

Biophysical Journal, Volume 96

**Supporting Material**

**Reconstruction and stability of secondary structure elements in the context of protein structure prediction**

Alexei A. Podtelezhnikov and David L. Wild

# Reconstruction and stability of secondary structure elements in the context of protein structure prediction

Alexei A. Podtelezhnikov and David L. Wild

## Supplementary Material #1 The dataset of domains with different folds

The table contains SCOP sid domain identifier, domain class, sequence length, root-mean-square-error (RMSE) of the structure regularization, and SPACI score as a measure of the structure quality.

| SID     | Class          | Length | RMSE  | SPACI | d1d3va_ | $\alpha/\beta$ | 308 | 0.030 | 0.57 |
|---------|----------------|--------|-------|-------|---------|----------------|-----|-------|------|
| d1a1x_  | $\beta$        | 106    | 0.039 | 0.43  | d1d4oa_ | $\alpha/\beta$ | 177 | 0.028 | 0.66 |
| d1a3aa_ | $\alpha+\beta$ | 145    | 0.029 | 0.51  | d1dcia_ | $\alpha/\beta$ | 275 | 0.025 | 0.63 |
| d1a6m_  | $\alpha$       | 151    | 0.035 | 1.04  | d1dd3a1 | $\alpha$       | 57  | 0.026 | 0.41 |
| d1a6q_2 | $\alpha+\beta$ | 295    | 0.047 | 0.41  | d1dfma_ | $\alpha/\beta$ | 223 | 0.046 | 0.61 |
| d1aa7a_ | $\alpha$       | 158    | 0.026 | 0.42  | d1dfup_ | $\beta$        | 94  | 0.037 | 0.49 |
| d1af7_1 | $\alpha$       | 81     | 0.031 | 0.41  | d1dj0a_ | $\alpha+\beta$ | 264 | 0.029 | 0.65 |
| d1ah7_  | $\alpha$       | 245    | 0.028 | 0.62  | d1dj8a_ | $\alpha$       | 79  | 0.029 | 0.42 |
| d1aie_  | $\alpha$       | 31     | 0.031 | 0.62  | d1dkza2 | $\beta$        | 118 | 0.036 | 0.45 |
| d1ail_  | $\alpha$       | 70     | 0.017 | 0.52  | d1dl5a2 | $\alpha+\beta$ | 104 | 0.037 | 0.52 |
| d1ako_  | $\alpha+\beta$ | 268    | 0.032 | 0.56  | d1ds1a_ | $\beta$        | 323 | 0.032 | 0.90 |
| d1amj_2 | $\alpha/\beta$ | 527    | 0.043 | 0.45  | d1duvg1 | $\alpha/\beta$ | 150 | 0.036 | 0.53 |
| d1axn_  | $\alpha$       | 323    | 0.041 | 0.51  | d1dvoa_ | $\alpha$       | 152 | 0.022 | 0.47 |
| d1ay7b_ | $\alpha/\beta$ | 89     | 0.033 | 0.57  | d1dw9a1 | $\alpha$       | 86  | 0.027 | 0.61 |
| d1b25a2 | $\alpha+\beta$ | 210    | 0.033 | 0.50  | d1dw9a2 | $\alpha+\beta$ | 70  | 0.062 | 0.61 |
| d1b2pa_ | $\beta$        | 119    | 0.063 | 0.55  | d1dzfa2 | $\alpha+\beta$ | 72  | 0.029 | 0.43 |
| d1b2va_ | $\alpha+\beta$ | 173    | 0.036 | 0.47  | d1e19a_ | $\alpha/\beta$ | 313 | 0.030 | 0.64 |
| d1b3aa_ | $\alpha+\beta$ | 67     | 0.048 | 0.60  | d1e58a_ | $\alpha/\beta$ | 247 | 0.026 | 0.85 |
| d1b67a_ | $\alpha$       | 68     | 0.023 | 0.63  | d1e7la1 | $\alpha$       | 54  | 0.024 | 0.79 |
| d1bd8_  | $\alpha+\beta$ | 156    | 0.022 | 0.51  | d1e8ca1 | $\alpha/\beta$ | 101 | 0.032 | 0.44 |
| d1bfd_2 | $\alpha/\beta$ | 180    | 0.025 | 0.62  | d1eaqa_ | $\beta$        | 124 | 0.062 | 0.80 |
| d1bgf_  | $\alpha$       | 124    | 0.026 | 0.66  | d1eb6a_ | $\alpha+\beta$ | 177 | 0.038 | 1.06 |
| d1bkra_ | $\alpha$       | 108    | 0.025 | 0.91  | d1ed1a_ | $\alpha$       | 114 | 0.024 | 0.41 |
| d1bm8_  | $\alpha+\beta$ | 99     | 0.043 | 0.52  | d1eexg_ | $\alpha$       | 137 | 0.037 | 0.54 |
| d1boua_ | $\alpha$       | 132    | 0.023 | 0.42  | d1egwa_ | $\alpha+\beta$ | 71  | 0.052 | 0.54 |
| d1bx4a_ | $\alpha/\beta$ | 342    | 0.030 | 0.61  | d1el6a_ | $\alpha+\beta$ | 208 | 0.030 | 0.44 |
| d1bxya_ | $\alpha+\beta$ | 60     | 0.064 | 0.45  | d1emua_ | $\alpha$       | 132 | 0.020 | 0.48 |
| d1byi_  | $\alpha/\beta$ | 224    | 0.042 | 1.06  | d1ew4a_ | $\alpha+\beta$ | 106 | 0.034 | 0.69 |
| d1c1da2 | $\alpha/\beta$ | 148    | 0.059 | 0.61  | d1ewfa1 | $\alpha+\beta$ | 217 | 0.038 | 0.50 |
| d1c1ka_ | $\alpha$       | 217    | 0.023 | 0.61  | d1eyqa_ | $\alpha+\beta$ | 212 | 0.045 | 0.44 |
| d1c75a_ | $\alpha$       | 71     | 0.039 | 1.06  | d1ez3a_ | $\alpha$       | 124 | 0.019 | 0.47 |
| d1c8za_ | $\alpha+\beta$ | 265    | 0.034 | 0.44  | d1f3ua_ | $\beta$        | 118 | 0.032 | 0.48 |
| d1chd_  | $\alpha/\beta$ | 198    | 0.030 | 0.51  | d1f5na1 | $\alpha$       | 300 | 0.020 | 0.53 |
| d1cipa1 | $\alpha$       | 121    | 0.023 | 0.59  | d1f7ta_ | $\alpha+\beta$ | 119 | 0.039 | 0.49 |
| d1cq3a_ | $\beta$        | 224    | 0.047 | 0.45  | d1f86a_ | $\beta$        | 115 | 0.058 | 0.92 |
| d1csei_ | $\alpha+\beta$ | 63     | 0.062 | 0.79  | d1f8na1 | $\alpha$       | 690 | 0.021 | 0.65 |
| d1ctf_  | $\alpha+\beta$ | 68     | 0.035 | 0.55  | d1f9ya_ | $\alpha+\beta$ | 158 | 0.041 | 1.17 |
| d1cy5a_ | $\alpha$       | 92     | 0.029 | 0.77  | d1fid_  | $\alpha+\beta$ | 258 | 0.037 | 0.44 |

