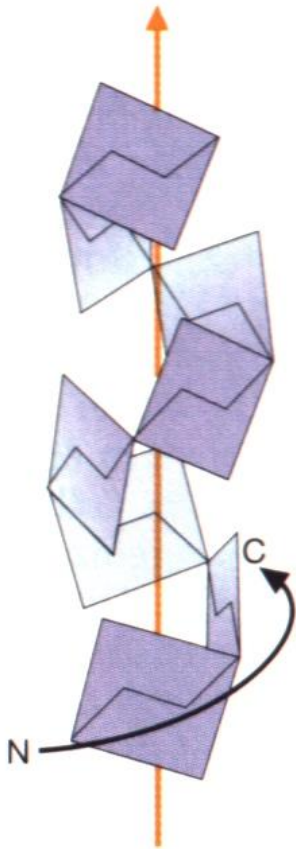
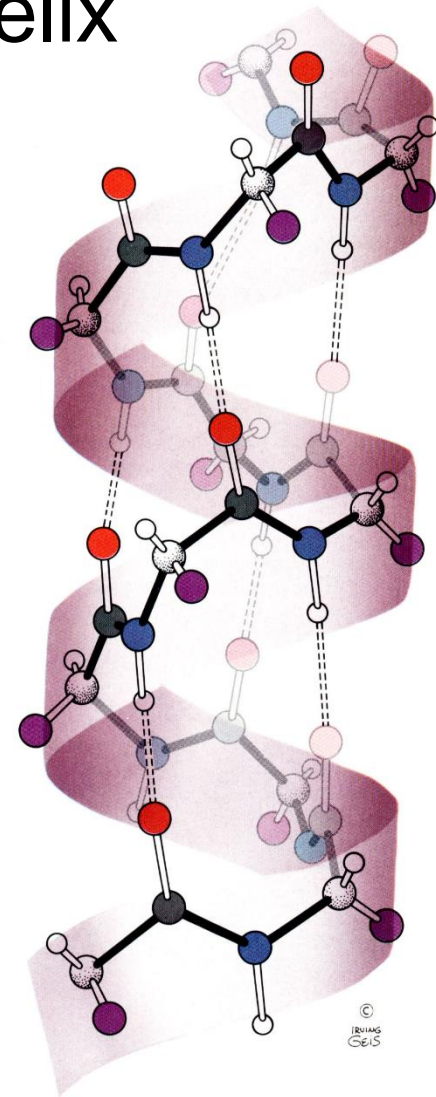
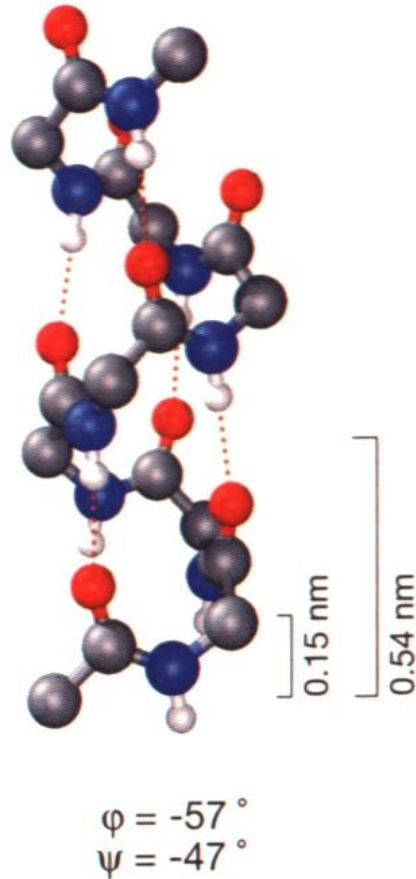


