

| Name | # | % | alpha | beta | other | χ^1 mode | χ^1 comm. | χ^2 mode | χ^2 comm. | χ^2 range | χ^1 1/2 Width | χ^2 1/2 Height |
|----------------------|-----------|-----|-------|------|-------|------------------|-------------------|------------------|-------------------|----------------------|-----------------------|------------------------|
| Isoleucine | | | | | | | | | | | | |
| pp | 10 | 1% | <1% | 1% | <1% | | 62 | | 100 | | | |
| pt | 216 | 13% | 4% | 13% | 22% | 61 | 62 | 171 | 170 | | 10 | 10 |
| tp | 36 | 2% | 2% | 1% | 4% | -169 | -177 | 66 | 66 | | 13 | 11 |
| tt | 127 | 8% | 1% | 8% | 14% | -174 | -177 | 167 | 165 | | 13 | 11 |
| mp | 19 | 1% | 0% | 2% | 1% | | -65 | | 100 | | | |
| mt | 993 | 60% | 81% | 58% | 41% | -66 | -65 | 169 | 170 | | 10 | 10 |
| mm | 242 | 15% | 10% | 16% | 17% | -57 | -57 | -59 | -60 | | 10 | 10 |
| | | 99% | 99% | 98% | 99% | | | | | | | |
| | 1643/1667 | | 496 | 629 | 518 | | | | | | | |
| Leucine | | | | | | | | | | | | |
| pp | 21 | 1% | <1% | 2% | 1% | | 62 | | 80 | | | |
| tp | 750 | 29% | 30% | 36% | 23% | 177 | -177 | 63 | 65 | | 10 | 10 |
| tt | 49 | 2% | 1% | 3% | 1% | -172 | -172 | 147 | 145 | 120 to 180 | 9 | 9 |
| mp | 63 | 2% | 1% | 5% | 2% | -85 | -85 | 66 | 65 | 45 to 105 | 11 | 14 |
| mt | 1548 | 59% | 62% | 46% | 66% | -65 | -65 | 174 | 175 | | 11 | 11 |
| | | 93% | 95% | 93% | 93% | | | | | | | |
| | 2431/2602 | | 836 | 644 | 951 | | | | | | | |
| Histidine | | | | | | | | | | | | |
| p-80° | 51 | 9% | 0% | 6% | 13% | 60 | 62 | -75 | -75 | -120 to -50 | 10 | 12 |
| p80° | 26 | 4% | 0% | 4% | 6% | 61 | 62 | 78 | 80 | 50 to 120 | 13 | 10 |
| t-160° | 31 | 5% | 5% | 14% | 1% | -178 | -177 | -163 | -165 | 150 to -120 | 12 | 20 |
| t-80° | 64 | 11% | 17% | 9% | 9% | -173 | -177 | -81 | -80 | -120 to -50 | 10 | 22 |
| t60° | 94 | 16% | 24% | 17% | 12% | -178 | -177 | 62 | 60 | 50 to 120 | 13 | 19 |
| m-70° | 174 | 29% | 26% | 30% | 30% | -60 | -65 | -69 | -70 | -120 to -30 | 11 | 23 |
| m170° | 44 | 7% | 9% | 3% | 9% | -63 | -65 | 165 | 165 | 120 to -160 | 10 | 16 |
| m80° | 78 | 13% | 14% | 10% | 14% | -66 | -65 | 83 | 80 | 50 to 120 | 11 | 18 |
| | | 94% | 94% | 92% | 95% | | | | | | | |
| | 562/598 | | 124 | 143 | 295 | | | | | | | |
| Tryptophan | | | | | | | | | | | | |
| p-90° | 67 | 11% | 2% | 13% | 14% | 58 | 62 | -87 | -90 | -130 to -60 | 12 | 10 |
| p90° | 34 | 6% | 1% | 9% | 6% | 60 | 62 | 92 | 90 | 60 to 130 | 12 | 8 |
| t-105° | 100 | 16% | 27% | 10% | 14% | 178 | -177 | -105 | -105 | -130 to -60 | 16 | 14 |
| t90° | 109 | 18% | 28% | 14% | 15% | -178 | -177 | 88 | 90 | 0 to 100 | 10 | 11 |
| m-90° | 31 | 5% | 0% | 7% | 7% | -70 | -65 | -87 | -90 | -130 to -60 | 9 | 12 |
| m0° | 48 | 8% | 15% | 2% | 8% | -66 | -65 | -4 | -5 | -40 to 20 | 9 | 20 |
| m95° | 195 | 32% | 22% | 43% | 29% | -69 | -65 | 95 | 95 | 60 to 130 | 11 | 19 |
| | | 94% | 95% | 98% | 92% | | | | | | | |
| | 584/618 | | 140 | 175 | 269 | | | | | | | |
| Tyrosine | | | | | | | | | | | | |
| p90° | 182 | 13% | 1% | 21% | 12% | 63 | 62 | 89 | 90 | 60 to 90, -90 to -60 | 13 | 13 |
| t80° | 486 | 34% | 55% | 25% | 30% | 176 | -177 | 77 | 80 | 20 to 90, -90 to -75 | 11 | 14 |
| m-85° | 618 | 43% | 26% | 50% | 45% | -65 | -65 | -87 | -85 | 50 to 90, -90 to -50 | 11 | 21 |
| m-30° | 124 | 9% | 15% | 4% | 9% | -64 | -65 | -42 | -30 | -50 to 0, 0 to 50 | 11 | 18 |
| | | 98% | 97% | 99% | 97% | | | | | | | |
| | 1410/1443 | | 290 | 468 | 652 | | | | | | | |
| Phenylalanine | | | | | | | | | | | | |
| p90° | 202 | 13% | 1% | 24% | 11% | 59 | 62 | 88 | 90 | 60 to 90, -90 to -60 | 11 | 11 |
| t80° | 522 | 33% | 57% | 18% | 29% | 177 | -177 | 80 | 80 | 20 to 90, -90 to -75 | 13 | 17 |
| m-85° | 697 | 44% | 29% | 51% | 47% | -64 | -65 | -83 | -85 | 50 to 90, -90 to -50 | 12 | 17 |
| m-30° | 149 | 9% | 12% | 5% | 11% | -64 | -65 | -19 | -30 | -50 to 0, 0 to 50 | 9 | 20 |
| | | 98% | 97% | 99% | 98% | | | | | | | |
| | 1570/1599 | | 389 | 514 | 667 | | | | | | | |
| Proline | | | | | | | | | | | | |
| Cy endo | 379 | 44% | 23% | 54% | 43% | 30 | 30 | | | 15 to 60 | 7 | |
| Cy exo | 372 | 43% | 68% | 28% | 44% | -29 | -30 | | | -60 to -15 | 6 | |
| cis, Cy endo | 56 | 6% | 0% | 1% | 7% | 31 | 30 | | | 15 to 60 | 5 | |
| | | 93% | 91% | 84% | 94% | | | | | | | |
| | 807/928 | | 20 | 57 | 730 | | | | | | | |

