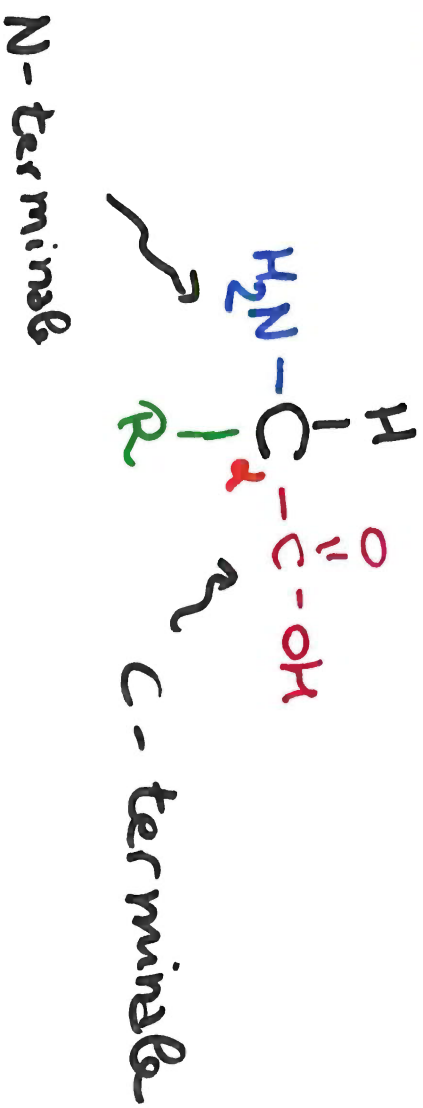


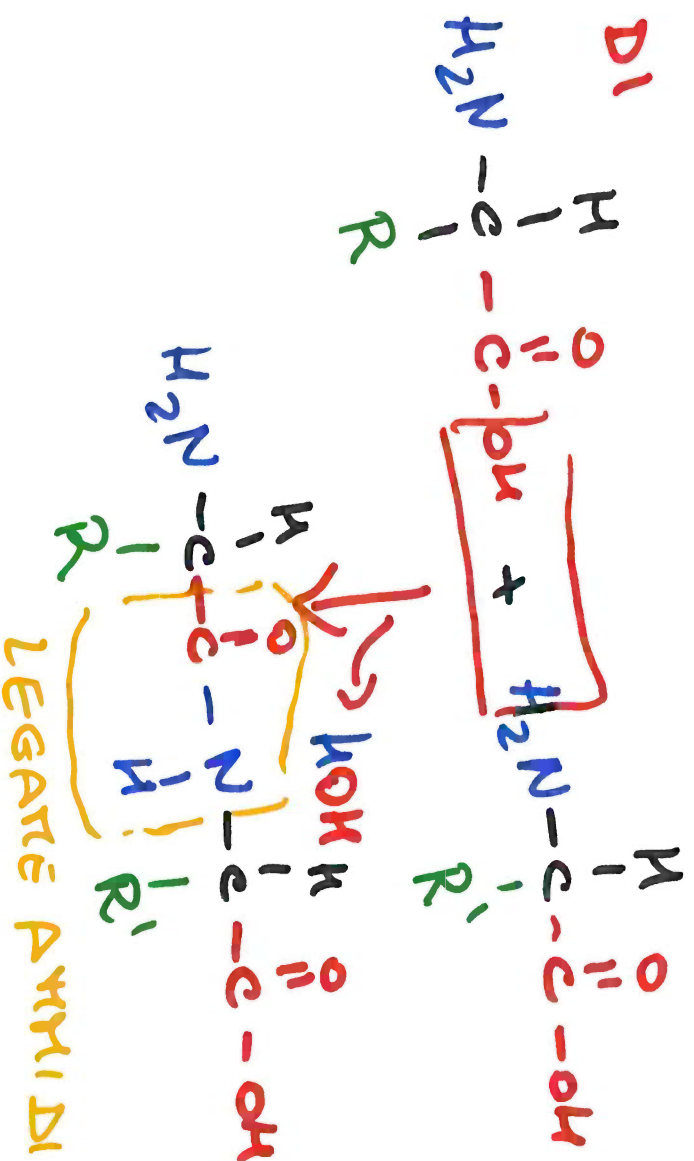
PROTEINE: BIOPOLIMERO

15/05

Catene di aminoacidi (aa)



POLIAMMIDI



TRANS

FUNZIONI:

Enzimi → catalitiche

TRASPORTO → emoglobina (O_2 , CO_2)
→ principi nutritivi

Sostegno → muscoli

Contrattile → fibre 

Controlla della T corporea

SINTESI

R

20 aa diversi

8 essenziali

R = H glycine

R = CH₃ Alanine

L-22 (natural)

