

# Atlas of Protein Side-Chain Interactions

Volume II

# Atlas of Protein Side-Chain Interactions

JUSWINDER SINGH

and

JANET M. THORNTON

*Biomolecular Structure and Modelling Unit  
Department of Biochemistry and Molecular Biology  
University College, London*

## Volume II

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# Contents

|                       |    |
|-----------------------|----|
| Introduction          | 1  |
| 1 Making of the atlas | 2  |
| 2 Format of the atlas | 19 |
| Bibliography          | 23 |

## Atlas of protein side-chain interactions

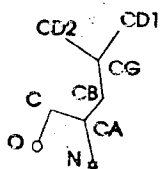
### Volume I

|     |     |
|-----|-----|
| ALA | 28  |
| ARG | 68  |
| ASN | 108 |
| ASP | 148 |
| LYS | 188 |
| GLN | 228 |
| GLU | 268 |
| GLY | 308 |
| HIS | 348 |
| ILE | 388 |

### Volume II

|     |     |
|-----|-----|
| LEU | 428 |
| LYS | 468 |
| MET | 508 |
| PHE | 548 |
| PRO | 588 |
| SER | 628 |
| THR | 668 |
| TRP | 708 |
| TYR | 748 |
| VAL | 788 |

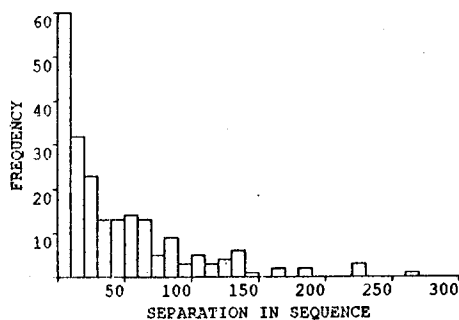
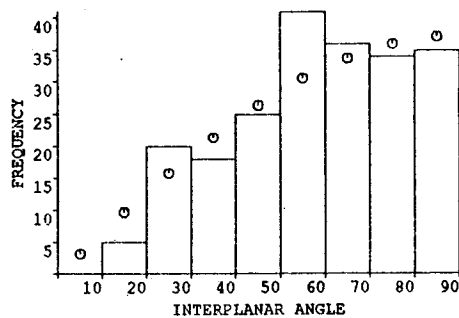
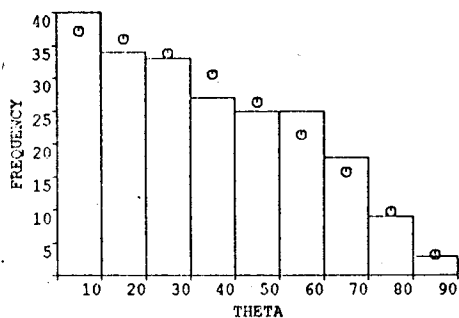
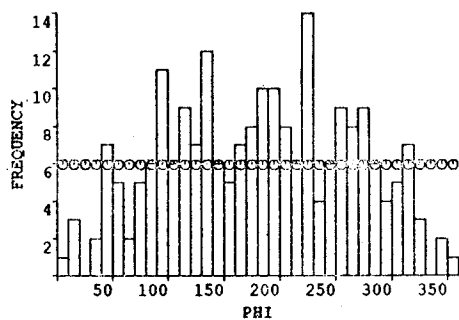
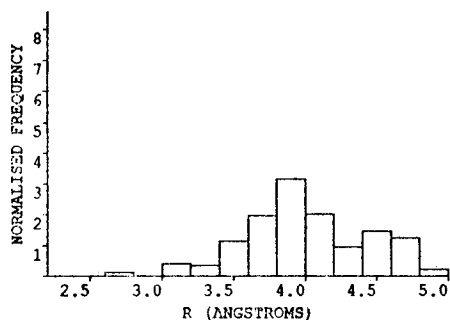
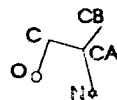
# LEU-ALA



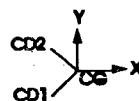
Number of LEU - 761  
Number of ALA - 858  
Number of LEU-ALA Contacts - 214

|                   | Chi-Squared Values | Degrees of Freedom | Significance Level |
|-------------------|--------------------|--------------------|--------------------|
| Interplanar Angle | 10.5               | 7                  | 50.0-10.0          |
| Theta             | 1.8                | 7                  | 97.5-95.0          |

Atom Definitions for the Geometry:  
Contact for LEU: CB CG CD1 CD2  
Contact for ALA: CB  
Plane of LEU: CG CD1 CD2  
Plane of ALA: N CA CB  
Theta/Phi of ALA: CB