|          |                |     |       |      |         |                |     |       |      |
|----------|----------------|-----|-------|------|---------|----------------|-----|-------|------|
| d1fjja_  | $\beta$        | 159 | 0.047 | 0.57 | d1hxn_  | $\beta$        | 209 | 0.072 | 0.48 |
| d1fk5a_  | $\alpha$       | 93  | 0.040 | 0.77 | d1hyoa2 | $\alpha+\beta$ | 298 | 0.033 | 0.73 |
| d1fkma1  | $\alpha$       | 194 | 0.018 | 0.47 | d1i27a_ | $\alpha$       | 73  | 0.034 | 1.00 |
| d1flma_  | $\beta$        | 122 | 0.053 | 0.77 | d1i2ta_ | $\alpha$       | 61  | 0.019 | 0.98 |
| d1fmta1  | $\beta$        | 108 | 0.058 | 0.41 | d1i40a_ | $\beta$        | 175 | 0.038 | 0.94 |
| d1fn9a_  | $\alpha+\beta$ | 365 | 0.030 | 0.52 | d1i4ja_ | $\alpha+\beta$ | 110 | 0.037 | 0.49 |
| d1fs1a1  | $\alpha$       | 41  | 0.036 | 0.48 | d1i4ma_ | $\alpha+\beta$ | 108 | 0.038 | 0.44 |
| d1fs1b1  | $\alpha$       | 55  | 0.030 | 0.48 | d1i6pa_ | $\alpha/\beta$ | 214 | 0.025 | 0.46 |
| d1fsga_  | $\alpha/\beta$ | 233 | 0.025 | 0.98 | d1i7qa_ | $\alpha+\beta$ | 517 | 0.040 | 0.45 |
| d1fw9a_  | $\alpha+\beta$ | 164 | 0.051 | 0.68 | d1ig0a2 | $\alpha/\beta$ | 221 | 0.028 | 0.47 |
| d1g2ra_  | $\alpha+\beta$ | 94  | 0.034 | 0.73 | d1ihra_ | $\alpha+\beta$ | 73  | 0.057 | 0.64 |
| d1g2ya_  | $\alpha$       | 31  | 0.034 | 0.98 | d1ijya_ | $\alpha$       | 122 | 0.026 | 0.66 |
| d1g3p_1  | $\beta$        | 65  | 0.030 | 0.64 | d1ikpa2 | $\alpha+\beta$ | 212 | 0.036 | 0.62 |
| d1g61a_  | $\alpha+\beta$ | 225 | 0.036 | 0.74 | d1io0a_ | $\alpha/\beta$ | 166 | 0.022 | 0.63 |
| d1g66a_  | $\alpha/\beta$ | 207 | 0.054 | 1.16 | d1ioma_ | $\alpha$       | 374 | 0.023 | 0.65 |
| d1g6ga_  | $\beta$        | 127 | 0.030 | 0.54 | d1iq4a_ | $\alpha+\beta$ | 179 | 0.038 | 0.47 |
| d1g7sa3  | $\alpha/\beta$ | 131 | 0.029 | 0.41 | d1irqa_ | $\alpha$       | 48  | 0.034 | 0.60 |
| d1g8ea_  | $\alpha$       | 98  | 0.023 | 0.46 | d1itxa2 | $\alpha+\beta$ | 72  | 0.045 | 0.93 |
| d1g8ma1  | $\alpha/\beta$ | 197 | 0.028 | 0.51 | d1iw0a_ | $\alpha$       | 207 | 0.027 | 0.72 |
| d1g8qa_  | $\alpha$       | 90  | 0.036 | 0.56 | d1ix9a1 | $\alpha$       | 90  | 0.033 | 1.16 |
| d1g8ta_  | $\alpha+\beta$ | 241 | 0.030 | 0.92 | d1ix9a2 | $\alpha+\beta$ | 115 | 0.039 | 1.16 |
| d1g9za_  | $\alpha+\beta$ | 152 | 0.031 | 0.48 | d1ixh_  | $\alpha/\beta$ | 321 | 0.051 | 1.05 |
| d1gci_   | $\alpha/\beta$ | 269 | 0.041 | 1.33 | d1izma_ | $\alpha$       | 170 | 0.045 | 0.45 |
| d1gk8i_  | $\alpha+\beta$ | 125 | 0.036 | 0.71 | d1j09a1 | $\alpha$       | 163 | 0.020 | 0.50 |
| d1gmua1  | $\beta$        | 70  | 0.045 | 0.59 | d1j0pa_ | $\alpha$       | 108 | 0.041 | 1.13 |
| d1gmxa_  | $\alpha/\beta$ | 108 | 0.049 | 0.94 | d1j2ra_ | $\alpha/\beta$ | 188 | 0.030 | 0.78 |
| d1goial  | $\beta$        | 52  | 0.060 | 0.67 | d1j31a_ | $\alpha+\beta$ | 262 | 0.039 | 0.60 |
| d1gp0a_  | $\beta$        | 133 | 0.045 | 0.62 | d1j5ua_ | $\alpha+\beta$ | 127 | 0.044 | 0.42 |
| d1gpqa_  | $\alpha+\beta$ | 127 | 0.042 | 0.58 | d1j8ba_ | $\alpha+\beta$ | 92  | 0.043 | 0.52 |
| d1gwua_  | $\alpha$       | 306 | 0.043 | 0.73 | d1j98a_ | $\alpha+\beta$ | 154 | 0.047 | 0.85 |
| d1gwya_  | $\beta$        | 175 | 0.051 | 0.49 | d1j9ja_ | $\alpha/\beta$ | 247 | 0.023 | 0.47 |
| d1gxja_  | $\alpha+\beta$ | 161 | 0.029 | 0.41 | d1jata_ | $\alpha+\beta$ | 152 | 0.032 | 0.57 |
| d1gyxa_  | $\alpha+\beta$ | 76  | 0.028 | 0.75 | d1jb9a1 | $\beta$        | 157 | 0.050 | 0.56 |
| d1h09a1  | $\beta$        | 149 | 0.038 | 0.41 | d1jf8a_ | $\alpha/\beta$ | 130 | 0.023 | 0.85 |
| d1h16a_  | $\alpha/\beta$ | 759 | 0.030 | 0.51 | d1jfba_ | $\alpha$       | 399 | 0.037 | 1.01 |
| d1h2ca_  | $\beta$        | 124 | 0.041 | 0.60 | d1jg1a_ | $\alpha/\beta$ | 215 | 0.037 | 0.82 |
| d1h4ax1  | $\beta$        | 85  | 0.045 | 0.85 | d1jh6a_ | $\alpha+\beta$ | 181 | 0.051 | 0.50 |
| d1h4xa_  | $\alpha/\beta$ | 111 | 0.042 | 0.87 | d1jhda1 | $\beta$        | 173 | 0.037 | 0.56 |
| d1h6wa1  | $\beta$        | 82  | 0.063 | 0.44 | d1jhfa2 | $\beta$        | 126 | 0.023 | 0.46 |
| d1h99a1  | $\alpha$       | 115 | 0.021 | 0.57 | d1ji7a_ | $\alpha$       | 77  | 0.023 | 0.68 |
| d1hdha_  | $\alpha/\beta$ | 525 | 0.038 | 0.71 | d1jida_ | $\alpha+\beta$ | 114 | 0.044 | 0.51 |
| d1hfell1 | $\alpha/\beta$ | 311 | 0.030 | 0.61 | d1jixa_ | $\alpha/\beta$ | 351 | 0.028 | 0.55 |
| d1hfes_  | $\alpha$       | 88  | 0.033 | 0.61 | d1jkea_ | $\alpha/\beta$ | 145 | 0.041 | 0.58 |
| d1hp1a1  | $\alpha+\beta$ | 188 | 0.047 | 0.56 | d1jkxa_ | $\alpha/\beta$ | 209 | 0.032 | 0.55 |
| d1hqsa_  | $\alpha/\beta$ | 423 | 0.031 | 0.58 | d1jm1a_ | $\beta$        | 202 | 0.042 | 0.94 |
| d1hs6a2  | $\beta$        | 208 | 0.099 | 0.44 | d1jnra1 | $\alpha$       | 141 | 0.030 | 0.59 |
| d1hufa_  | $\alpha+\beta$ | 123 | 0.042 | 0.41 | d1jo0a_ | $\alpha+\beta$ | 97  | 0.049 | 0.73 |
| d1hw1a2  | $\alpha$       | 152 | 0.020 | 0.64 | d1jo8a_ | $\beta$        | 58  | 0.054 | 0.78 |
| d1hxha_  | $\alpha/\beta$ | 253 | 0.045 | 0.82 | d1josa_ | $\alpha+\beta$ | 100 | 0.048 | 0.51 |