Proteine - Die α -Helix



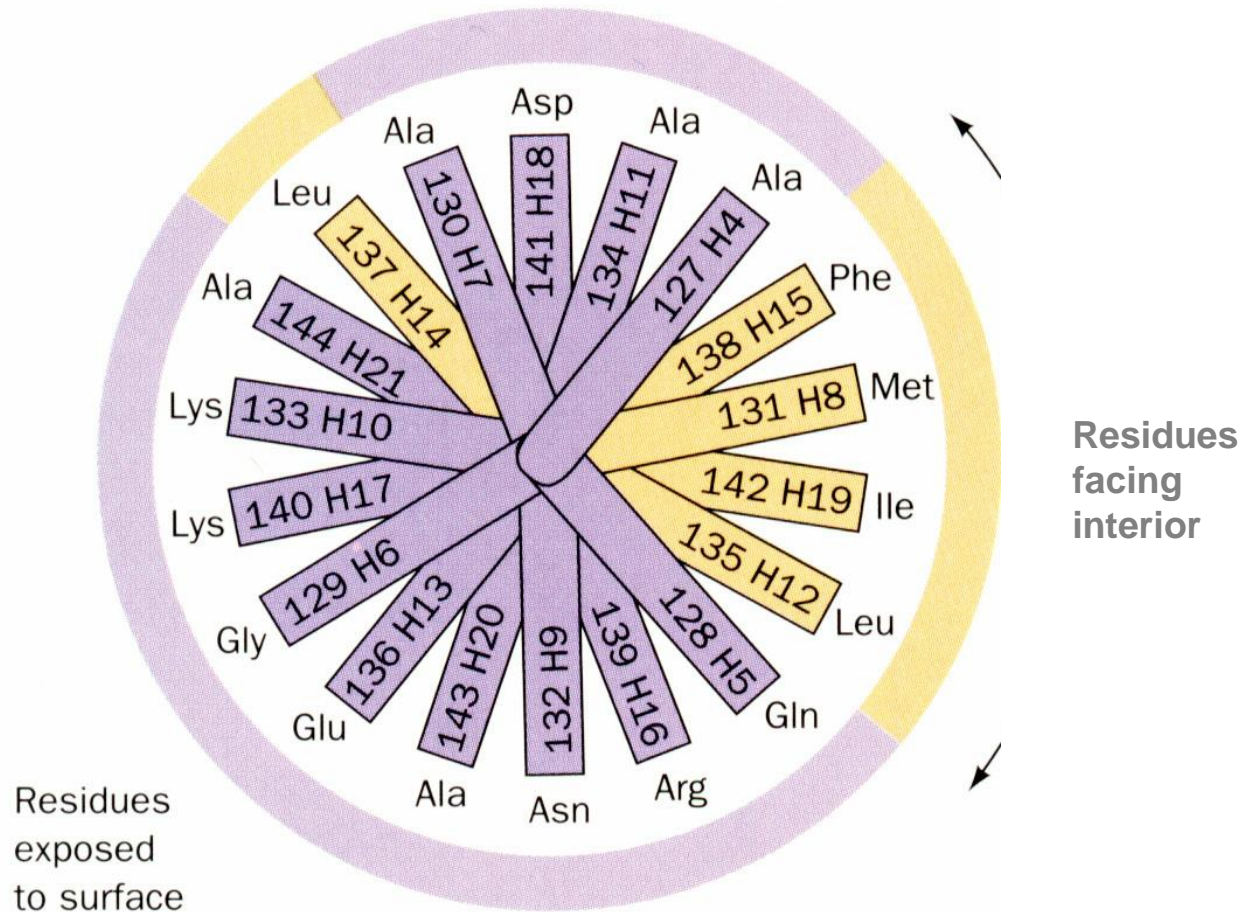
A. α -Helix

Globuläre und Faserproteine
 $\phi = 57^\circ$ und $\psi = 47^\circ$



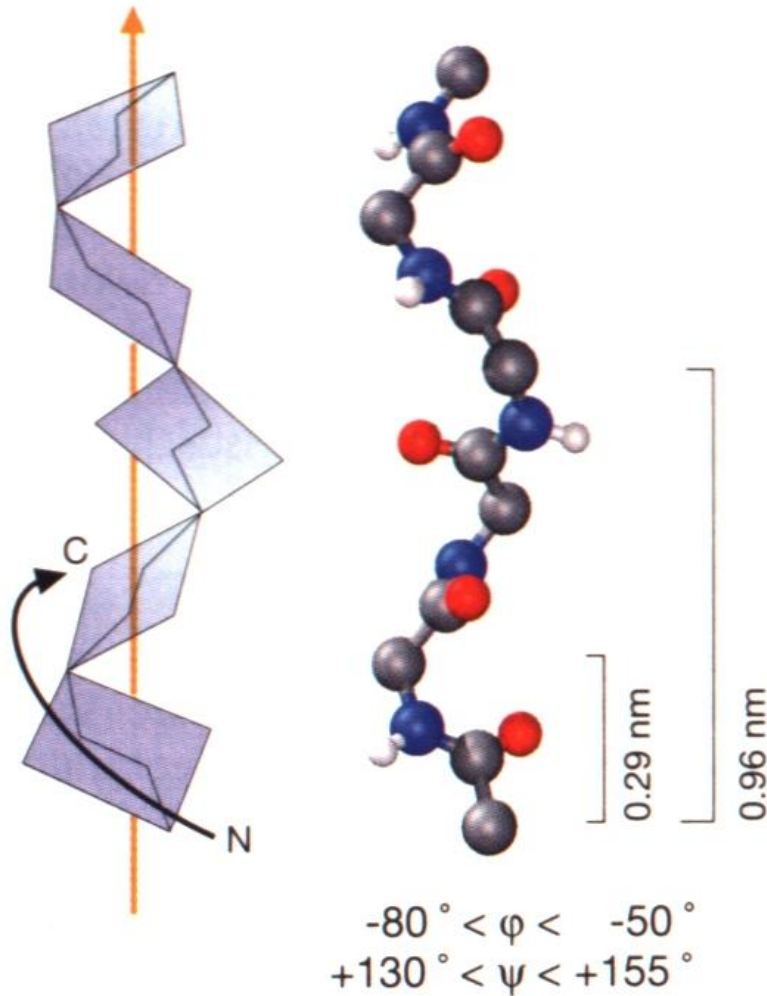
3.6 Aminosäurereste pro Windung
Ganghöhe p (pitch): 0.54 nm.

Die α -Helix des Pottwal-Myoglobins



Funktionales Helixrad: Hydrophile und hydrophobe Flächen!

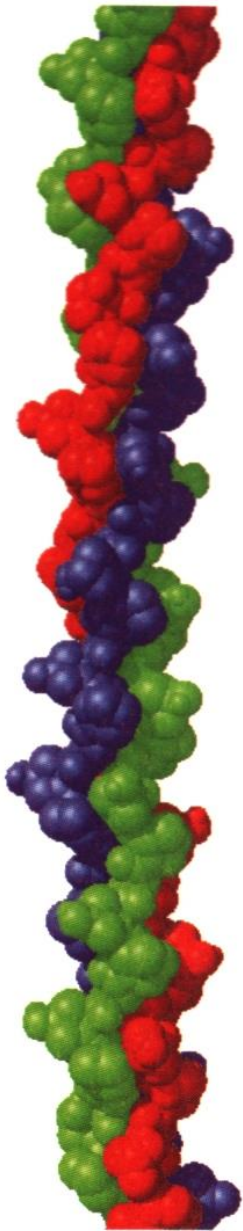
Die Kollagen-Helix



B. Collagen-Helix

3_{10} -Helix: allein nicht stabil!