Gly
Ala

G
A

ALIFATICO

ALIFATICO

APOLARE

C_a è chirale

= CH₂COOH Acido ascorbico

aa ACIDO

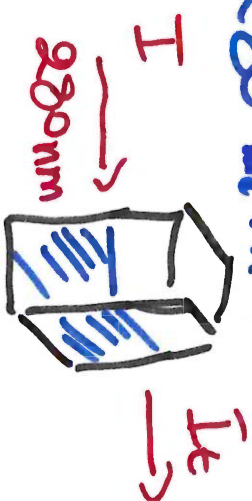


fenilalanina

aa AROMATICO

APOLARE → idrofobico
planare

UV a 280 nm



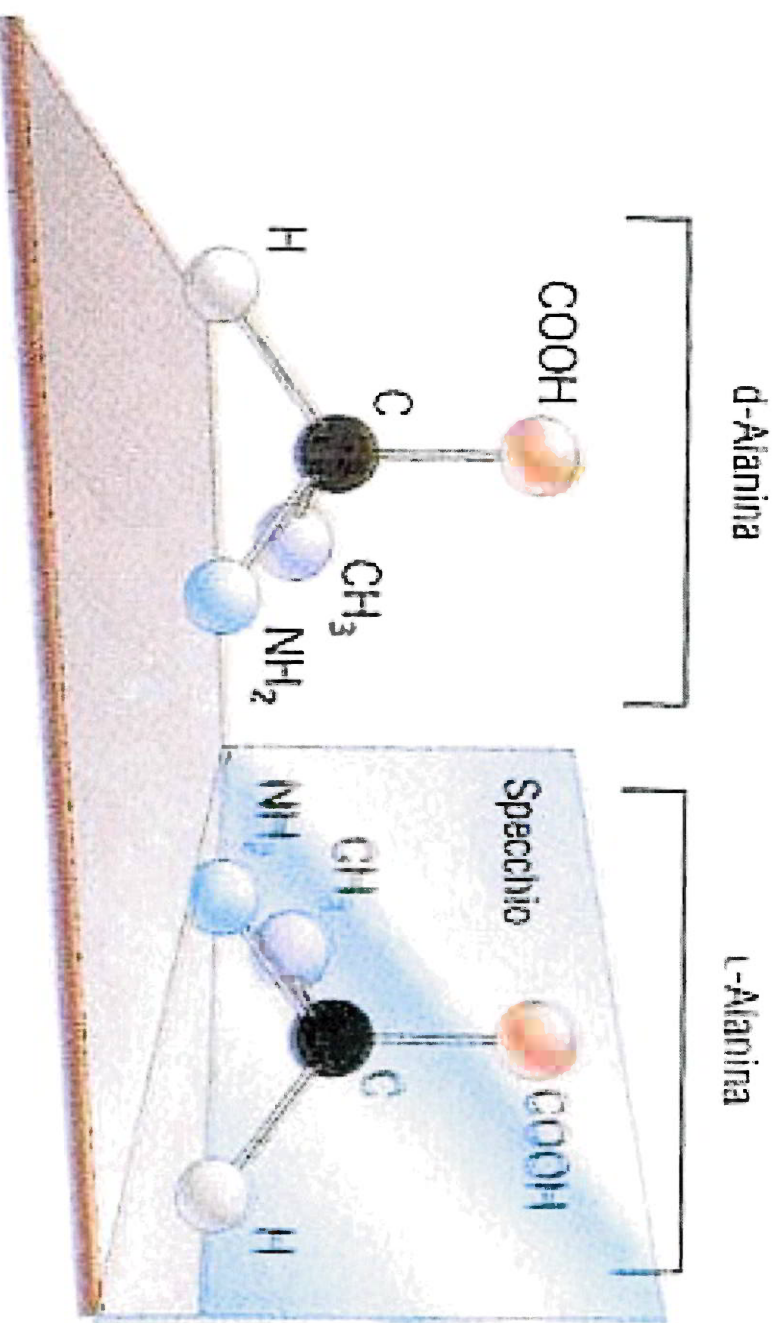
$$A = \frac{I_t}{I}$$