## LEU REFERENCE SYSTEM

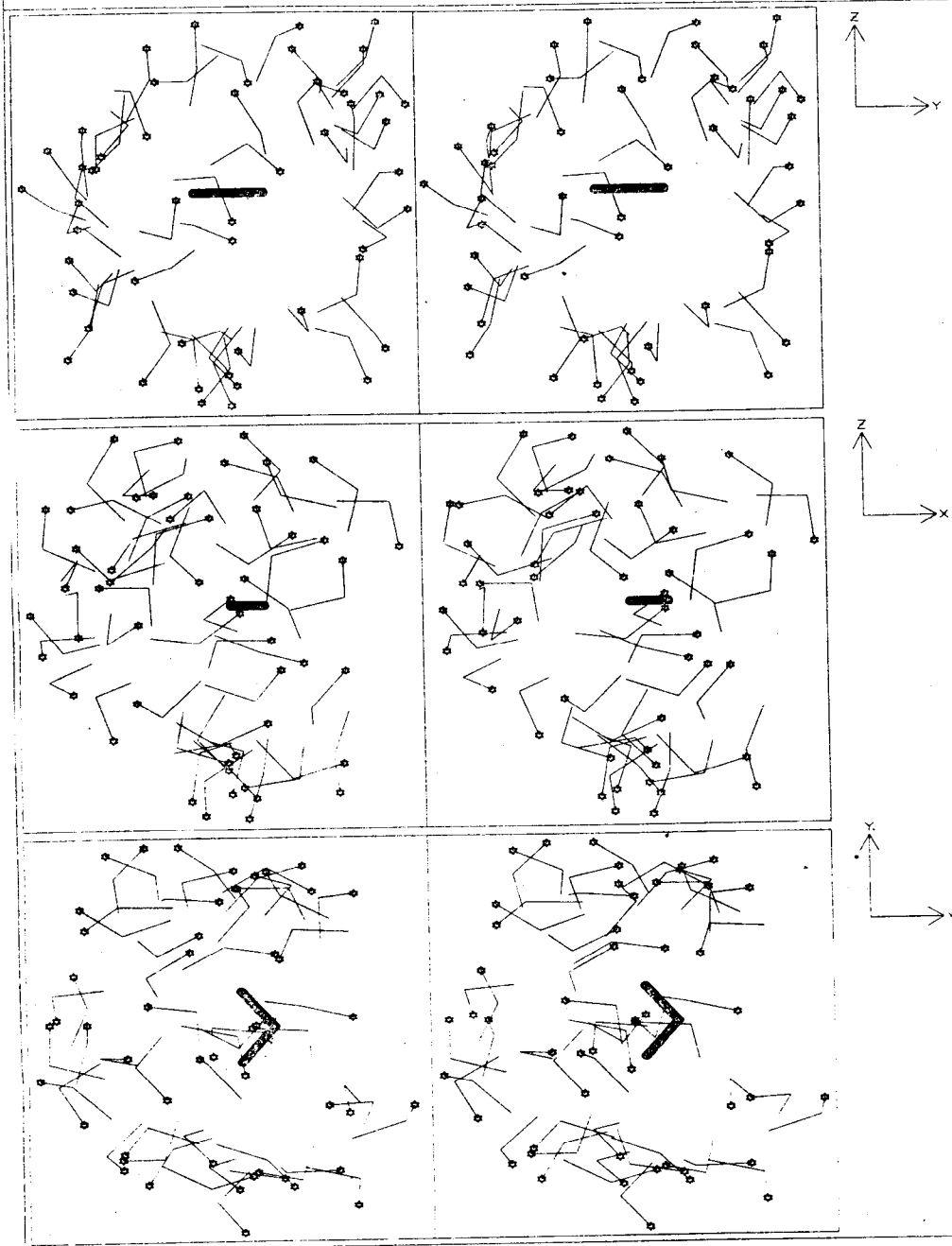


50 out of a Total 214 LEU-ALA pairs have been plotted

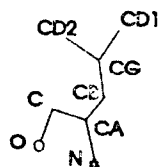
Atoms plotted for LEU: CG CD1 CD2

Atoms plotted for ALA: N CA CB

Nitrogens - Stars, Oxygens - Circles, Sulphurs - Triangles, Carbons - No Symbol



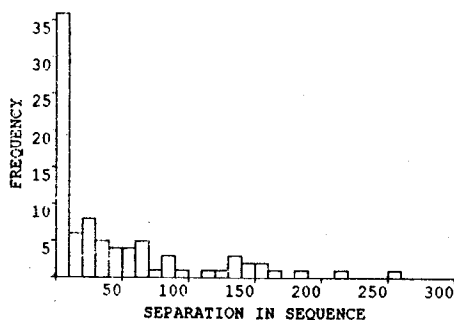
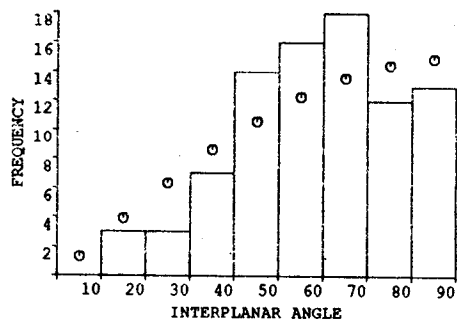
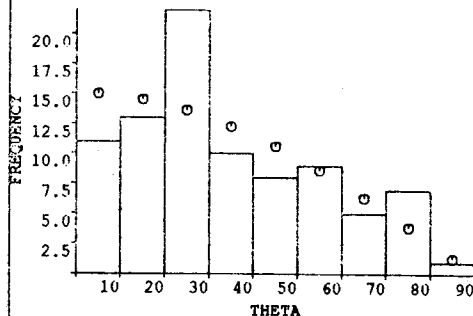
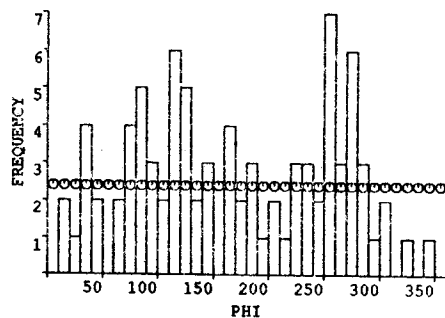
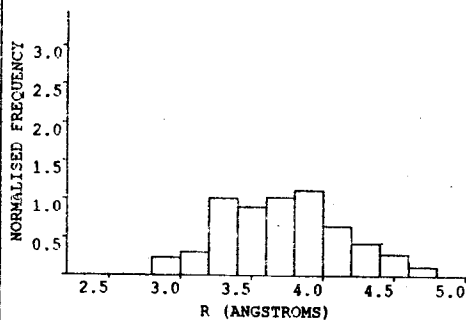
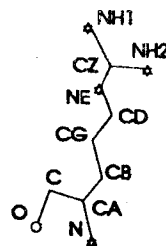
# LEU-ARG



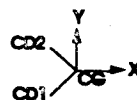
Number of LEU - 761  
 Number of ARG - 307  
 Number of LEU-ARG Contacts - 86

|                   | Chi-Squared Values | Degrees of Freedom | Significance Level |
|-------------------|--------------------|--------------------|--------------------|
| Interplanar Angle | 7.3                | 7                  | 50.0-10.0          |
| Theta             | 9.3                | 7                  | 50.0-10.0          |

Atom Definitions for the Geometry:  
 Contact for LEU: C3 CG CD1 CD2  
 Contact for ARG: C3 CG CD NE CZ NH1 NH2  
 Plane of LEU: CC CD1 CD2  
 Plane of ARG: CZ NH1 NH2  
 Theta/Phi of ARG: CZ



