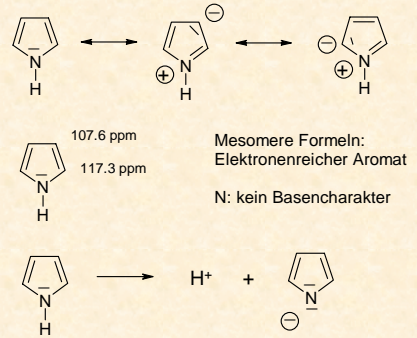
Chemie der Nukleinsäuren

1. Eigenschaften von N-Heterocyclen

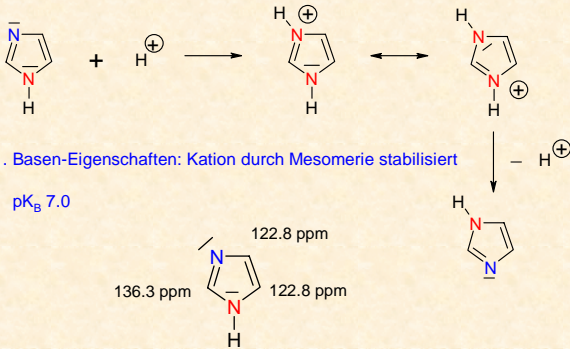


Pyrrol

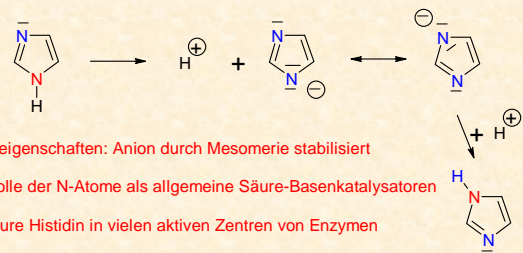
Pyrrol: Aromat (6 π -Elektronen)



Imidazol

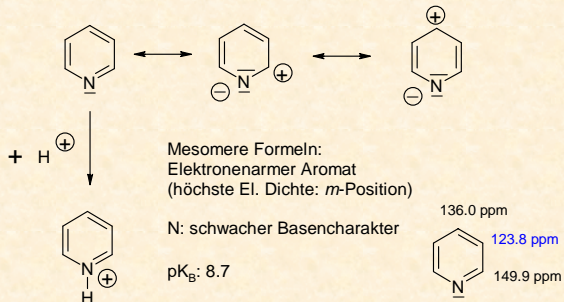


Imidazol



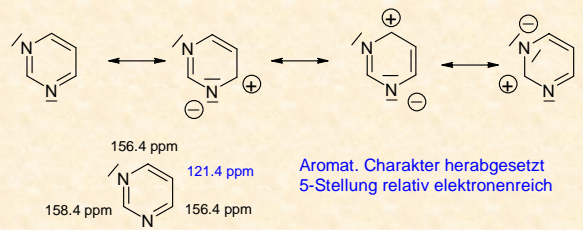
Pyridin

Pyridin: 6 π -Elektronen

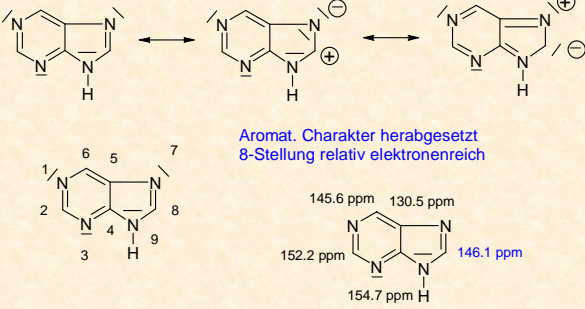


Pyrimidin

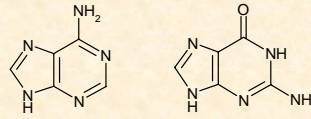
Pyrimidin: 6 π -Elektronen



Purin



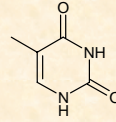
Die N-Basen von DNA und RNA



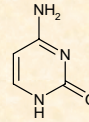
Adenin

Guanin

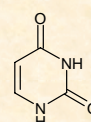
Purin-Basen



Thymin



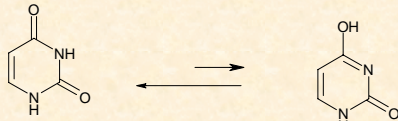
Cytosin



Uracil

Pyrimidin-Basen

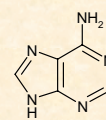
Lactam-Lactim Tautomerie



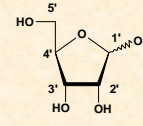
Uracil: Lactamform

Lactimform

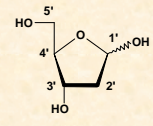
Nucleoside: N-Glycoside der N-Basen



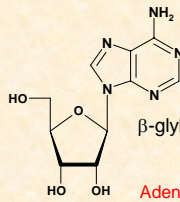
Adenin



Ribose
(Furanose)