|         |                |     |       |      |         |                |     |       |      |
|---------|----------------|-----|-------|------|---------|----------------|-----|-------|------|
| d1jr2a_ | $\alpha/\beta$ | 260 | 0.052 | 0.48 | d1mlna_ | $\alpha/\beta$ | 477 | 0.042 | 0.80 |
| d1jsda_ | $\beta$        | 317 | 0.037 | 0.48 | d1m2da_ | $\alpha/\beta$ | 101 | 0.040 | 0.97 |
| d1jtgb_ | $\alpha+\beta$ | 165 | 0.050 | 0.55 | d1m44a_ | $\alpha+\beta$ | 177 | 0.040 | 0.59 |
| d1jx4a1 | $\alpha+\beta$ | 101 | 0.047 | 0.51 | d1m55a_ | $\alpha+\beta$ | 193 | 0.024 | 0.68 |
| d1jyha_ | $\alpha+\beta$ | 155 | 0.035 | 0.50 | d1m7ja1 | $\beta$        | 55  | 0.042 | 0.65 |
| d1jzta_ | $\alpha/\beta$ | 243 | 0.022 | 0.46 | d1m9fc_ | $\alpha$       | 146 | 0.051 | 0.54 |
| d1k0ra4 | $\alpha+\beta$ | 104 | 0.024 | 0.47 | d1mc2a_ | $\alpha$       | 122 | 0.047 | 1.23 |
| d1k20a_ | $\alpha/\beta$ | 310 | 0.031 | 0.64 | d1me4a_ | $\alpha+\beta$ | 215 | 0.029 | 0.88 |
| d1k3ia3 | $\beta$        | 387 | 0.031 | 0.67 | d1mixa1 | $\alpha$       | 114 | 0.022 | 0.52 |
| d1k3xa1 | $\alpha$       | 89  | 0.024 | 0.79 | d1mjna_ | $\alpha/\beta$ | 179 | 0.038 | 0.74 |
| d1k3xa2 | $\beta$        | 124 | 0.035 | 0.79 | d1mk0a_ | $\alpha+\beta$ | 97  | 0.035 | 0.59 |
| d1k3ya1 | $\alpha$       | 142 | 0.035 | 0.78 | d1moga_ | $\alpha+\beta$ | 67  | 0.046 | 0.52 |
| d1k4ia_ | $\alpha+\beta$ | 216 | 0.043 | 0.91 | d1mqoa_ | $\alpha+\beta$ | 221 | 0.041 | 0.66 |
| d1k5ca_ | $\beta$        | 333 | 0.034 | 1.06 | d1msk_  | $\alpha+\beta$ | 327 | 0.053 | 0.47 |
| d1k5na2 | $\alpha+\beta$ | 181 | 0.049 | 0.95 | d1mun_  | $\alpha$       | 225 | 0.035 | 0.88 |
| d1k5nb_ | $\beta$        | 100 | 0.055 | 0.95 | d1mvfd_ | $\beta$        | 44  | 0.036 | 0.53 |
| d1k6ka_ | $\alpha$       | 142 | 0.022 | 0.50 | d1mw5a_ | $\alpha+\beta$ | 162 | 0.039 | 0.41 |
| d1k8ke_ | $\alpha$       | 173 | 0.030 | 0.40 | d1mzga_ | $\alpha+\beta$ | 144 | 0.032 | 0.41 |
| d1k92a2 | $\alpha+\beta$ | 256 | 0.029 | 0.61 | d1n4wa2 | $\alpha+\beta$ | 132 | 0.043 | 0.98 |
| d1kafa_ | $\alpha+\beta$ | 108 | 0.035 | 0.55 | d1n5ua1 | $\alpha$       | 195 | 0.024 | 0.42 |
| d1keka4 | $\alpha/\beta$ | 253 | 0.033 | 0.46 | d1n62a1 | $\alpha$       | 82  | 0.074 | 0.92 |
| d1khda1 | $\alpha$       | 69  | 0.017 | 0.46 | d1n62b1 | $\alpha+\beta$ | 141 | 0.094 | 0.92 |
| d1kid_  | $\alpha/\beta$ | 193 | 0.038 | 0.55 | d1n62b2 | $\alpha+\beta$ | 663 | 0.103 | 0.92 |
| d1kjqa1 | $\beta$        | 74  | 0.054 | 0.88 | d1n62c1 | $\alpha+\beta$ | 109 | 0.104 | 0.92 |