$$= \epsilon \cdot c \cdot l$$

ε coeff. estinzione
mola

conc. analita

STEREISOIMERIA DEGLI AMMINOACIDI



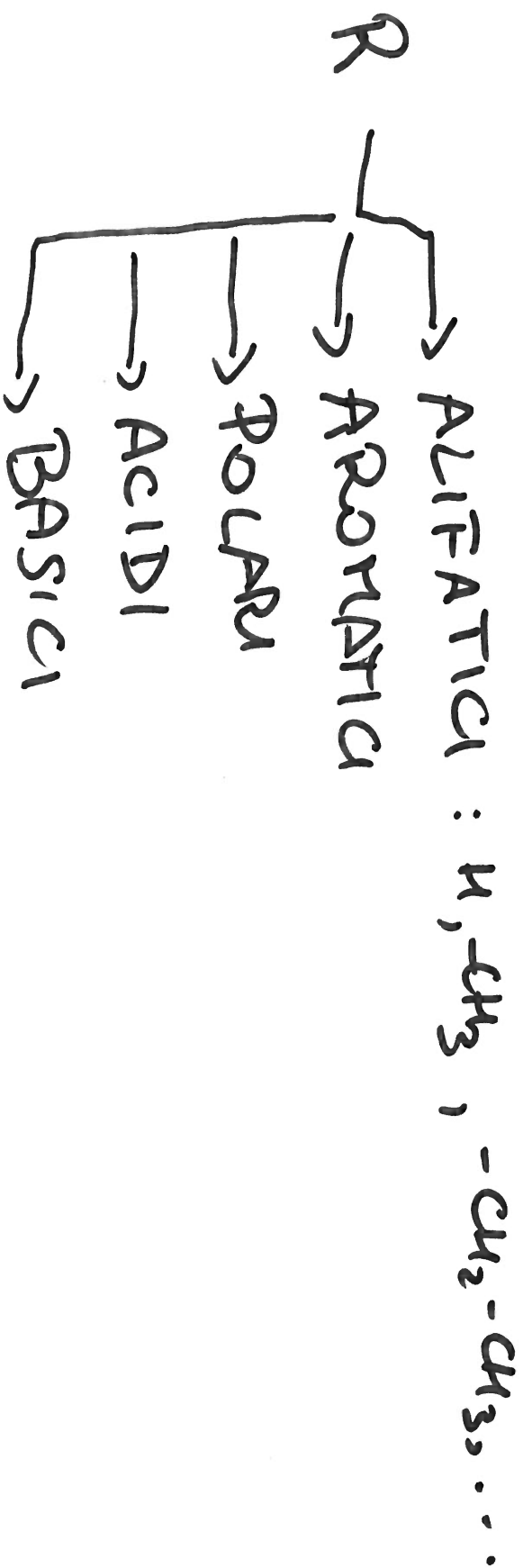
$-(CH_2)_4-NH_2$ Lysine Basic



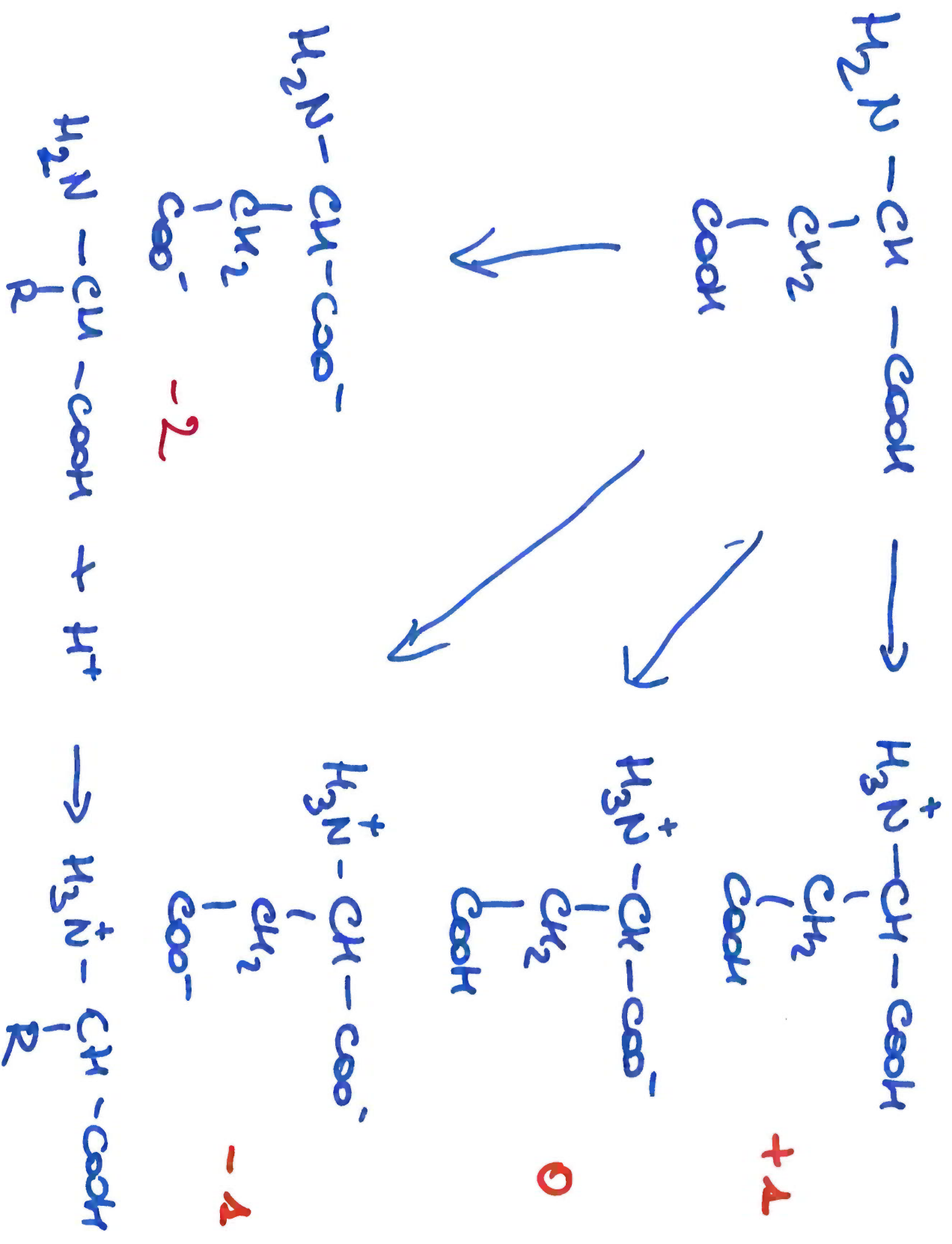
$\underbrace{\hspace{1.5cm}}_{\text{APOLAR}} \quad \text{POLAR}$