## LEU REFERENCE SYSTEM

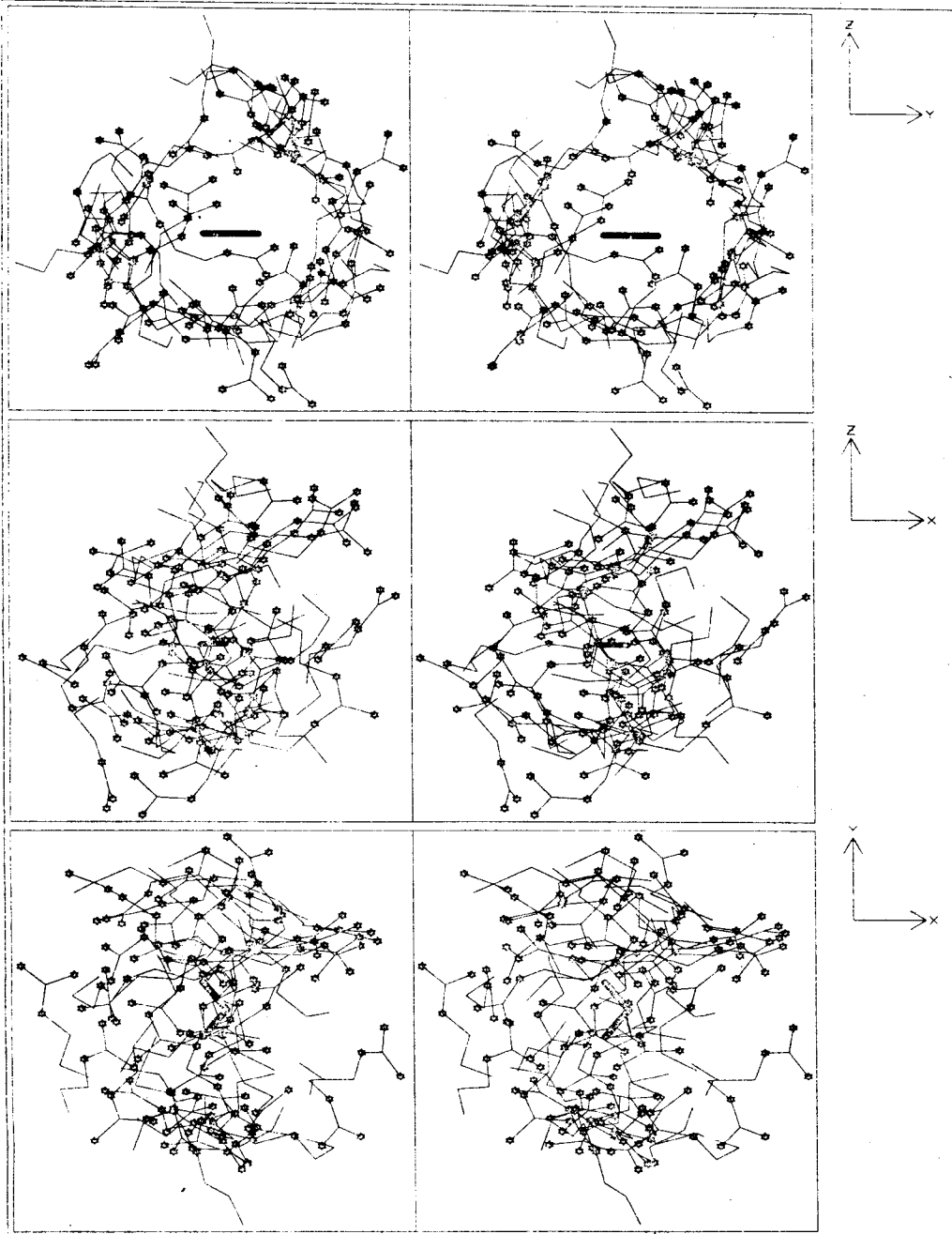


50 out of a Total 86 LEU-ARG pairs have been plotted

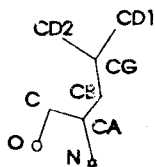
Atoms plotted for LEU: CG CD1 CD2

Atoms plotted for ARG: CB CG CD NE CZ NH1 NH2

Nitrogens - Stars, Oxygens - Circles, Sulphurs - Triangles, Carbons - No Symbol



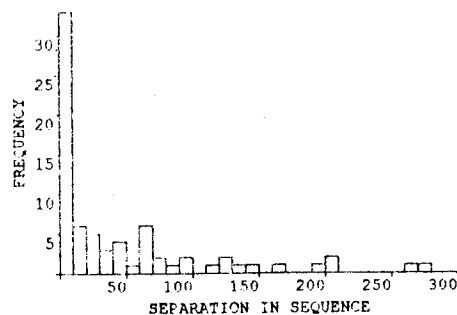
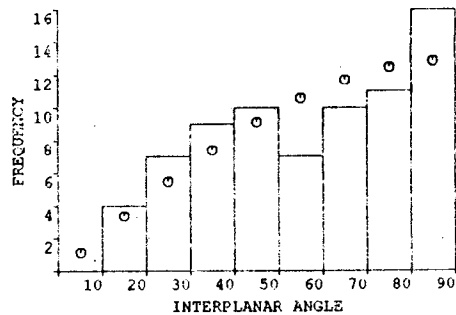
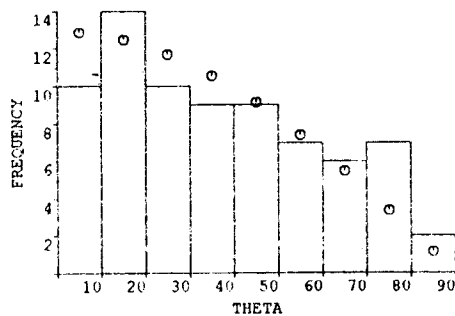
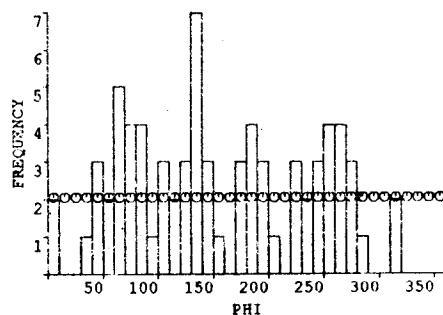
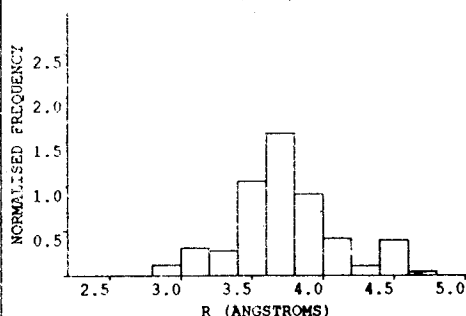
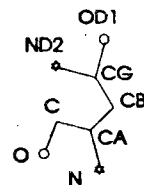
# LEU-ASN