| d1kjqa2 | $\alpha/\beta$ | 111 | 0.034 | 0.88 | d1n62c2 | $\alpha+\beta$ | 177 | 0.086 | 0.92 |
| d1kkoa2 | $\alpha+\beta$ | 160 | 0.049 | 0.74 | d1n7za_ | $\beta$        | 328 | 0.033 | 0.42 |
| d1kmva_ | $\alpha/\beta$ | 185 | 0.052 | 0.82 | d1n81a_ | $\alpha$       | 186 | 0.029 | 0.42 |
| d1knma_ | $\beta$        | 129 | 0.028 | 0.86 | d1n8va_ | $\alpha$       | 101 | 0.021 | 0.71 |
| d1kpf_  | $\alpha+\beta$ | 111 | 0.038 | 0.59 | d1nbua_ | $\alpha+\beta$ | 118 | 0.049 | 0.56 |
| d1kpta_ | $\alpha+\beta$ | 105 | 0.042 | 0.53 | d1nc7a_ | $\beta$        | 116 | 0.047 | 0.62 |
| d1kq1a_ | $\beta$        | 60  | 0.054 | 0.55 | d1ng6a_ | $\alpha$       | 148 | 0.019 | 0.68 |
| d1kq6a_ | $\alpha+\beta$ | 140 | 0.042 | 0.85 | d1nh2b_ | $\alpha$       | 46  | 0.015 | 0.47 |
| d1kqpa_ | $\alpha/\beta$ | 271 | 0.034 | 1.03 | d1nkd_  | $\alpha$       | 59  | 0.039 | 0.90 |
| d1kwfa_ | $\alpha$       | 363 | 0.033 | 1.12 | d1nkia_ | $\alpha+\beta$ | 134 | 0.042 | 1.06 |
| d1kyfa2 | $\alpha+\beta$ | 114 | 0.049 | 0.81 | d1nkpb_ | $\alpha$       | 83  | 0.019 | 0.52 |
| d1l5oa_ | $\alpha/\beta$ | 346 | 0.027 | 0.61 | d1nlqa_ | $\beta$        | 105 | 0.046 | 0.55 |
| d1l91a_ | $\alpha$       | 74  | 0.035 | 1.10 | d1nls_  | $\beta$        | 237 | 0.039 | 1.06 |
| d1lb6a_ | $\beta$        | 155 | 0.037 | 0.49 | d1nm8a1 | $\alpha/\beta$ | 377 | 0.033 | 0.56 |
| d1lbu_1 | $\alpha$       | 83  | 0.027 | 0.50 | d1nnha_ | $\alpha+\beta$ | 293 | 0.024 | 0.59 |
| d1lc0a2 | $\alpha+\beta$ | 118 | 0.040 | 0.75 | d1nox_  | $\alpha+\beta$ | 200 | 0.021 | 0.60 |
| d1lc5a_ | $\alpha/\beta$ | 355 | 0.032 | 0.64 | d1nppa1 | $\beta$        | 81  | 0.053 | 0.40 |
| d1lkka_ | $\alpha+\beta$ | 105 | 0.028 | 1.00 | d1nqua_ | $\alpha/\beta$ | 154 | 0.038 | 0.58 |
| d1lnia_ | $\alpha+\beta$ | 96  | 0.052 | 1.03 | d1nrza_ | $\alpha/\beta$ | 163 | 0.032 | 0.50 |
| d1lria_ | $\alpha$       | 98  | 0.034 | 0.67 | d1ns5a_ | $\alpha/\beta$ | 153 | 0.041 | 0.60 |
| d1luga_ | $\beta$        | 258 | 0.059 | 1.07 | d1ntyal | $\alpha$       | 184 | 0.020 | 0.54 |
| d1luqa_ | $\beta$        | 119 | 0.101 | 1.04 | d1nwwa_ | $\alpha+\beta$ | 145 | 0.045 | 0.84 |
| d1lyva_ | $\alpha/\beta$ | 283 | 0.036 | 0.75 | d1nwza_ | $\alpha+\beta$ | 125 | 0.067 | 1.24 |
| d1m15a1 | $\alpha$       | 94  | 0.027 | 0.85 | d1nxua_ | $\alpha/\beta$ | 332 | 0.030 | 0.49 |
| d1m15a2 | $\alpha+\beta$ | 262 | 0.045 | 0.85 | d1nz0a_ | $\alpha+\beta$ | 109 | 0.058 | 0.81 |