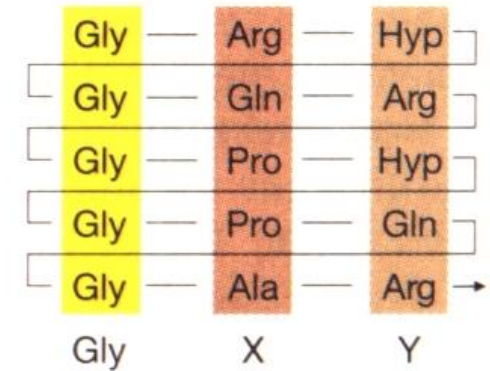
Die Kollagen-Helix



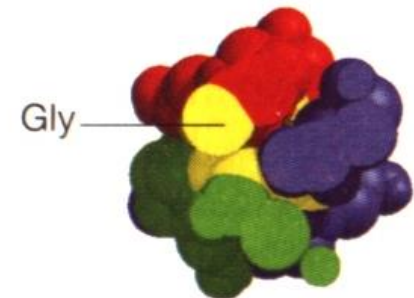
Viel Prolin und Hydroxyprolin

Alle 3 AS Glycin:
hydrophobe WW
im Inneren

1. Tripelhelix (Ausschnitt)



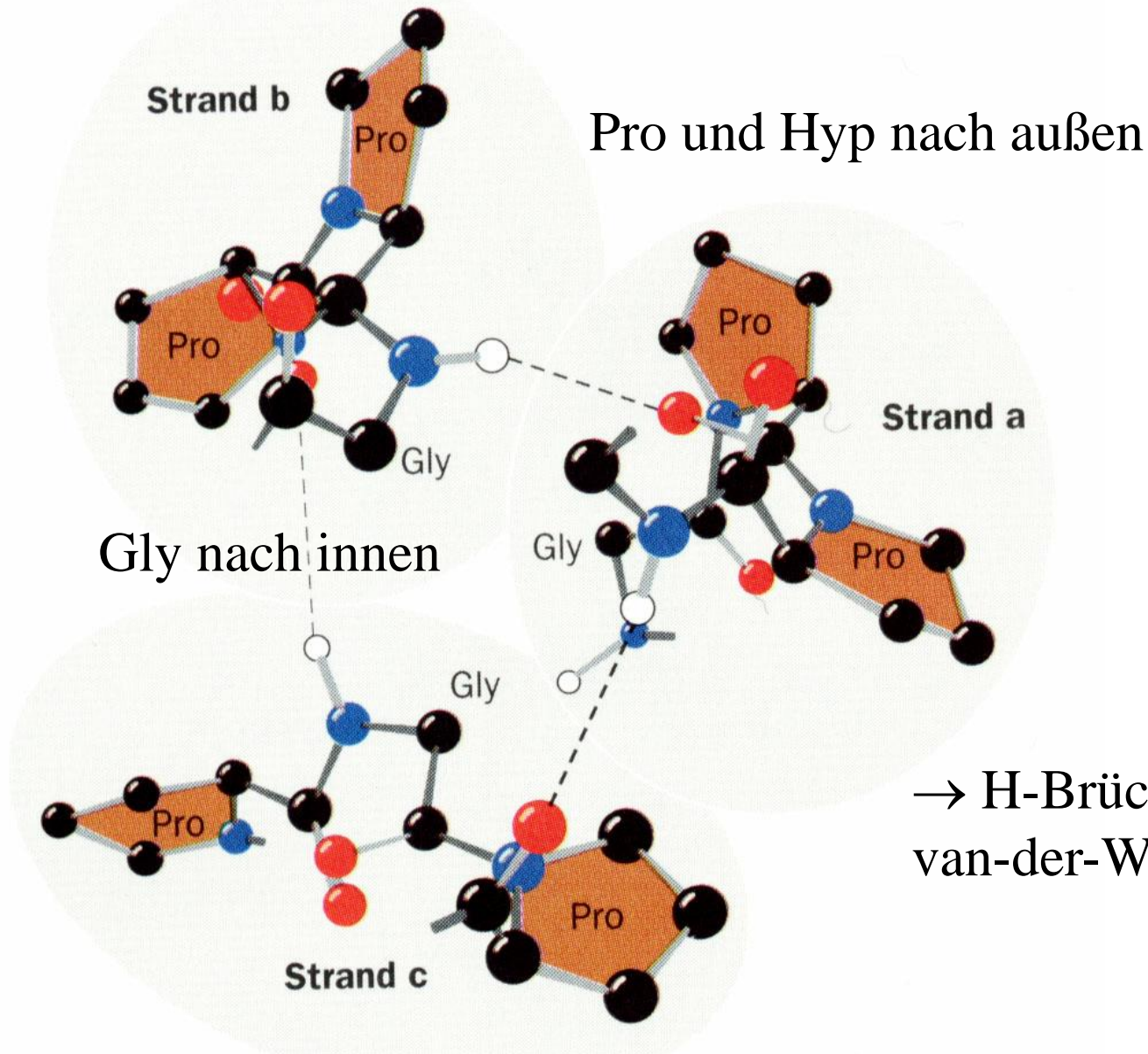
2. Typische Sequenz



3. Tripelhelix (Aufsicht)

B. Collagen