| Name | # | % | alpha | beta | other | χ^1 act. | χ^1 com. | | χ^1 |
|------------------|-----------|-----|-------|------|-------|------------------|------------------|--------------------|-------------------------|
| Threonine | | | | | | | | | |
| p | 1200 | 49% | 25% | 31% | 65% | 59 | 62 | | 1/2 Width at 1/2 Height |
| t | 169 | 7% | 0% | 13% | 6% | -171 | -175 | | 10 |
| m | 1062 | 43% | 74% | 55% | 29% | -61 | -65 | | 6 |
| | | 99% | 100% | 99% | 99% | | | | 7 |
| | 2431/2447 | | 395 | 672 | 1364 | | | | |
| Valine | | | | | | | | | |
| p | 169 | 6% | 2% | 8% | 8% | 63 | 63 | "177" ^f | 8 |
| t | 1931 | 73% | 90% | 72% | 63% | 175 | 175 | "-65" | 8 |
| m | 526 | 20% | 7% | 20% | 28% | -64 | -60 | "60" | 7 |
| | | 99% | 100% | 99% | 99% | | | | |
| | 2626/2649 | | 622 | 1080 | 924 | | | | |
| Serine | | | | | | | | | |
| p | 1201 | 48% | 33% | 36% | 55% | 64 | 62 | | 10 |
| t | 541 | 22% | 22% | 34% | 18% | 178 | -177 | | 11 |
| m | 714 | 29% | 44% | 29% | 25% | -65 | -65 | | 9 |
| | | 98% | 98% | 100% | 98% | | | | |
| | 2456/2498 | | 350 | 485 | 1621 | | | | |
| Cysteine | | | | | | | | | |
| p | 64 | 23% | 5% | 23% | 34% | 55 | 62 | | 14 |
| t | 74 | 26% | 20% | 45% | 21% | -177 | -177 | | 10 |
| m | 142 | 50% | 75% | 32% | 43% | -65 | -65 | | 11 |
| | | 99% | 100% | 100% | 98% | | | | |
| | 280/285 | | 85 | 65 | 130 | | | | |

^a"mode" indicates the peak of the smoothed distribution, "comm." indicates the common-atom value (given in bold face).

^bMode and 1/2 width at 1/2 height values are not given for minor rotamers.

^c<1% indicates a value between 0.5% and 0%. 0% indicates no observations.

^dTotal number of rotameric side chains / Total number that pass all data filters.

^eRanges used in determining frequencies are normally common-atom values $\pm 30^\circ$. Exceptions (always in the terminal χ value) are listed here.

^fStandard conventions ^{28,29} result in χ angles being named differently for Val than for Thr and Ile. These figures indicate the equivalent angles.