

 $Φ=C_{(i-1)},N_i,Cα_i,C_i$ $Ψ=N_i,Cα_i,C_i,N_{(i+1)}$

> $C_{(i-1)}=(1,0,0)$ $N_i=(0,0,0)$

 $C\alpha_i = (0, 1, 0)$ $C_i = (0, 1, -1)$

 $N_{(i+1)} = (0, 1, 1)$

Above the Valine (V) amino acid and the Ramachandran plot of Φ and Ψ dihedrals of this Valine are shown. Calculate the backbone dihedral angles Φ and Ψ of the V using the coordinates provided and using the Ramachandran plot, determine which secondary structure this V falls into?

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Land Bridge Description

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2018 (0,010) (0,1,-1) Bi 3° bir 1 33 12 1 53 Bi = Nû-Cû-1= (-1,0,0) -> 1511=1 -- 2 52 = Cat-NC = (0,1,0) 7 152 =1 -> 3 53= c2-ca2=(0,0,-1) -> (53)=1 -2 (1,0,0) (0,1,0)R= 51 x 52 = (-1) x 3 = - 2 $\frac{1}{2} = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1$ dot product -> al. n2 = pringcosa Since sin and cas symmetric func. cross product > nixñz = nim.sma derrue a formula including ton or cot mstead of sm and cos. $\frac{\vec{n}_1 \cdot \vec{n}_2}{|\vec{n}_1 \times \vec{n}_2|} = \cot Q \quad \cot Q \quad \cot Q \quad 0.5 \text{ pts}$ $|\vec{n}_1 \times \vec{n}_2| = \cot Q \quad \cot Q \quad 0.5 \text{ pts}$ $|\vec{n}_1 \times \vec{n}_2| = \cot Q \quad \cot Q \quad 0.5 \text{ pts}$ $|\vec{n}_1 \times \vec{n}_2| = \cot Q \quad \cot Q \quad 0.5 \text{ pts}$ $|\vec{n}_1 \times \vec{n}_2| = \cot Q \quad \cot Q \quad 0.5 \text{ pts}$ $|\vec{n}_1 \times \vec{n}_2| = \cot Q \quad \cot Q \quad 0.5 \text{ pts}$ $|\vec{n}_1 \times \vec{n}_2| = \cot Q \quad \cot Q \quad 0.5 \text{ pts}$ $|\vec{n}_1 \times \vec{n}_2| = \cot Q \quad \cot Q \quad 0.5 \text{ pts}$ (0,1,0) (0,1,1)

(ai n. N(1)

($\vec{a}_1 = Ca_1^2 - NC = (0,1,0) \rightarrow |\vec{a}_1| = 1 \rightarrow \hat{f}$ $\vec{a}_1 = c\hat{i} - Ca\hat{i} = (0,0,1) \rightarrow |\vec{a}_1| = 1 \rightarrow -\hat{c}$ $\vec{a}_3 = N(C+1) - C\hat{c} = (0,0,0) \rightarrow |\vec{a}_3| = 2 \rightarrow 2\hat{c}$ Ri = aix.a2 = fx(-E)=-1 12 = a2 x a3 = (-k) x (2k) = 0= (0i+0j+0k) 1 pts $tona = \frac{0}{X \rightarrow 11.11} = 0 \quad tona = \frac{0}{0}$ | ni x n2 = 0 cannot find = @ rsundefined!

=) We cannot find if due to uncertainty, however previously we have found \$=90°. Based on this, this was residue connot take place reither in right-harded a-hebreal er B-sheet-regren. It can only be found around left-handed a-herrout regron. O.S pts

the secondary Structure