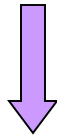
Die Kollagen-Helix



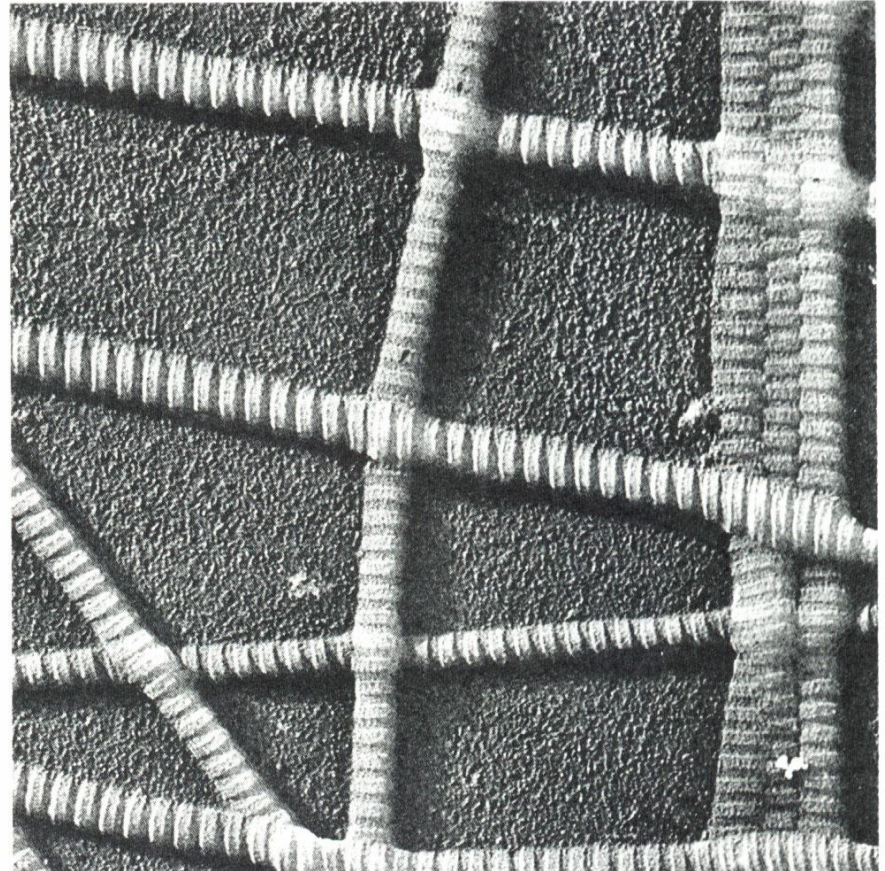
Elektronenmikroskopie



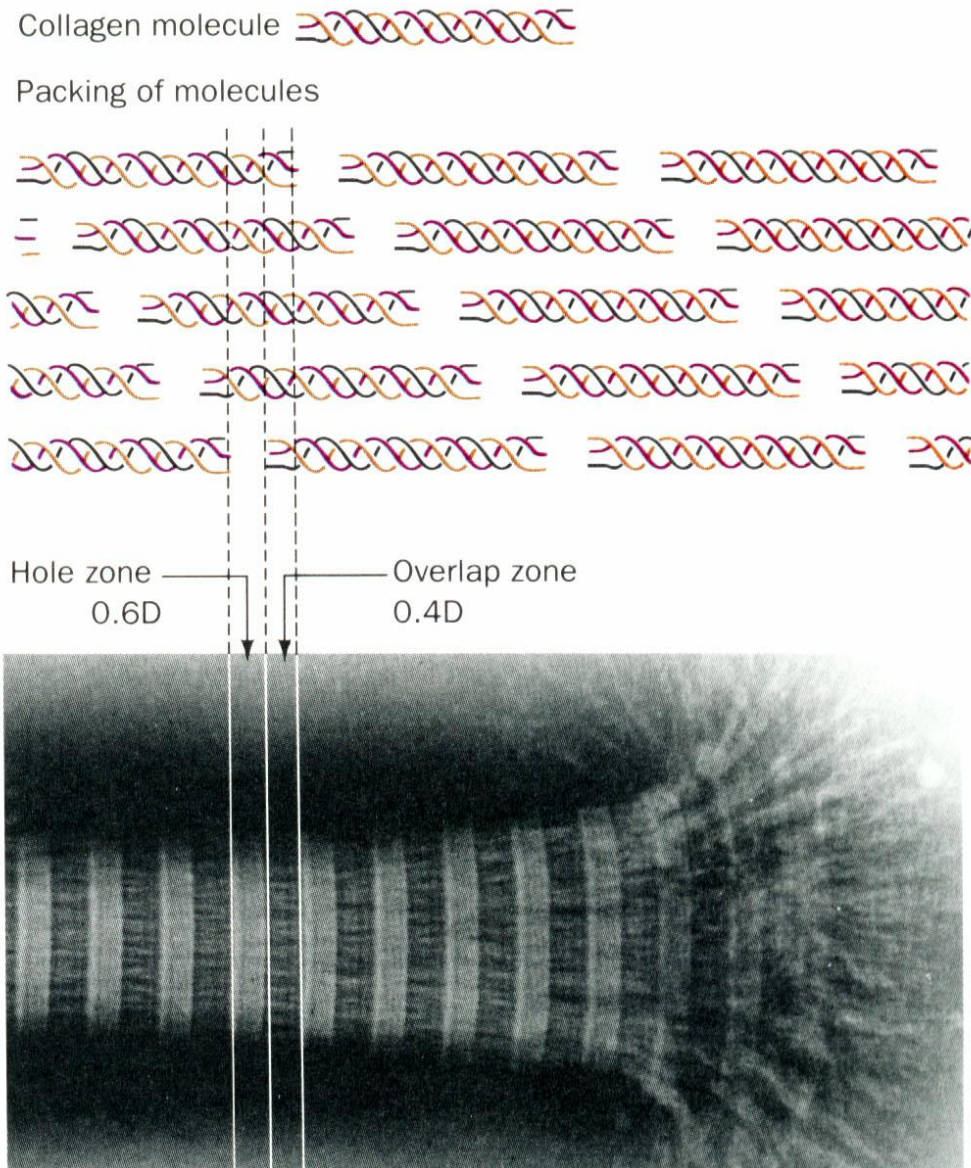
Aggregation
zu Fibrillen



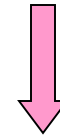
Zugfestigkeit
Faserprotein



Packung im Fibrillenstrang



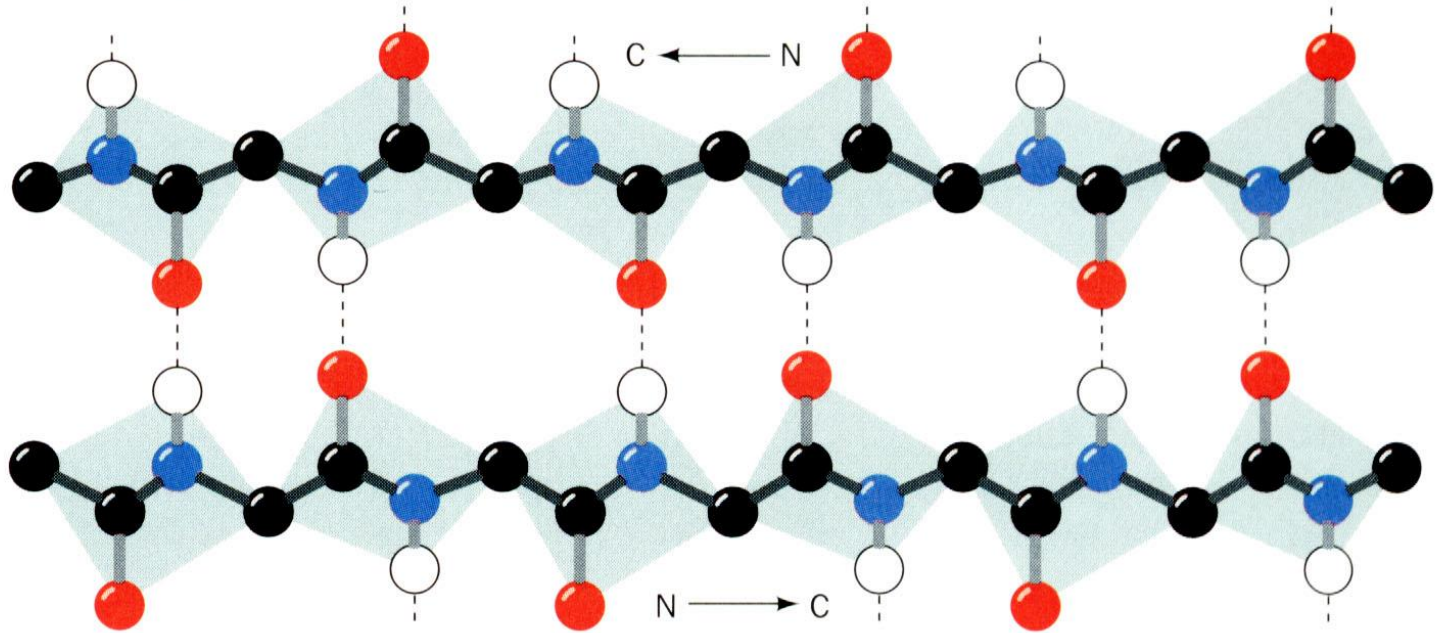