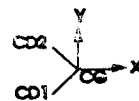
Number of LEU - 731  
 Number of ASN - 456  
 Number of LEU-ASN Contacts - 74

|                   | Chi-Squared Values | Degrees of Freedom | Significance Level |
|-------------------|--------------------|--------------------|--------------------|
| Interplanar Angle | 3.3                | 7                  | 90.0-50.0          |
| Theta             | 3.9                | 6                  | 90.0-50.0          |

Atom Definitions for the Geometry:  
 Contact for LEU: CE CG CD1 CD2  
 Contact for ASN: CE CG OD1 ND2  
 Plane of LEU: CG CD1 CD2  
 Plane of ASN: CG OD1 ND2  
 Theta/Phi of ASN: CG



## LEU REFERENCE SYSTEM

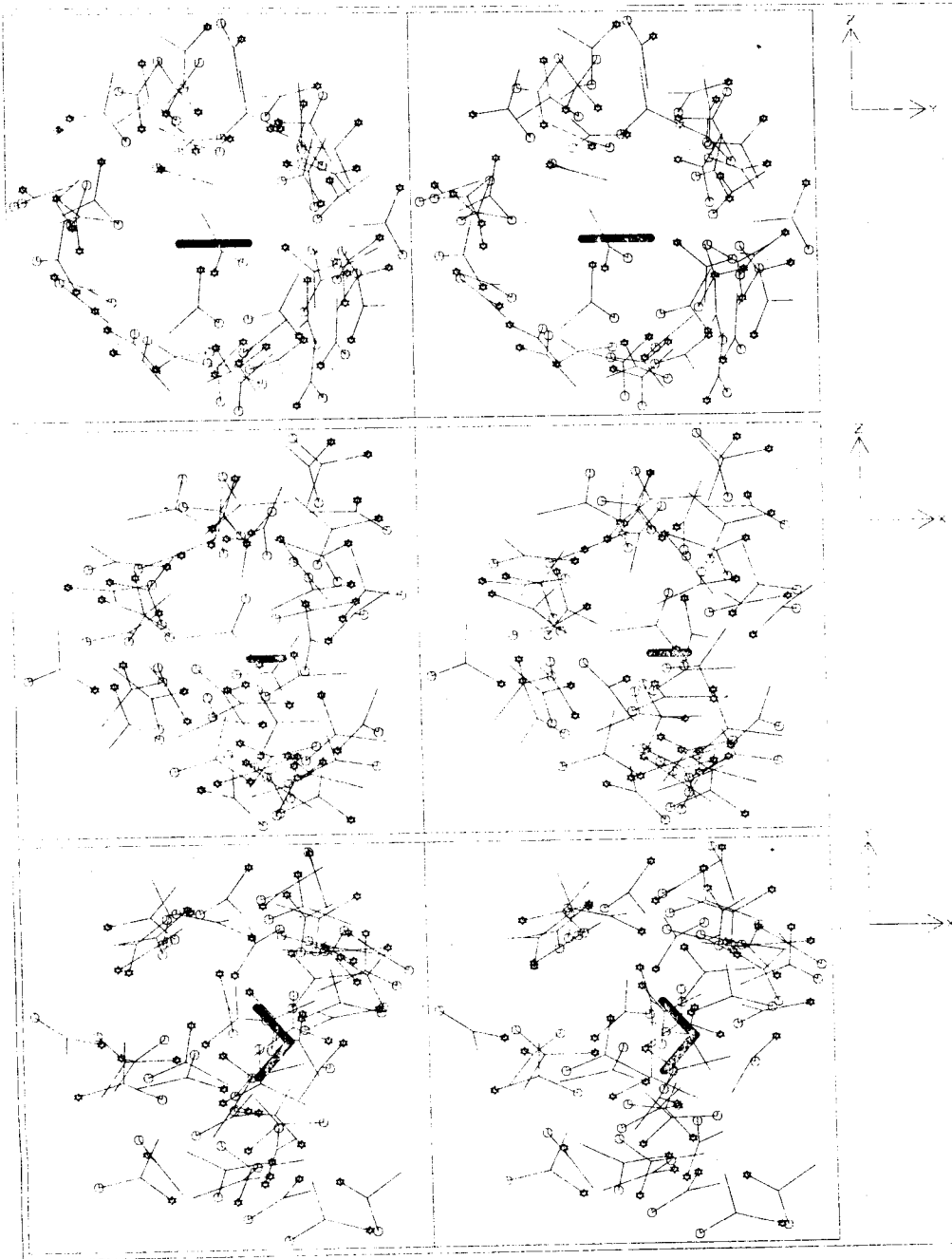


50 out of a Total 74 LEU-ASN pairs have been plotted

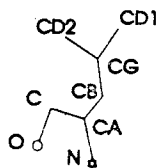
Atoms plotted for LEU: CG CD1 CD2

Atoms plotted for ASN: CB CG OD1 ND2

Nitrogens - Stars, Oxygens - Circles, Sulphurs - Triangles, Carbons - No Symbol