POLAR PENT A H
GLUTAMINE

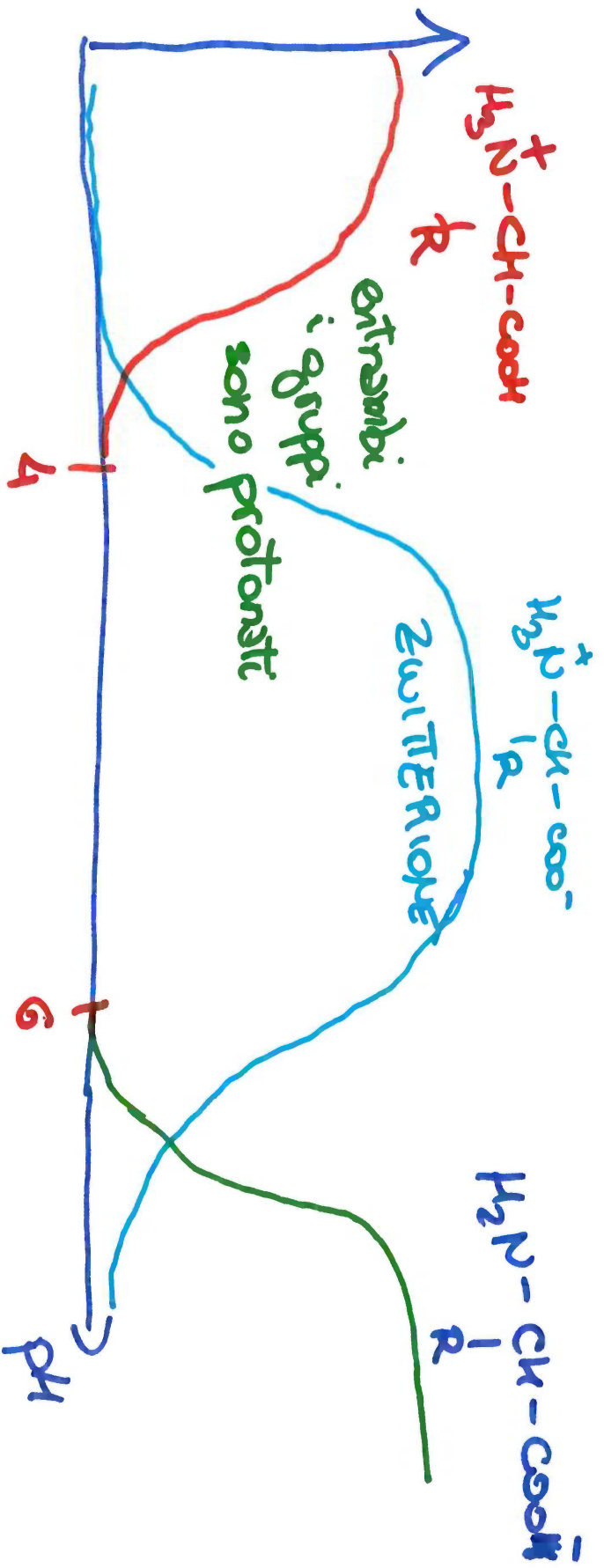


Punto 180E LETTERA C : il pH per cui la carica è 0

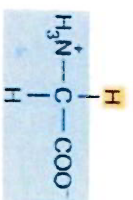




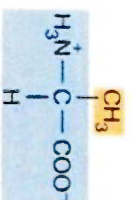
$$pK_{a,COOH} = 4 \div 5$$



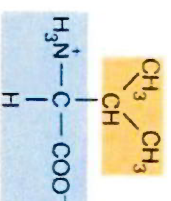
AMINOACIDI ALIFATICI



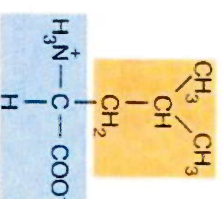
Glicina (Gly) G



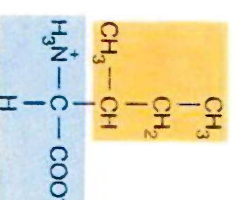
Alanina (Ala) A



Valina (Val) V

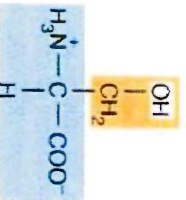


Leucina (Leu) L

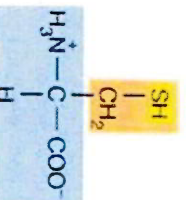


Isoleucina (Ile) I

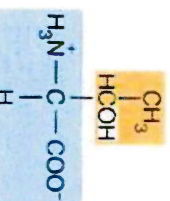
AMINOACIDI CON CATENE LATERALI CONTENENTI ZOLFO O GRUPPI OSSIDRILICI



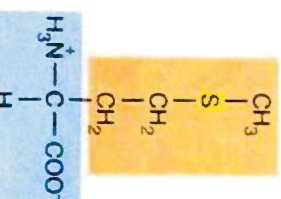
Serina (Ser) S



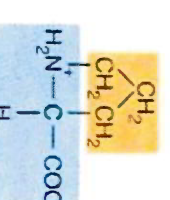
Cisteina (Cys) C



Treonina (Thr) T

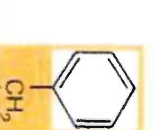


Metionina (Met) M

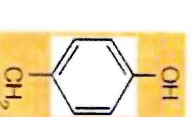


Prolina (Pro) P

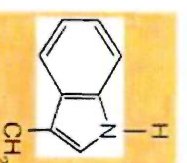
AMINOACIDI AROMATICI



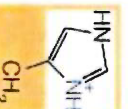
Fenilalanina (Phe) F



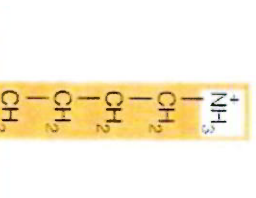
Tirosina (Tyr) Y



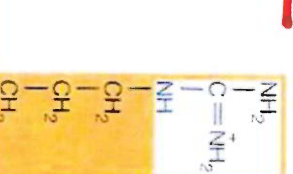
Triptofano (Trp) W