präzis
gestaffelt



Periodisch
eingekerbte
Oberfläche

β -Faltblatt

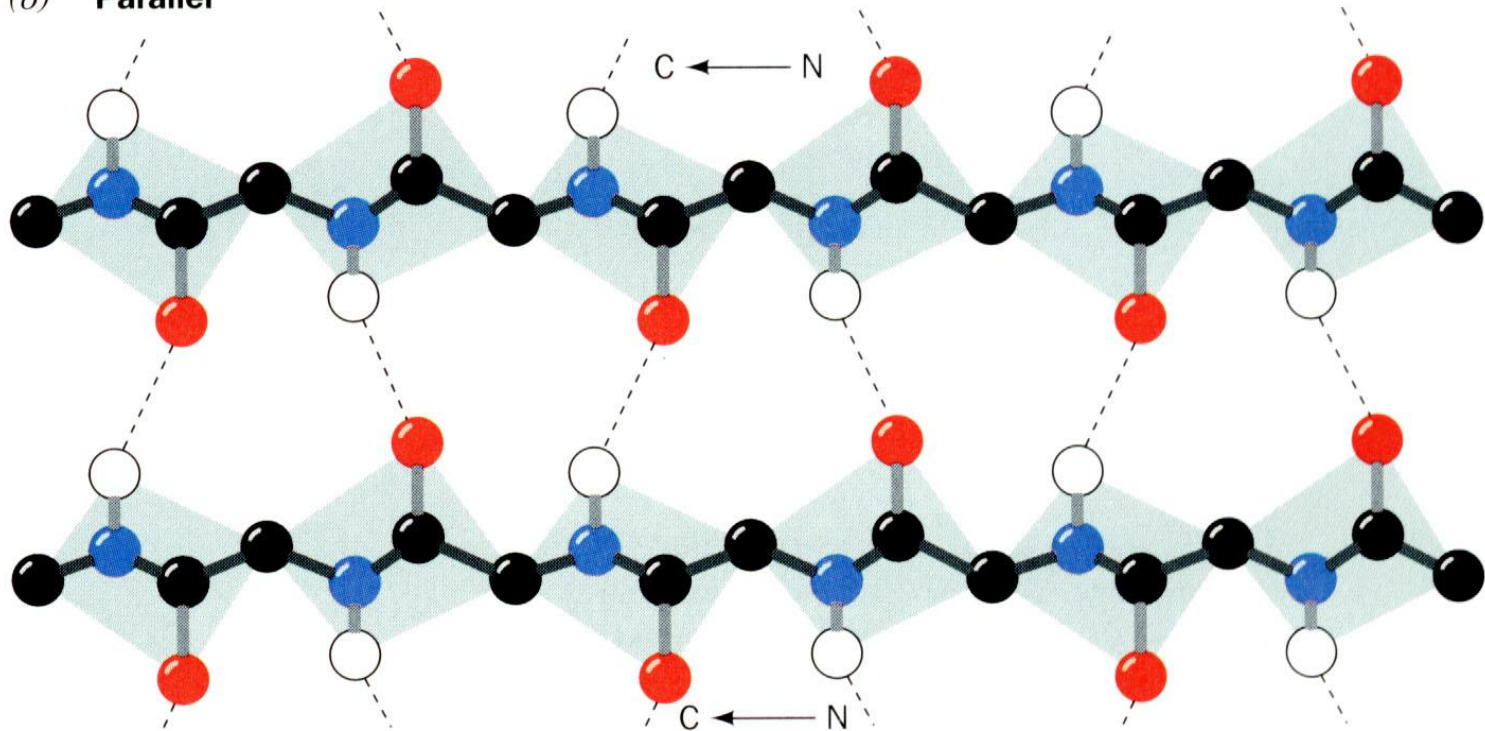
(a) Antiparallel



Gestreckte Kette: zwei benachbarte Stränge paaren

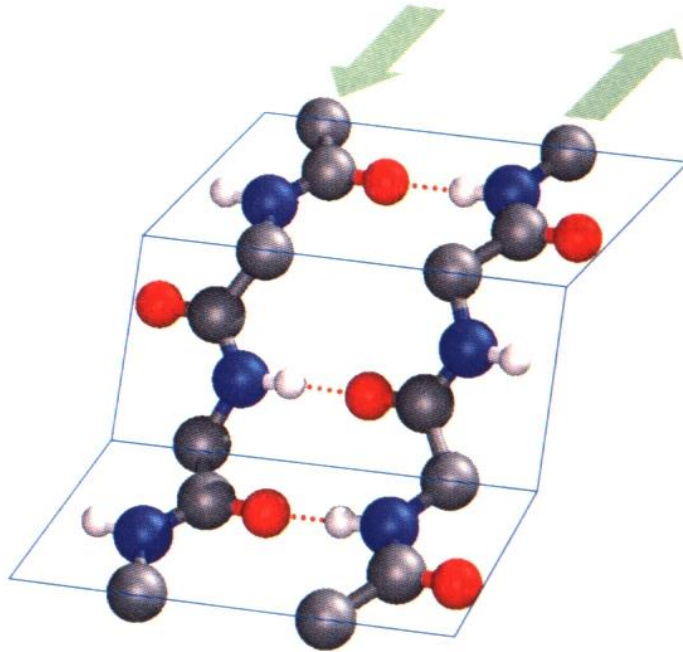
β -Faltblatt

(b) **Parallel**



Parallel: Gewinkelte H-Brücken - schwächere Bindung