|         |                |     |       |      |         |                |     |       |      |
|---------|----------------|-----|-------|------|---------|----------------|-----|-------|------|
| d1o08a_ | $\alpha/\beta$ | 221 | 0.028 | 0.84 | d1pfval | $\alpha$       | 162 | 0.022 | 0.55 |
| d1o0wa1 | $\alpha$       | 169 | 0.025 | 0.46 | d1pjxa_ | $\beta$        | 314 | 0.058 | 1.21 |
| d1o1xa_ | $\alpha/\beta$ | 145 | 0.034 | 0.56 | d1pm4a_ | $\beta$        | 117 | 0.070 | 0.52 |
| d1o22a_ | $\alpha+\beta$ | 149 | 0.042 | 0.46 | d1pq7a_ | $\beta$        | 224 | 0.057 | 1.29 |
| d1o26a_ | $\alpha+\beta$ | 219 | 0.029 | 0.58 | d1ptf_  | $\alpha+\beta$ | 87  | 0.024 | 0.61 |
| d1o4wa_ | $\alpha/\beta$ | 125 | 0.035 | 0.48 | d1pu5a_ | $\beta$        | 164 | 0.050 | 0.45 |
| d1o6aa_ | $\beta$        | 87  | 0.055 | 0.53 | d1puc_  | $\alpha+\beta$ | 101 | 0.043 | 0.44 |
| d1o7ja_ | $\alpha/\beta$ | 325 | 0.030 | 0.95 | d1pv5a_ | $\alpha+\beta$ | 261 | 0.034 | 0.51 |
| d1o7na2 | $\alpha+\beta$ | 293 | 0.046 | 0.67 | d1pz4a_ | $\alpha+\beta$ | 113 | 0.047 | 0.64 |
| d1o7qa_ | $\alpha/\beta$ | 287 | 0.026 | 0.80 | d1q5za_ | $\alpha$       | 145 | 0.020 | 0.52 |
| d1o98a1 | $\alpha/\beta$ | 234 | 0.031 | 0.67 | d1q9ia3 | $\alpha+\beta$ | 146 | 0.030 | 0.60 |
| d1oa8a_ | $\beta$        | 128 | 0.052 | 0.50 | d1qdda_ | $\alpha+\beta$ | 144 | 0.027 | 0.75 |
| d1oaia_ | $\alpha$       | 59  | 0.024 | 1.03 | d1qgwa_ | $\alpha+\beta$ | 76  | 0.031 | 0.61 |
| d1oc7a_ | $\alpha/\beta$ | 364 | 0.034 | 0.94 | d1qhva_ | $\beta$        | 195 | 0.040 | 0.69 |
| d1ocya_ | $\alpha+\beta$ | 198 | 0.037 | 0.66 | d1qksa2 | $\beta$        | 432 | 0.042 | 0.74 |
| d1od3a_ | $\beta$        | 131 | 0.048 | 1.01 | d1qlma_ | $\alpha+\beta$ | 316 | 0.024 | 0.44 |
| d1ogca_ | $\alpha/\beta$ | 131 | 0.031 | 0.44 | d1qopb_ | $\alpha/\beta$ | 390 | 0.030 | 0.73 |
| d1ogox1 | $\beta$        | 199 | 0.034 | 0.55 | d1qqqa_ | $\alpha+\beta$ | 264 | 0.037 | 0.58 |
| d1ojha_ | $\alpha$       | 52  | 0.025 | 0.54 | d1qrea_ | $\beta$        | 210 | 0.036 | 0.64 |
| d1ojra_ | $\alpha/\beta$ | 274 | 0.038 | 0.77 | d1qv9a_ | $\alpha/\beta$ | 282 | 0.032 | 0.61 |
| d1ok0a_ | $\beta$        | 74  | 0.066 | 1.11 | d1qw2a_ | $\alpha+\beta$ | 102 | 0.045 | 0.61 |
| d1ok7a1 | $\alpha+\beta$ | 122 | 0.049 | 0.54 | d1qwna1 | $\alpha$       | 111 | 0.022 | 0.80 |
| d1on2a2 | $\alpha$       | 74  | 0.019 | 0.57 | d1qwza_ | $\beta$        | 235 | 0.034 | 0.53 |
| d1oo0a_ | $\alpha+\beta$ | 144 | 0.055 | 0.45 | d1qxoa_ | $\alpha+\beta$ | 388 | 0.035 | 0.47 |