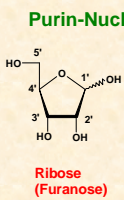
2'-Desoxyribose
(Furanose)



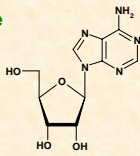
β-glycosidische Bindung (β-Ribofuranosid)

Adenosin

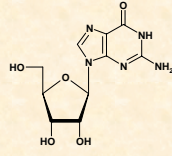
Purin-Nucleoside



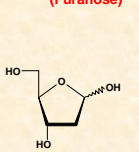
Ribose
(Furanose)



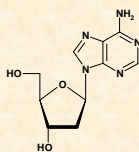
Adenosin



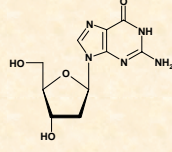
Guanosin



2'-Desoxyribose
(Furanose)



2'-desoxy-Adenosin
dA



2'-desoxy-Guanosin
dG

Pyrimidin-Nucleoside



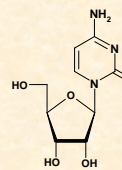
Cytosin



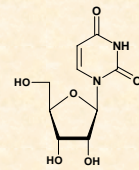
Thymin



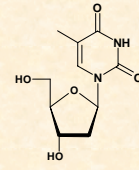
Uracil



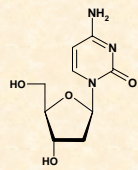
Cytidin
C



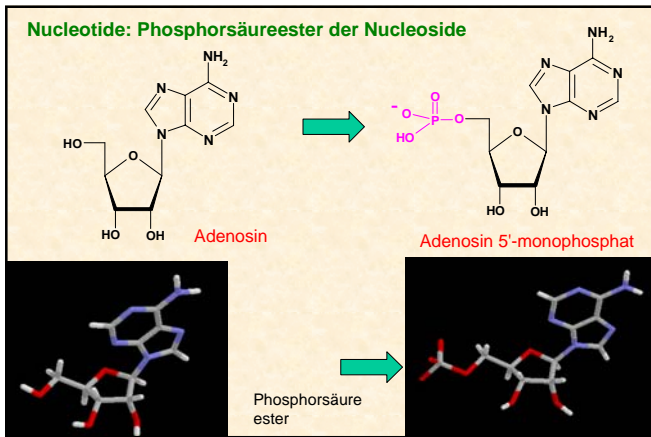
Uridin
U



Thymin
2'-Desoxyribosylthymin
dT



2'-desoxy-Cytidin
dC



2. Allgemeine Eigenschaften

Löslichkeit von Pyrimidinen und Purinen in Wasser (1 g Verbindung auf x g H₂O)

Heterocyclus	x g H ₂ O	funktionelle Gruppen
Pyrimidin	1	-
Uracil	280	2 OH
Thymin	250	2 OH, 1 Me
Purin.Pikrat	2	-
Adenin.Pikrat	1086	1 NH ₂
Guanin.Pikrat	26000	1 OH, NH ₂
2,8-Dihydroxyadenin	500000	1 OH, NH ₂
Harnsäure	39480	3 OH
Nucleoside, Nucleotide		gut in heißem, schlecht in kaltem Wasser

Allgemeine Eigenschaften

Dissoziationsgleichgewichte in Nucleotiden

Funktionelle Gruppe	Dissoziationsgleichgewicht	pK
1. Phosphat-OH	$RO-PO_3H_2 \rightleftharpoons RO-PO_3H^- + H^+$	0.7-1.6
-NH ₂ von Adenin	$R-NH_3^+ \rightleftharpoons R-NH_2 + H^+$	3.5-4.5
2. Phosphat-OH	$RO-PO_3H^- \rightleftharpoons RO-PO_3^{2-} + H^+$	5.8-6.6
Heterocycl. Protonen (U, T, G)	$-NH-CO- \rightleftharpoons -N=C(O)- + H^+$	9.5
-OH von Ribose	$R-OH \rightleftharpoons RO^- + H^+$	12.5