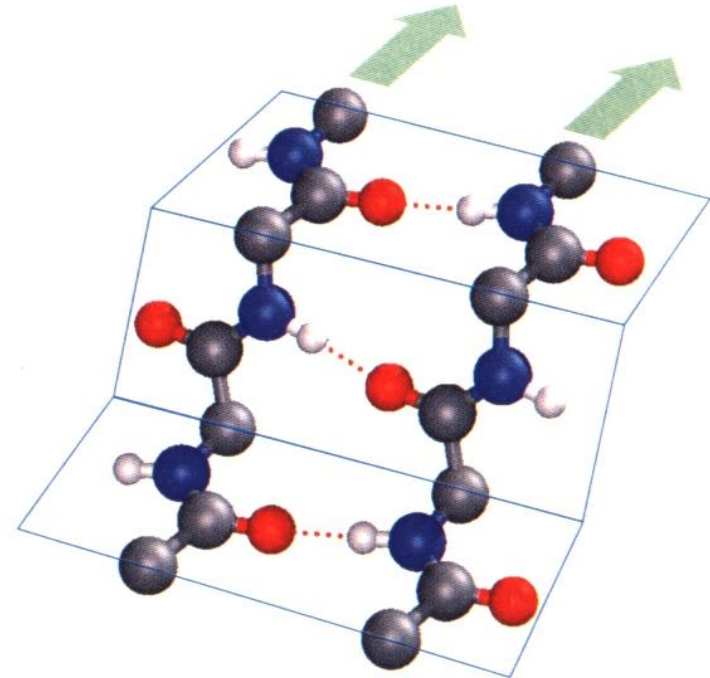
Erscheinungsbild



1. antiparallel

$$\varphi = -139^\circ$$
$$\psi = +135^\circ$$

C. Faltblatt-Strukturen

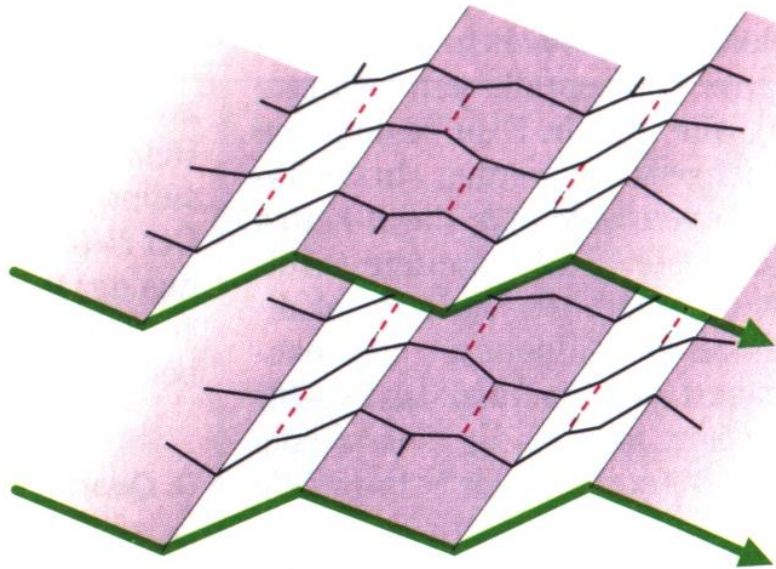


2. parallel

$$\varphi = -119^\circ$$
$$\psi = +113^\circ$$

Knicke des Faltblatts nur an α -C-Atomen (sp^3)