| d1oqja_ | $\alpha+\beta$ | 90  | 0.028 | 0.59 | d1qxya_ | $\alpha+\beta$ | 249 | 0.053 | 0.97 |
| d1oqva_ | $\alpha+\beta$ | 171 | 0.050 | 0.79 | d1r0da_ | $\alpha$       | 194 | 0.027 | 0.46 |
| d1or7a2 | $\alpha$       | 113 | 0.033 | 0.45 | d1r0va3 | $\alpha+\beta$ | 75  | 0.062 | 0.45 |
| d1or7c_ | $\alpha$       | 66  | 0.033 | 0.45 | d1r29a_ | $\alpha+\beta$ | 122 | 0.028 | 0.79 |
| d1orua_ | $\beta$        | 182 | 0.032 | 0.50 | d1r2ma_ | $\beta$        | 70  | 0.031 | 1.00 |
| d1os1a1 | $\alpha/\beta$ | 313 | 0.039 | 0.49 | d1r4va_ | $\alpha$       | 151 | 0.023 | 0.49 |
| d1os1a2 | $\alpha/\beta$ | 224 | 0.030 | 0.49 | d1r6ja_ | $\beta$        | 82  | 0.035 | 1.45 |
| d1ospo_ | $\beta$        | 251 | 0.038 | 0.42 | d1r6la2 | $\alpha+\beta$ | 88  | 0.037 | 0.44 |
| d1ou8a_ | $\beta$        | 106 | 0.034 | 0.57 | d1r7la_ | $\alpha+\beta$ | 103 | 0.037 | 0.40 |
| d1ovna1 | $\alpha$       | 107 | 0.057 | 0.43 | d1r89a1 | $\alpha$       | 115 | 0.028 | 0.49 |
| d1owla1 | $\alpha$       | 271 | 0.019 | 0.51 | d1r89a2 | $\alpha+\beta$ | 142 | 0.028 | 0.49 |
| d1owla2 | $\alpha/\beta$ | 202 | 0.029 | 0.51 | d1rj1a_ | $\alpha$       | 148 | 0.020 | 0.51 |
| d1ox0a1 | $\alpha/\beta$ | 256 | 0.030 | 0.78 | d1rlha_ | $\alpha+\beta$ | 151 | 0.040 | 0.52 |
| d1oxca_ | $\beta$        | 114 | 0.053 | 0.81 | d1rlka_ | $\alpha/\beta$ | 116 | 0.035 | 0.45 |
| d1oyga_ | $\beta$        | 440 | 0.035 | 0.64 | d1ro7a_ | $\alpha/\beta$ | 258 | 0.027 | 0.48 |
| d1p3da1 | $\alpha/\beta$ | 96  | 0.036 | 0.56 | d1rqwa_ | $\beta$        | 207 | 0.047 | 0.96 |
| d1p3da2 | $\alpha/\beta$ | 152 | 0.025 | 0.56 | d1rtqa_ | $\alpha/\beta$ | 291 | 0.033 | 1.08 |
| d1p57a_ | $\alpha+\beta$ | 110 | 0.055 | 0.52 | d1rv9a_ | $\alpha+\beta$ | 242 | 0.047 | 0.59 |
| d1p5gx1 | $\alpha/\beta$ | 146 | 0.029 | 0.62 | d1rwha2 | $\beta$        | 113 | 0.061 | 0.83 |
| d1p6oa_ | $\alpha/\beta$ | 156 | 0.052 | 0.91 | d1rwha3 | $\beta$        | 272 | 0.048 | 0.83 |
| d1p9ya_ | $\alpha+\beta$ | 117 | 0.035 | 0.41 | d1rxqa_ | $\alpha$       | 174 | 0.026 | 0.54 |
| d1pbja1 | $\alpha+\beta$ | 59  | 0.028 | 0.67 | d1ry9a_ | $\alpha+\beta$ | 133 | 0.030 | 0.49 |
| d1pcfa_ | $\alpha+\beta$ | 66  | 0.033 | 0.54 | d1ryaa_ | $\alpha+\beta$ | 160 | 0.036 | 0.74 |
| d1pda_2 | $\alpha+\beta$ | 88  | 0.044 | 0.55 | d1rzhh1 | $\beta$        | 213 | 0.031 | 0.48 |
| d1pdo_  | $\alpha/\beta$ | 129 | 0.036 | 0.55 | d1s0pa_ | $\alpha$       | 176 | 0.037 | 0.70 |