Istidina (His) H

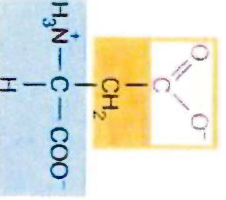


Lisina (Lys) K

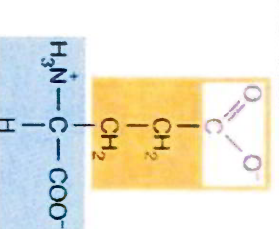


Arginina (Arg) R

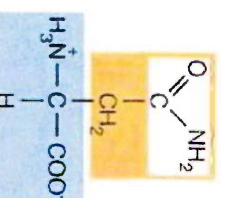
AMINOACIDI ACIDI E LORO AMIDI



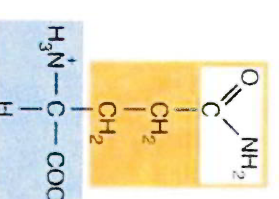
Acido aspartico (Asp) D



Acido glutammico (Glu) E



Asparagina (Asn) N



Glutammina (Gln) Q

ZWITTERIONS

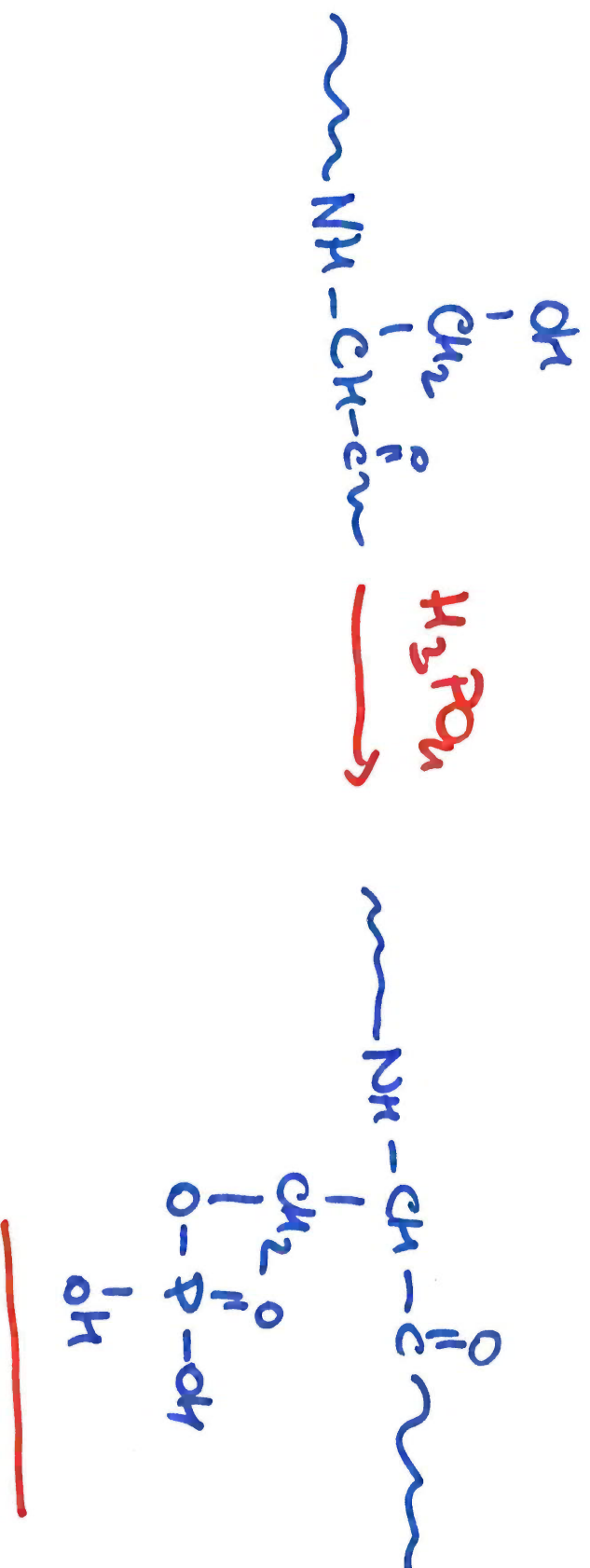
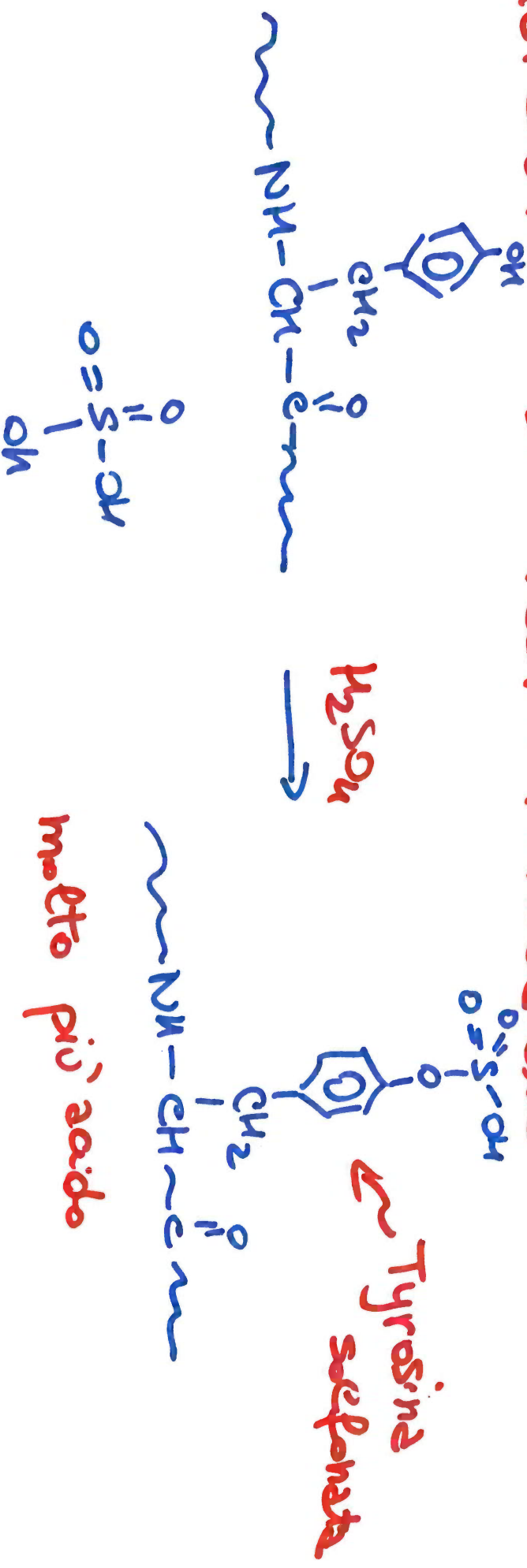
AMINOACIDO CICLICO

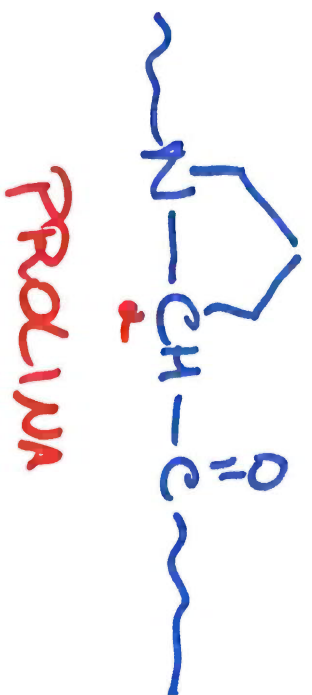
Gli aminoacidi incorporati nelle proteine. I 20 α-aminoacidi che sono incorporati nelle proteine sono qui classificati secondo i criteri discussi nel testo. Sotto ciascun aminoacido sono riportati il nome, l'abbreviazione secondo il codice a tre lettere e l'abbreviazione secondo il codice a una lettera.

pKa di gruppi dissociabili delle proteine

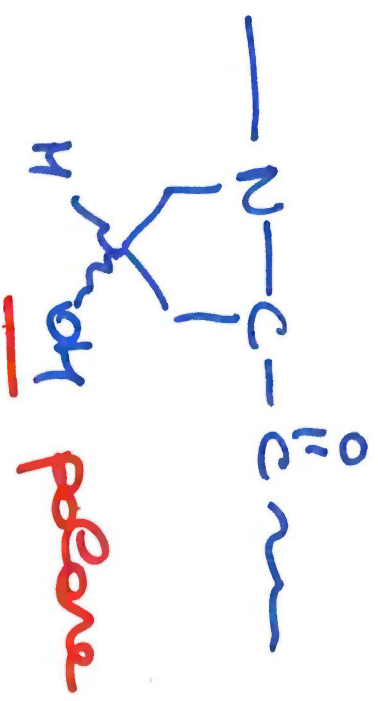
<i>Tipo di gruppo</i>	<i>intervallo di pKa</i>
Carbossilico	3.5 – 4.0
Carbossilico della catena laterale di Asp e Glu	4.0 - 4.8
Imidazolico (His)	6.5 – 7.4
Cisteinico (SH)	8.5 – 9.0
Fenolico (Tyr)	9.5 – 10.5
Alfa-amminico	8.0 – 9.0
Ammिनico della catena laterale di Lys	9.8 – 10.4
Guanidinico (Arg)	12