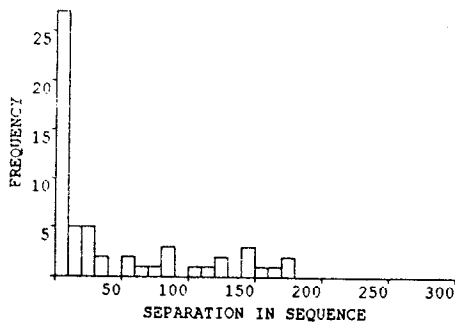
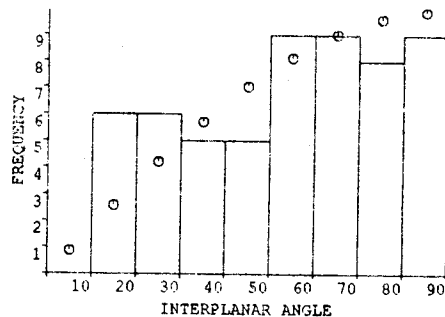
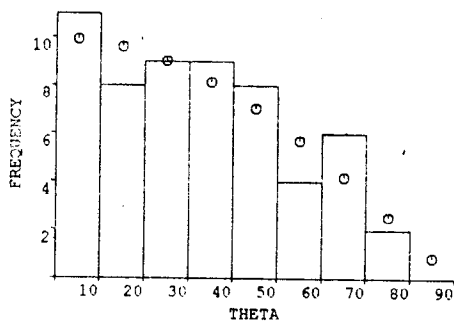
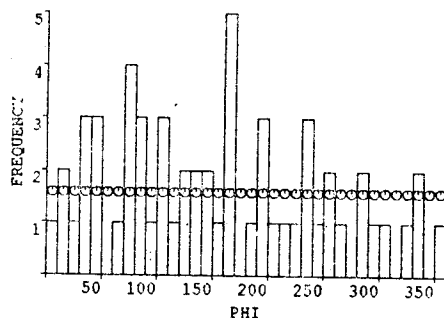
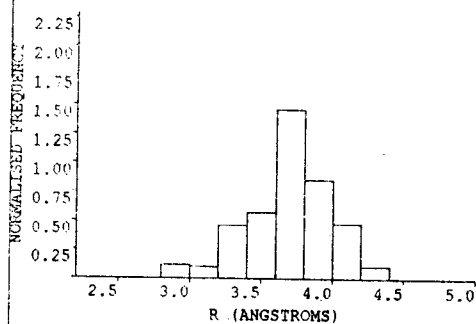
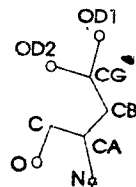
# LEU-ASP



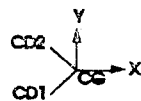
Number of LEU - 761  
 Number of ASP - 587  
 Number of LEU-ASP Contacts - 57

|                   | Chi-Squared Values | Degrees of Freedom | Significance Level |
|-------------------|--------------------|--------------------|--------------------|
| Interplanar Angle | 5.8                | 6                  | 50.0-10.0          |
| Theta             | 1.1                | 6                  | 99.0-97.5          |

Atom Definitions for the Geometry:  
 Contact for LEU: CB CG CD1 CD2  
 Contact for ASP: CB CG OD1 OD2  
 Plane of LEU: CG CD1 CD2  
 Plane of ASP: CG OD1 OD2  
 Theta/Phi of ASP: CG