|         |                |     |       |      |          |                |     |       |      |
|---------|----------------|-----|-------|------|----------|----------------|-----|-------|------|
| dls7za_ | $\alpha$       | 106 | 0.041 | 0.54 | d1uptb_  | $\alpha$       | 58  | 0.023 | 0.49 |
| d1s95a_ | $\alpha+\beta$ | 324 | 0.050 | 0.59 | d1uq5a_  | $\alpha+\beta$ | 263 | 0.057 | 0.68 |
| d1sbxa_ | $\alpha$       | 106 | 0.036 | 0.60 | d1us0a_  | $\alpha/\beta$ | 313 | 0.047 | 1.42 |
| d1sdia_ | $\alpha$       | 213 | 0.041 | 0.62 | d1utg_   | $\alpha$       | 70  | 0.028 | 0.65 |
| d1sed_  | $\alpha$       | 112 | 0.023 | 0.47 | d1uuja_  | $\alpha$       | 76  | 0.034 | 0.56 |
| d1seia_ | $\alpha+\beta$ | 130 | 0.053 | 0.42 | d1uuya_  | $\alpha/\beta$ | 161 | 0.038 | 0.68 |
| d1sfda_ | $\beta$        | 105 | 0.045 | 1.02 | d1uyla_  | $\alpha+\beta$ | 207 | 0.041 | 0.64 |
| d1shea_ | $\alpha+\beta$ | 94  | 0.021 | 0.47 | d1uz5a2  | $\beta$        | 176 | 0.035 | 0.41 |
| d1smba_ | $\alpha+\beta$ | 149 | 0.029 | 0.62 | d1uzba_  | $\alpha/\beta$ | 516 | 0.033 | 0.68 |
| d1soxa3 | $\alpha+\beta$ | 250 | 0.031 | 0.47 | d1v16b2  | $\alpha/\beta$ | 138 | 0.031 | 0.53 |
| d1sxra_ | $\alpha+\beta$ | 173 | 0.034 | 0.60 | d1v1ha1  | $\beta$        | 74  | 0.049 | 0.49 |
| d1syla_ | $\beta$        | 184 | 0.059 | 1.01 | d1v33a_  | $\alpha+\beta$ | 346 | 0.035 | 0.48 |
| d1szha_ | $\alpha$       | 147 | 0.024 | 0.62 | d1v54h_  | $\alpha$       | 79  | 0.027 | 0.50 |
| d1t07a_ | $\alpha+\beta$ | 81  | 0.031 | 0.51 | d1v6sa_  | $\alpha/\beta$ | 390 | 0.030 | 0.61 |
| d1t15a1 | $\alpha/\beta$ | 109 | 0.034 | 0.45 | d1v74a_  | $\alpha+\beta$ | 107 | 0.030 | 0.46 |
| d1t1ja_ | $\alpha/\beta$ | 119 | 0.031 | 0.53 | d1v7ra_  | $\alpha/\beta$ | 186 | 0.047 | 0.66 |
| d1t2da2 | $\alpha+\beta$ | 165 | 0.030 | 0.77 | d1v7za_  | $\alpha/\beta$ | 257 | 0.026 | 0.59 |
| d1t3ta3 | $\alpha+\beta$ | 152 | 0.025 | 0.47 | d1vcc_   | $\alpha+\beta$ | 77  | 0.040 | 0.55 |
| d1t56a2 | $\alpha$       | 120 | 0.013 | 0.54 | d1vc1a3  | $\alpha+\beta$ | 149 | 0.039 | 0.55 |
| d1t6t1_ | $\alpha/\beta$ | 108 | 0.025 | 0.53 | d1vf6a_  | $\alpha$       | 58  | 0.019 | 0.41 |
| d1t7ra_ | $\alpha$       | 250 | 0.020 | 0.69 | d1vh5a_  | $\alpha+\beta$ | 138 | 0.041 | 0.71 |
| d1t8ka_ | $\alpha$       | 77  | 0.024 | 0.93 | d1vhua_  | $\alpha/\beta$ | 192 | 0.033 | 0.76 |
| d1t95a2 | $\alpha+\beta$ | 76  | 0.043 | 0.45 | d1vhva_  | $\alpha/\beta$ | 251 | 0.034 | 0.49 |
| d1tbfa_ | $\alpha$       | 326 | 0.031 | 0.78 | d1vioa2  | $\alpha+\beta$ | 58  | 0.029 | 0.58 |
| d1tea1  | $\alpha$       | 133 | 0.021 | 0.63 | d1vk1a_  | $\alpha+\beta$ | 232 | 0.044 | 0.82 |