Reazione di Post-Traduzione





1,2-OSSIDAZIONE $\rightarrow$



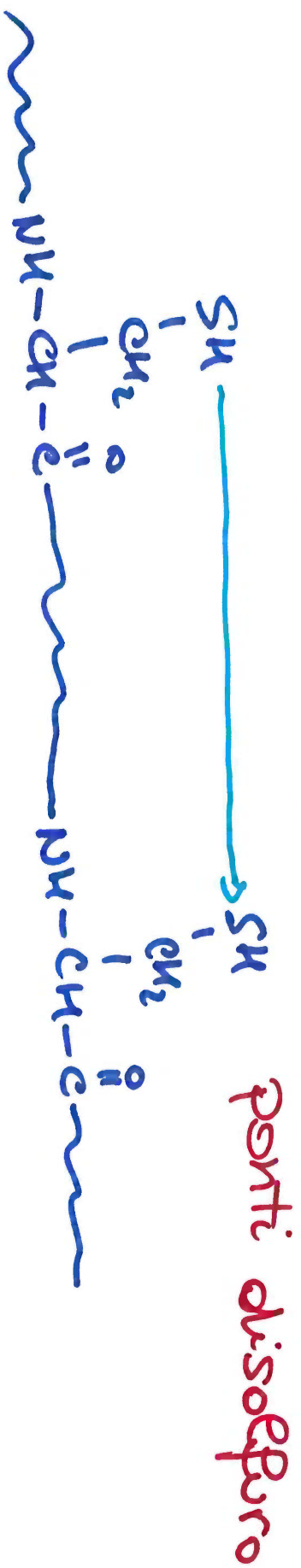
idrossi-prolina Hyp

collagene

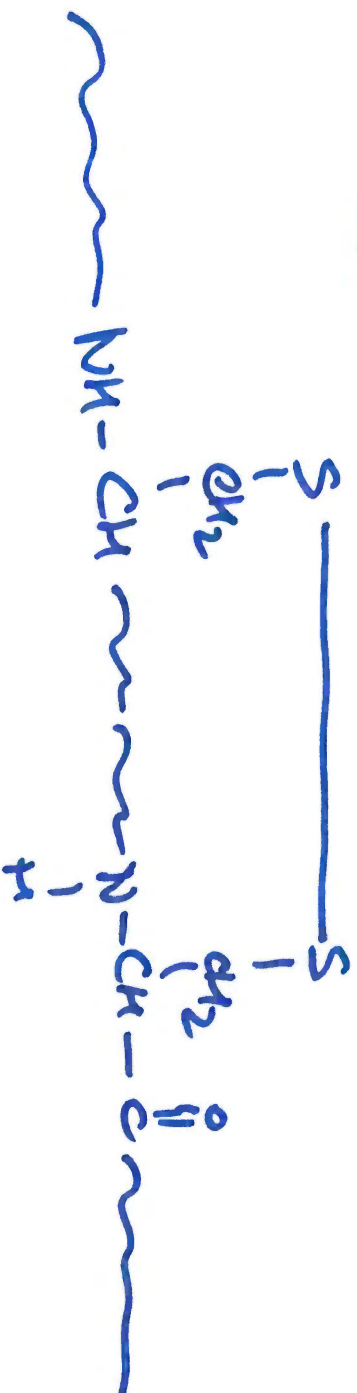
aa + ZUCCHERI $\rightarrow$ glicoproteine