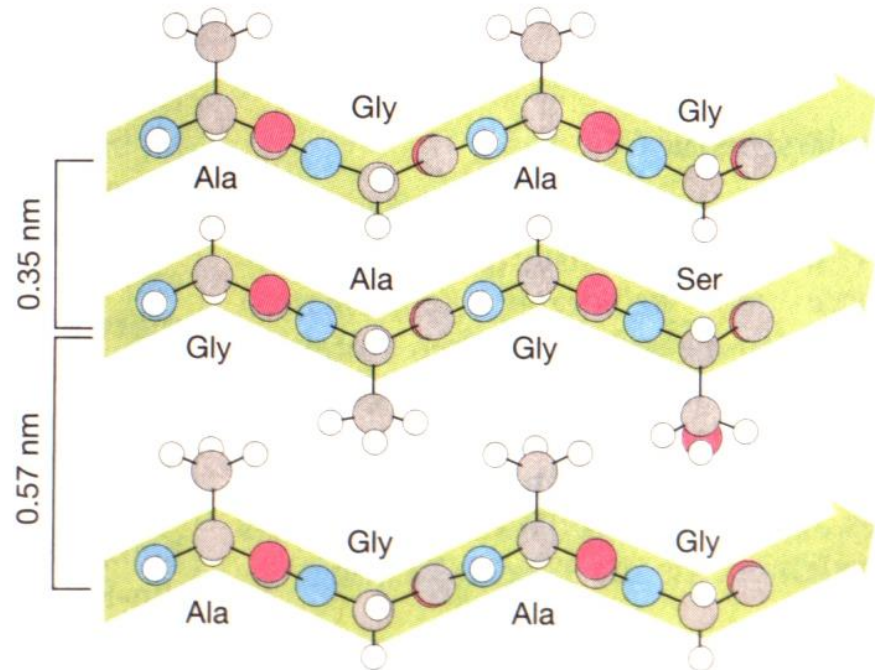
Seidenfibroin



1. Räumliche Darstellung

Viel Ala und Gly: →
verschiebbar - geschmeidig

β -Faltblatt-Stapel



2. Frontalansicht

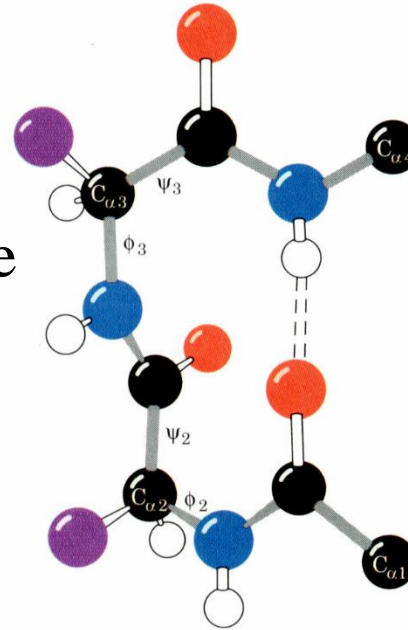
C. Seiden-Fibroin

β -Schleifen

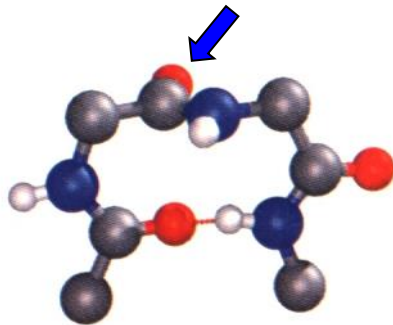
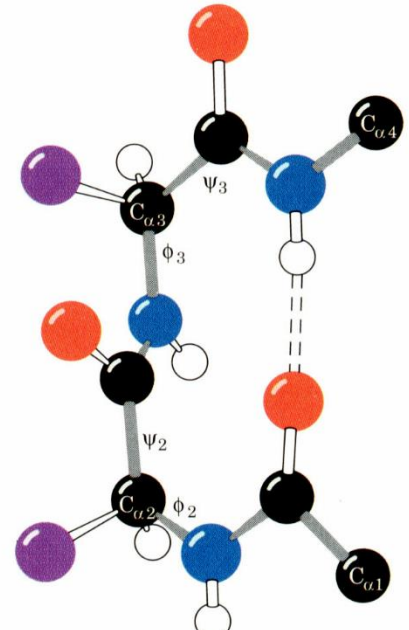
4 Aminosäuren mit 1 \rightarrow 4 H-Brücke

Typ I und II: Peptidbindung 2 \rightarrow 3

(a) Type I β bend

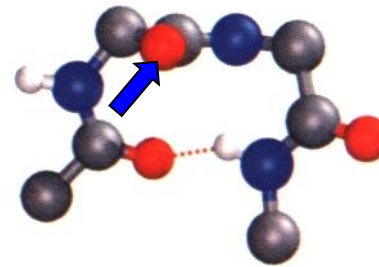
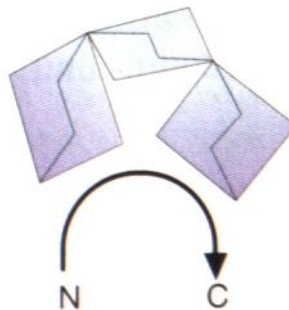


(b) Type II β bend

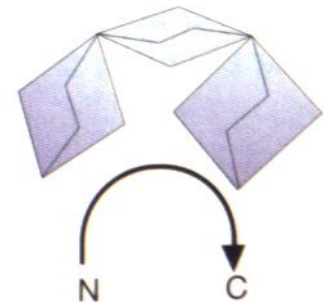


1. Typ I

D. β -Schleifen



2. Typ II



Richtungsänderungen - β -turns!

Beispiel:

Photosynthese- zentrum

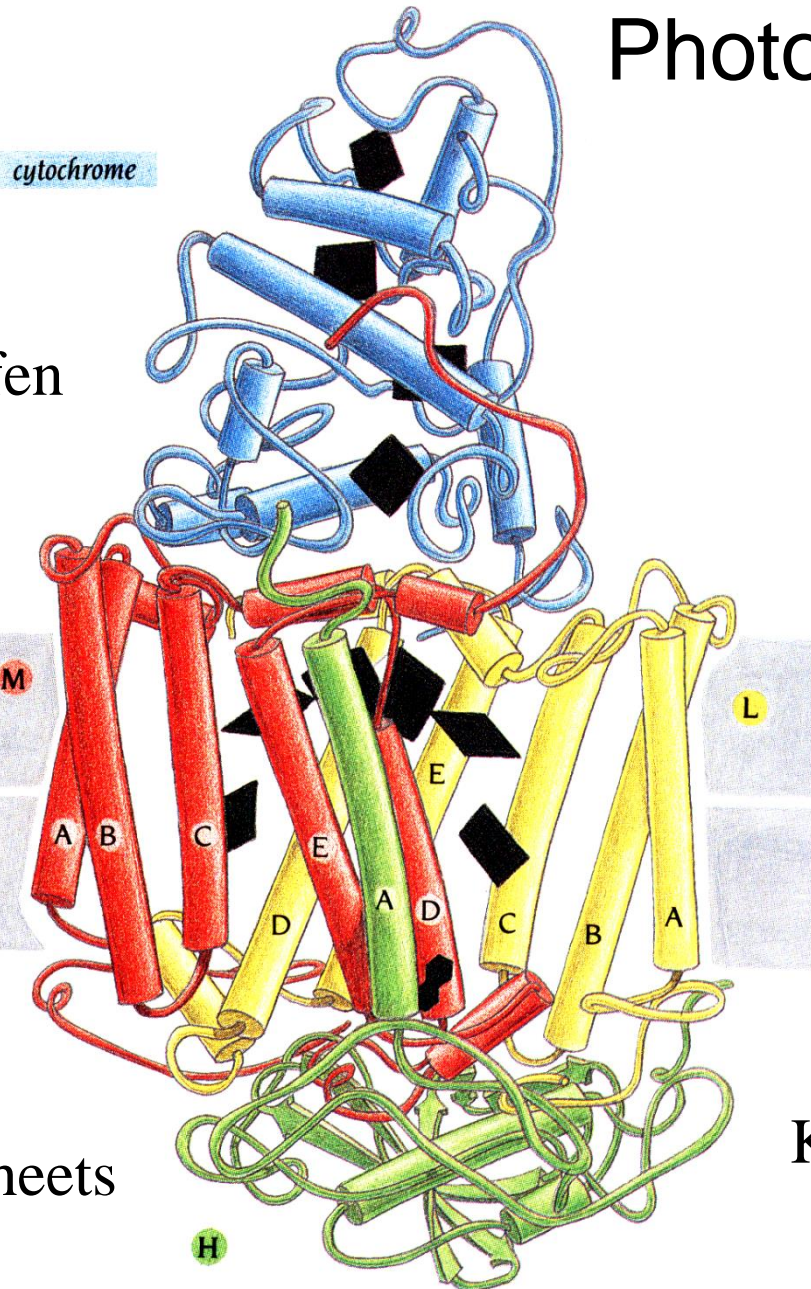
β -Schleifen

periplasmic
space



cytoplasm

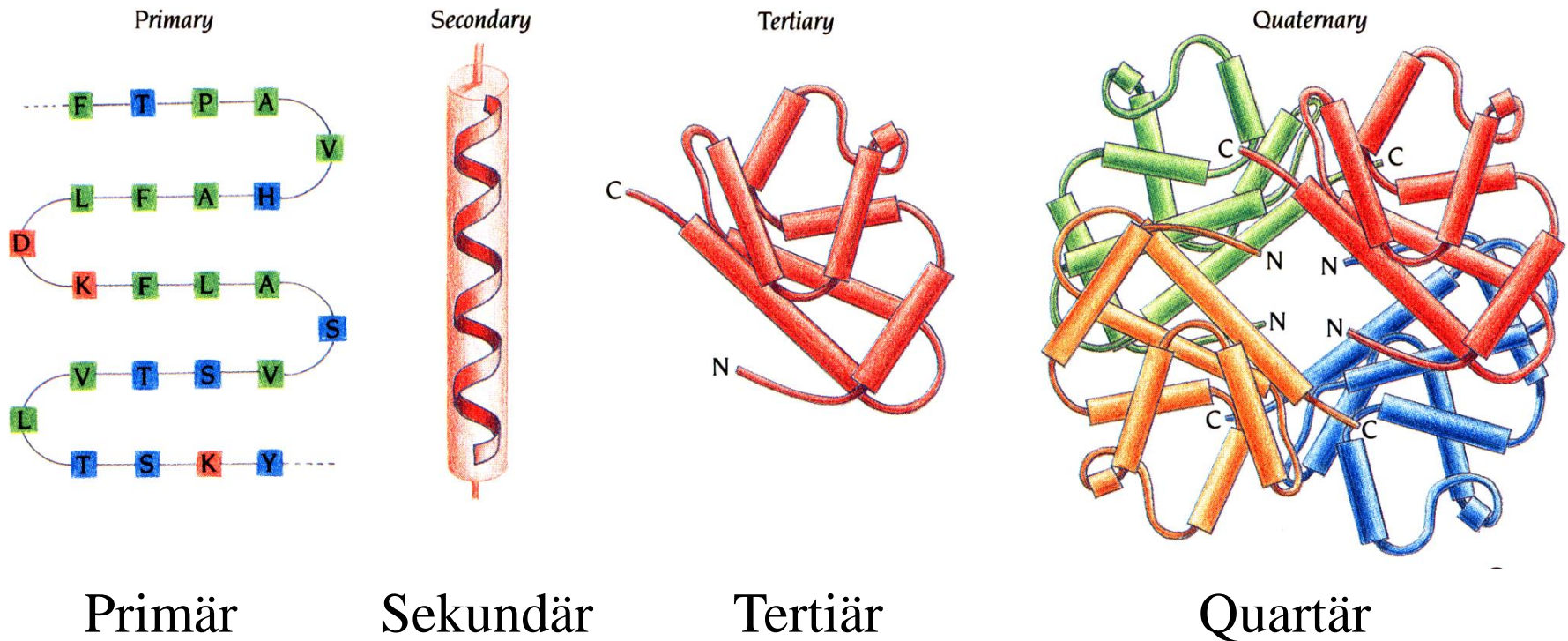
β -Sheets



α -Helices

Knäuel

Von der Sequenz zur Quartärstruktur



→→→ Die Primär- bestimmt die Tertiärstruktur!