## LEU REFERENCE SYSTEM

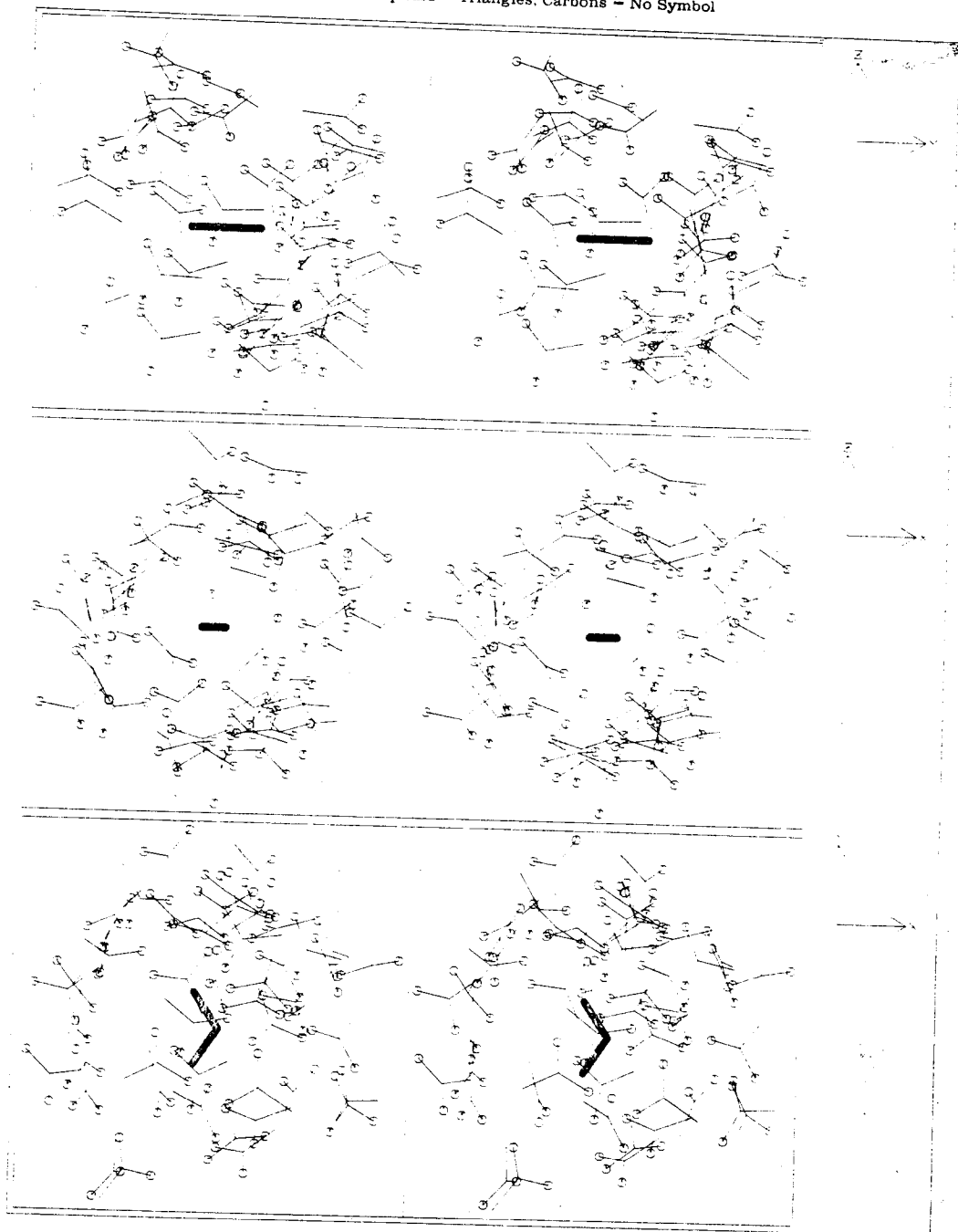


50 out of a Total 57 LEU-ASP pairs have been plotted

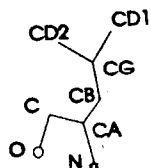
Atoms plotted for LEU: CG CD1 CD2

Atoms plotted for ASP: CB CG OD1 OD2

Nitrogens - Stars, Oxygens - Circles, Sulphurs - Triangles, Carbons - No Symbol



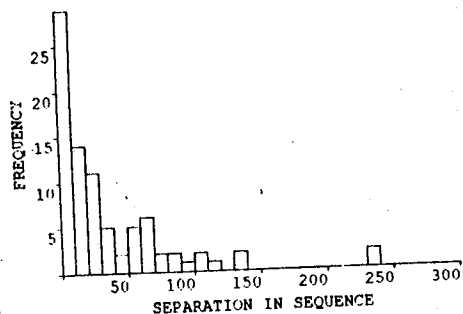
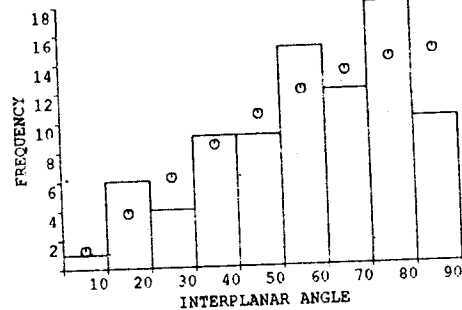
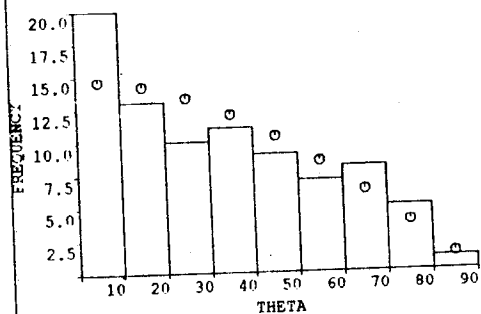
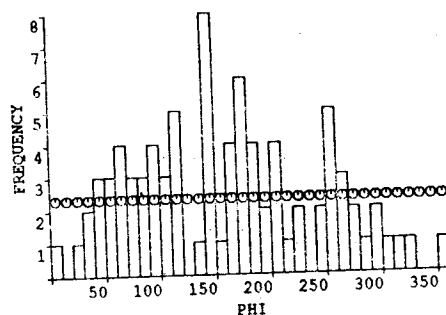
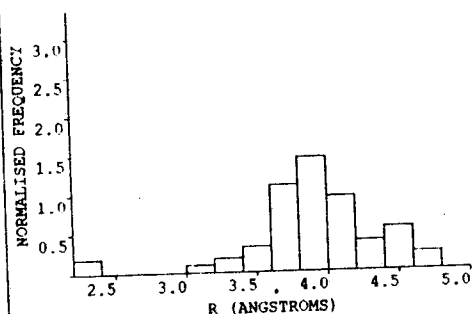
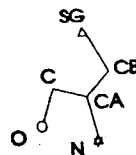
# LEU-CYS



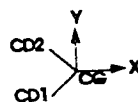
Number of LEU - 761  
Number of CYS - 281  
Number of LEU-CYS Contacts - 84

|                   | Chi-Squared Values | Degrees of Freedom | Significance Level |
|-------------------|--------------------|--------------------|--------------------|
| Interplanar Angle | 5.1                | 7                  | 90.0-50.0          |
| Theta             | 4.1                | 7                  | 90.0-50.0          |

Atom Definitions for the Geometry:  
Contact for LEU: CB CG CD1 CD2  
Contact for CYS: CB SG  
Plane of LEU: CG CD1 CD2  
Plane of CYS: CA CB SG  
Theta/Phi of CYS: SG