CISTEINA

R = -CH₂-SH *peleone*



SH si ossida e crea S-S



STRUCTURE PROTEINE

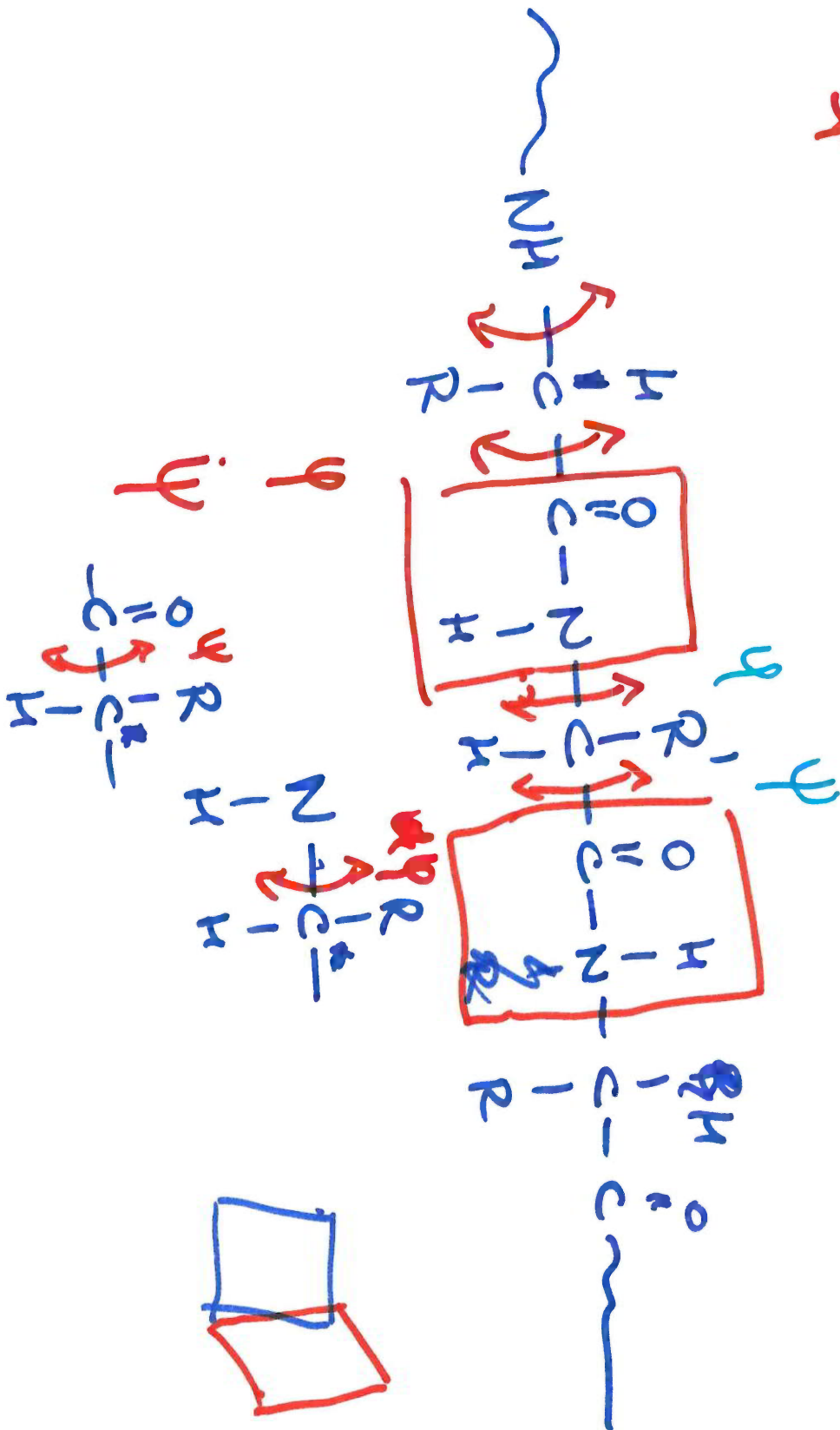
→ PRIMARIA → sequenza ∞

→ SECONDARIA : α -elae | β -sheet
(β -foglietto)

turn, ...

→ TERZIARIA : combinazione delle
strutture secondarie

→ QUATERNARIA 4 catene di ∞



ANALISI PROTEINE

PROTEINA

HeC 6M

110°C

24h

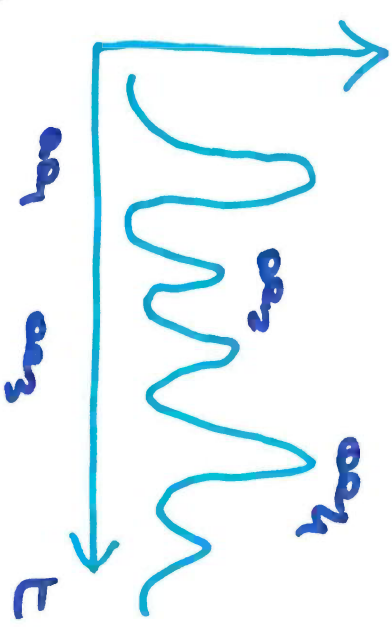
sottovuoto

aa
aa1

aa2

aa3

→ cromatografo

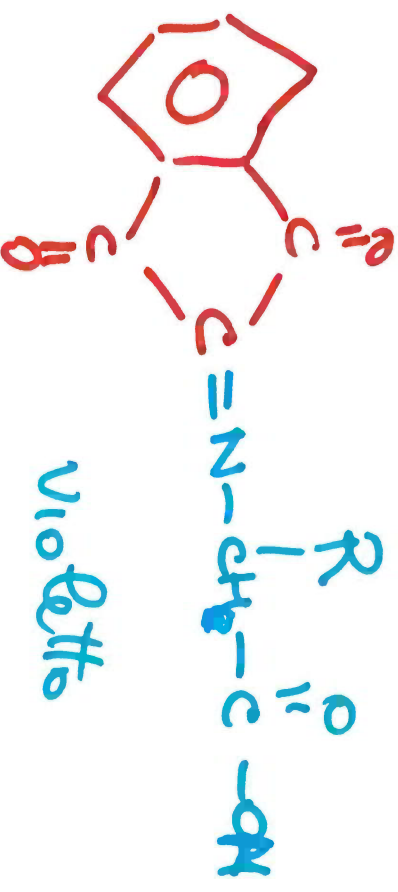
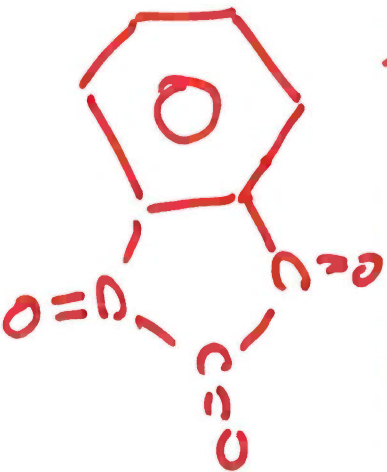


esce per primo:

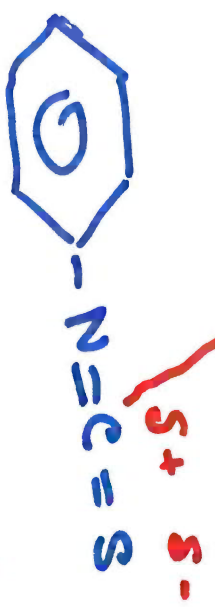
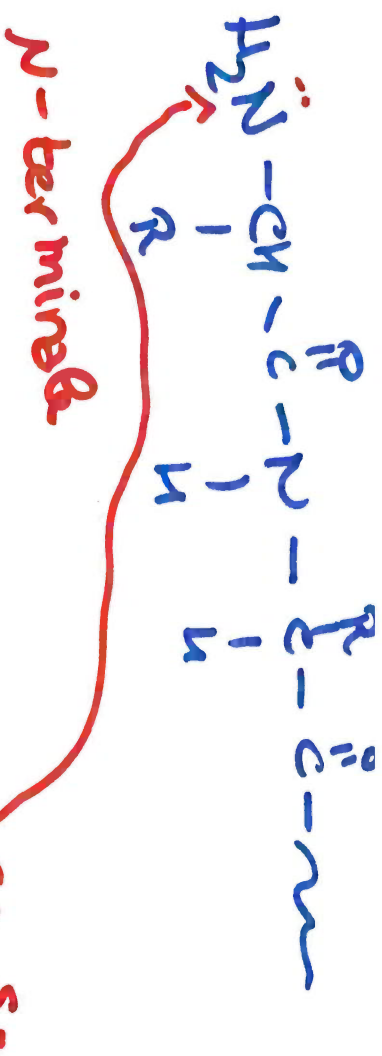
aa con (-) ⇒ acidi
aa neutri (0)

