Questions for the model building exercise

Q1:
In groups of two build two di-peptides - make sure that you build L-amino acids

Each group will be give a piece of paper with the assigned di-peptides
(Don’t show the paper to the other groups)
Once you have build the di-peptide then swap di-peptides with group
Group+1 and write down the one and three letter codes for di-peptide:

<table>
<thead>
<tr>
<th>Group</th>
<th>Di-peptide 1</th>
<th>Di-peptide 2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1-letter</td>
<td>3-letter</td>
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<td>1-letter</td>
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<td>5</td>
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Q2: *Once the rotation above is done and you have your own di-peptides.*
Connect the two di-peptides such that they are in a beta-strand conformation

Q3:
What is the difference between a beta-strand and a beta-sheet.
What atoms form hydrogen bonds in a beta-sheet

Q4:
Draw a schematic representation of the two types of beta-sheets. Use an arrow to indicate a beta-strand.
Q5:
Draw a di-peptide on paper with sidechain indicated with R
What are the names for the 4 backbone atoms
Write 1-letter codes for amino acids in these groups:
  • Hydrophobic
  • Acidic
  • Basic
  • Aromatic
  • Special amino acids
NB ! There may be an overlap of aa between the groups

Q6:
Build an alpha-helix composed of 10 Alanines
What is the hydrogen bonding pattern
What is the distance between CA(1) and CA(10) – use a ruler. Rise/aa ?