## LEU REFERENCE SYSTEM

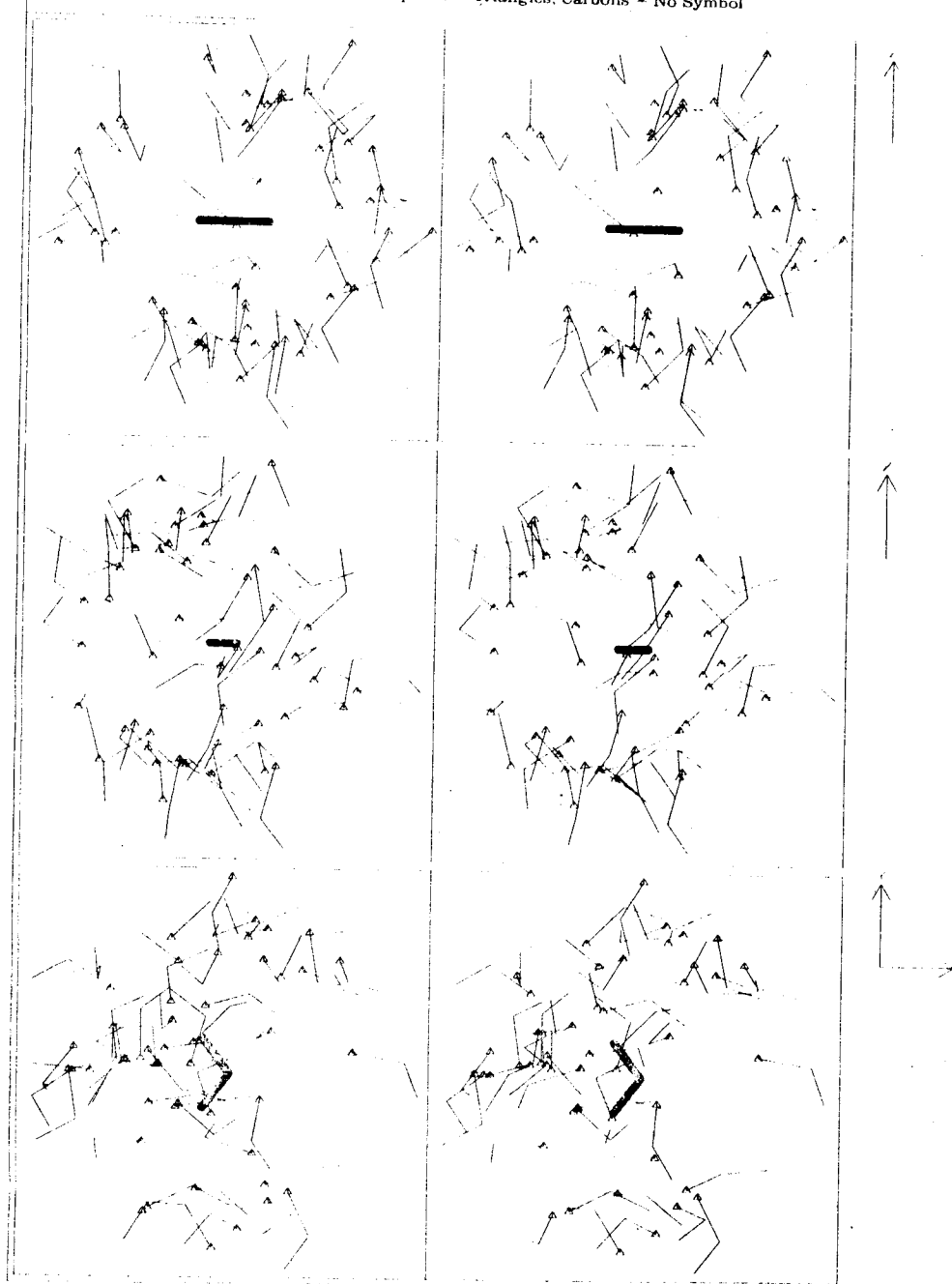


50 out of a Total 84 LEU-CYS pairs have been plotted

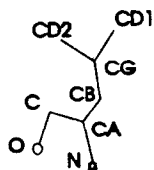
Atoms plotted for LEU: CG CD1 CD2

Atoms plotted for CYS: CA CB SG

Nitrogens - Stars, Oxygens - Circles, Sulphurs - Triangles, Carbons - No Symbol



# LEU-GLN

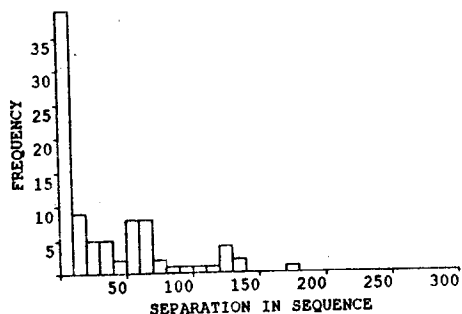
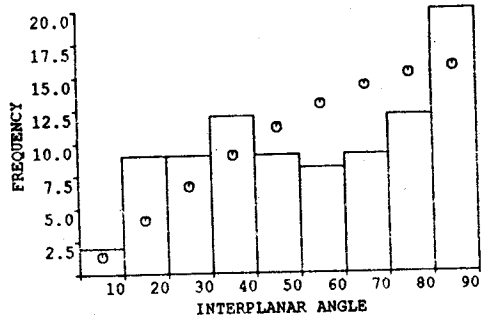
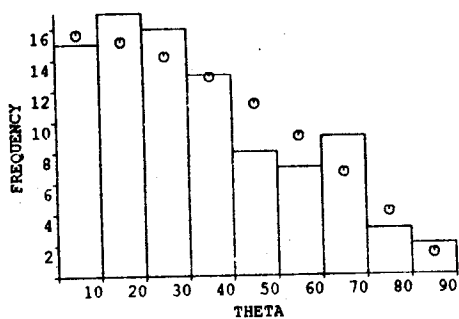
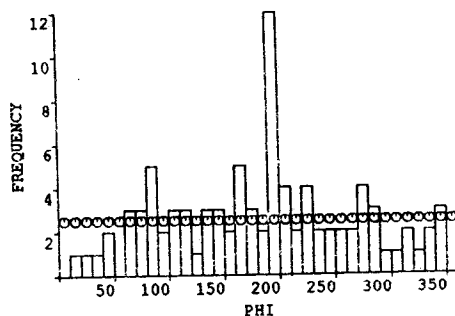
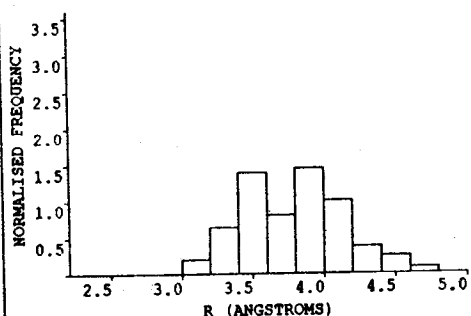
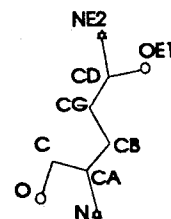


Number of LEU - 761  
Number of GLN - 335  
Number of LEU-GLN Contacts - 90

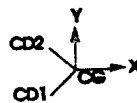
|                   | Chi-Squared Values | Degrees of Freedom | Significance Level |
|-------------------|--------------------|--------------------|--------------------|
| Interplanar Angle | 13.6               | 7                  | 10.0- 5.0          |
| Theta             | 2.7                | 7                  | 95.0-90.0          |

Atom Definitions for the Geometry:

Contact for LEU: CB CG CD1 CD2  
Contact for GLN: CB CG CD OE1 NE2  
Plane of LEU: CG CD1 CD2  
Plane of GLN: CD OE1 NE2  
Theta/Phi of GLN: CD