aa con (+) ⇒ basici

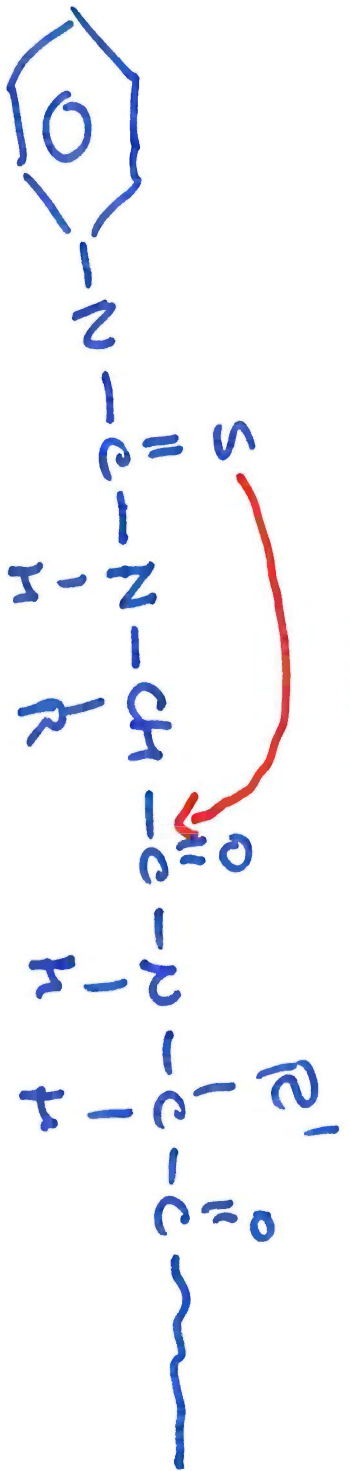
aa + Ninidrina



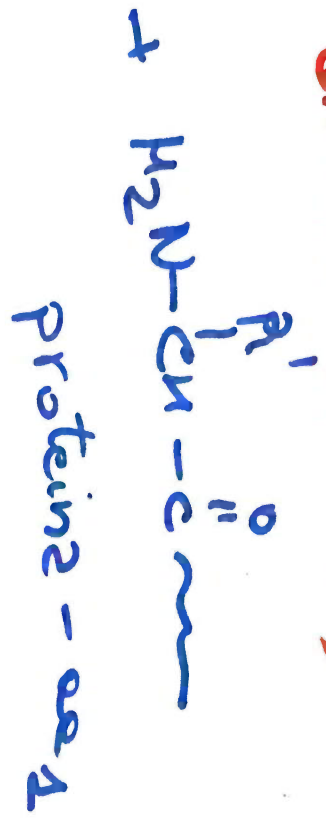
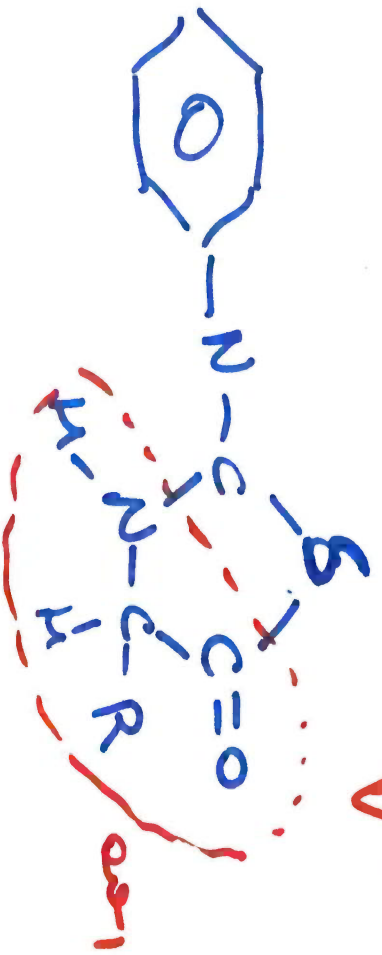
Violetto



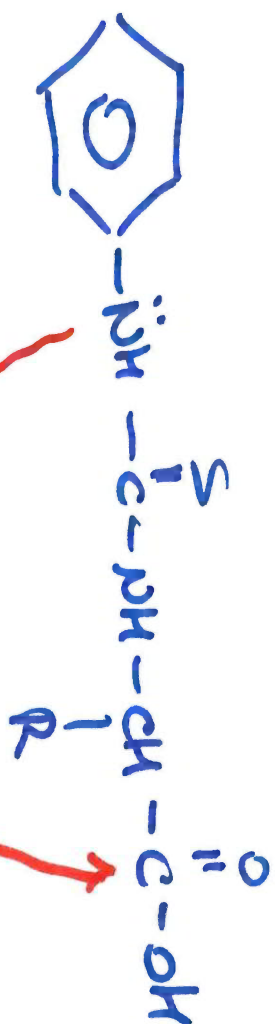
Phenyl isocyanate



H⁺ anhydro (no H₂O)



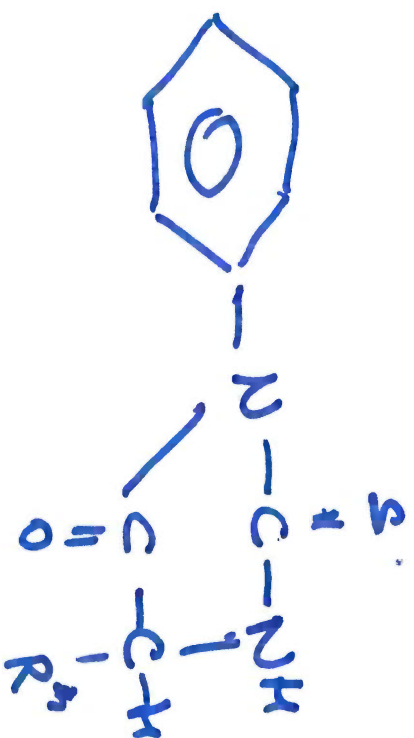
H^+ , H_2O
 $\downarrow$
 $80^\circ C$



Fenietioida toins

PTH

$\exists 1$ per aa



Columna IDROFOBICA per CROMATOGRAFIA