## LEU REFERENCE SYSTEM

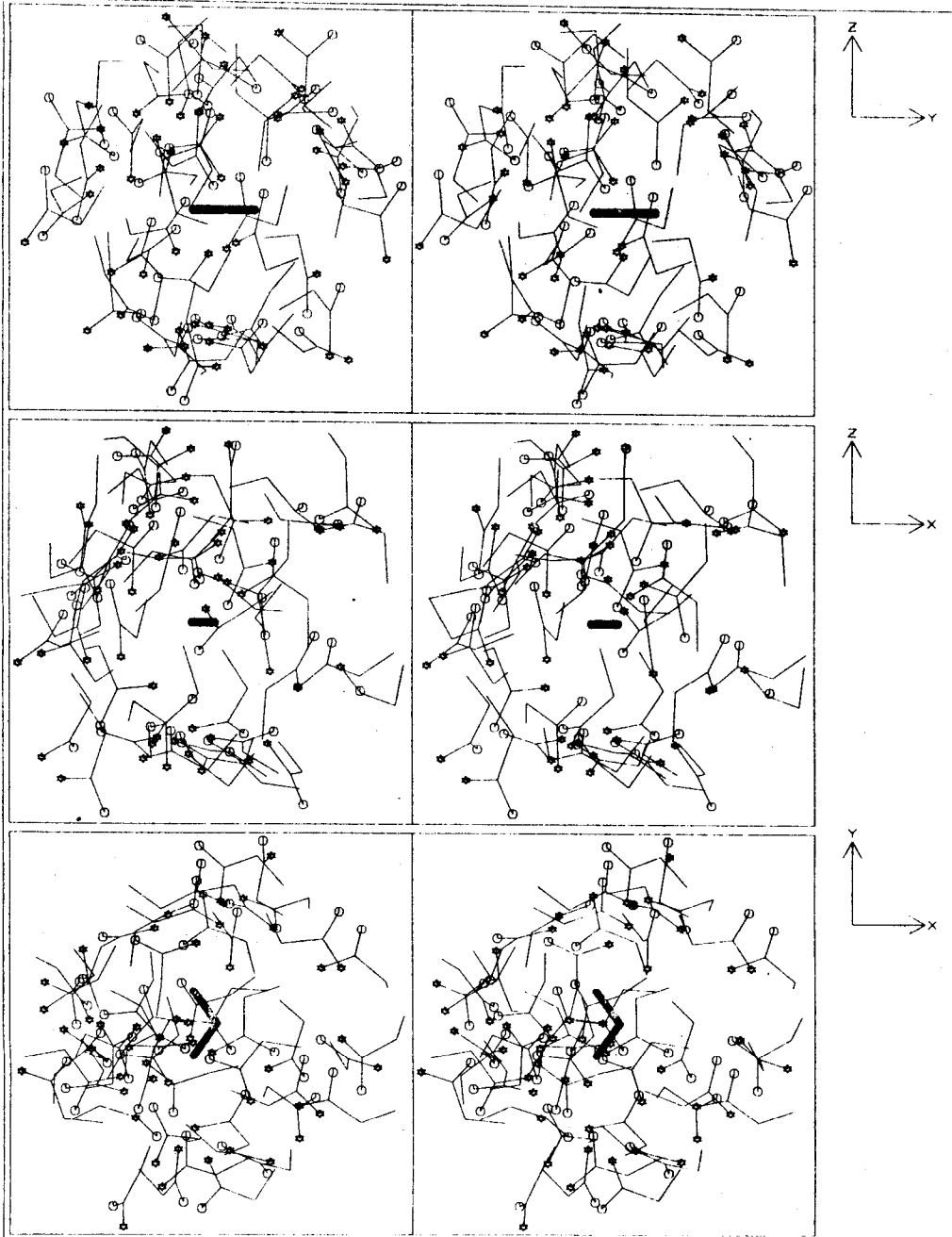


50 out of a Total 90 LEU-GLN pairs have been plotted

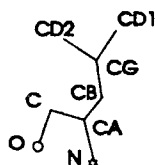
Atoms plotted for LEU: CG CD1 CD2

Atoms plotted for GLN: CB CG CD OE1 NE2

Nitrogens - Stars, Oxygens - Circles, Sulphurs - Triangles, Carbons - No Symbol



# LEU-GLU

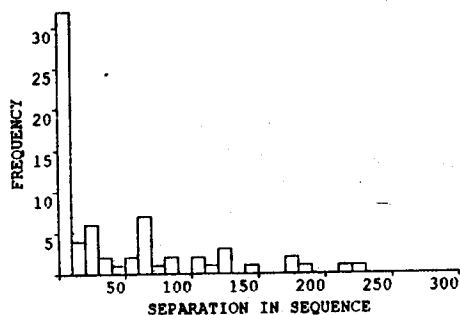
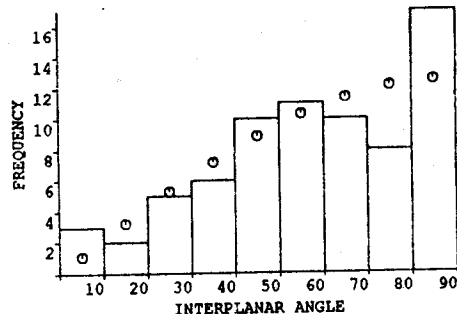
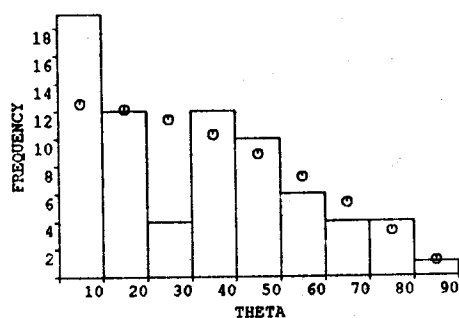
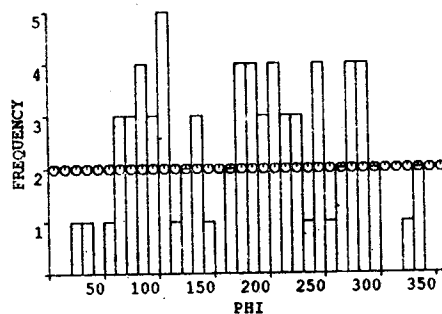
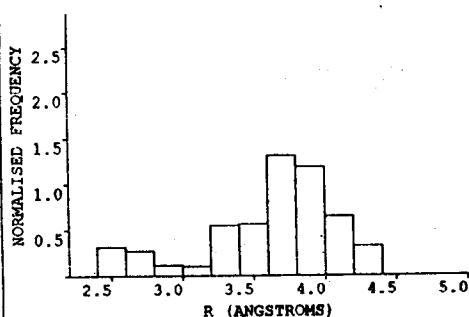
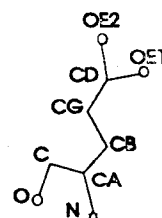


Number of LEU - 761  
Number of GLU - 483  
Number of LEU-GLU Contacts - 72

|                   | Chi-Squared Values | Degrees of Freedom | Significance Level |
|-------------------|--------------------|--------------------|--------------------|
| Interplanar Angle | 3.7                | 7                  | 90.0-50.0          |
| Theta             | 8.8                | 6                  | 50.0-10.0          |

Atom Definitions for the Geometry:

|                   |    |     |     |     |
|-------------------|----|-----|-----|-----|
| Contact for LEU:  | CB | CG  | CD1 | CD2 |
| Contact for GLU:  | CB | CG  | CD  | OE1 |
| Plane of LEU:     | CG | CD1 | CD2 |     |
| Plane of GLU:     | CD | OE1 | OE2 |     |
| Theta/Phi of GLU: | CD |     |     |     |



## LEU REFERENCE SYSTEM