| d1tfe_  | $\alpha+\beta$ | 142 | 0.031 | 0.52 | d1vk5a_  | $\alpha$       | 121 | 0.031 | 0.64 |
| d1tjya_ | $\alpha/\beta$ | 316 | 0.032 | 0.77 | d1vkia_  | $\alpha+\beta$ | 165 | 0.042 | 0.62 |
| d1tlua_ | $\alpha+\beta$ | 117 | 0.044 | 0.62 | d1vkka_  | $\alpha+\beta$ | 137 | 0.069 | 0.73 |
| d1tqga_ | $\alpha$       | 105 | 0.035 | 1.02 | d1vkma_  | $\alpha/\beta$ | 291 | 0.040 | 0.51 |
| d1tua1  | $\alpha+\beta$ | 84  | 0.027 | 0.62 | d1vly1a1 | $\beta$        | 82  | 0.058 | 0.77 |
| d1tvfa1 | $\beta$        | 68  | 0.056 | 0.47 | d1vly1a2 | $\alpha+\beta$ | 241 | 0.049 | 0.77 |
| d1tx4a_ | $\alpha$       | 196 | 0.025 | 0.56 | d1vns_   | $\alpha$       | 574 | 0.024 | 0.56 |
| d1tzba_ | $\alpha/\beta$ | 301 | 0.025 | 0.86 | d1w53a_  | $\alpha$       | 84  | 0.028 | 0.59 |
| d1tzva_ | $\alpha$       | 141 | 0.025 | 0.70 | d1whi_   | $\beta$        | 122 | 0.036 | 0.62 |
| d1u0ka1 | $\alpha+\beta$ | 129 | 0.044 | 0.64 | d1xbfa_  | $\alpha+\beta$ | 131 | 0.037 | 0.44 |
| d1u55a_ | $\alpha+\beta$ | 188 | 0.031 | 0.49 | d2cbla2  | $\alpha$       | 131 | 0.024 | 0.40 |
| d1u94a2 | $\alpha+\beta$ | 60  | 0.024 | 0.49 | d2cp1_   | $\beta$        | 164 | 0.042 | 0.57 |
| d1uc2a_ | $\alpha+\beta$ | 480 | 0.034 | 0.43 | d2end_   | $\alpha$       | 137 | 0.034 | 0.70 |
| d1ucda_ | $\alpha+\beta$ | 190 | 0.049 | 0.71 | d2erl_   | $\alpha$       | 40  | 0.055 | 1.01 |
| d1ucsa_ | $\beta$        | 64  | 0.039 | 1.62 | d2igd_   | $\alpha+\beta$ | 61  | 0.047 | 0.97 |
| d1udxa1 | $\beta$        | 156 | 0.041 | 0.40 | d2ilk_   | $\alpha$       | 155 | 0.040 | 0.58 |
| d1udxa3 | $\alpha+\beta$ | 76  | 0.025 | 0.40 | d2lisa_  | $\alpha$       | 131 | 0.024 | 0.78 |
| d1udza_ | $\beta$        | 179 | 0.042 | 0.47 | d2pvba_  | $\alpha$       | 107 | 0.032 | 1.15 |
| d1ufya_ | $\alpha+\beta$ | 121 | 0.048 | 0.93 | d3euga_  | $\alpha/\beta$ | 225 | 0.038 | 0.68 |
| d1ugpa_ | $\alpha+\beta$ | 203 | 0.023 | 0.58 | d3ezma_  | $\beta$        | 101 | 0.044 | 0.61 |
| d1ukka_ | $\alpha+\beta$ | 141 | 0.053 | 0.59 | d3lzt_   | $\alpha+\beta$ | 129 | 0.064 | 1.14 |
| d1umwal | $\alpha+\beta$ | 128 | 0.031 | 0.42 | d3sici_  | $\alpha+\beta$ | 107 | 0.053 | 0.48 |
| d1unqa_ | $\beta$        | 117 | 0.046 | 1.03 | d4ubpa_  | $\alpha+\beta$ | 100 | 0.039 | 0.64 |
| d1uowa_ | $\beta$        | 156 | 0.056 | 0.93 |          |                |     |       |      |

# Reconstruction and stability of secondary structure elements in the context of protein structure prediction

Alexei A. Podtelezhnikov and David L. Wild

## Supplementary Material #2 Supplementary Figures

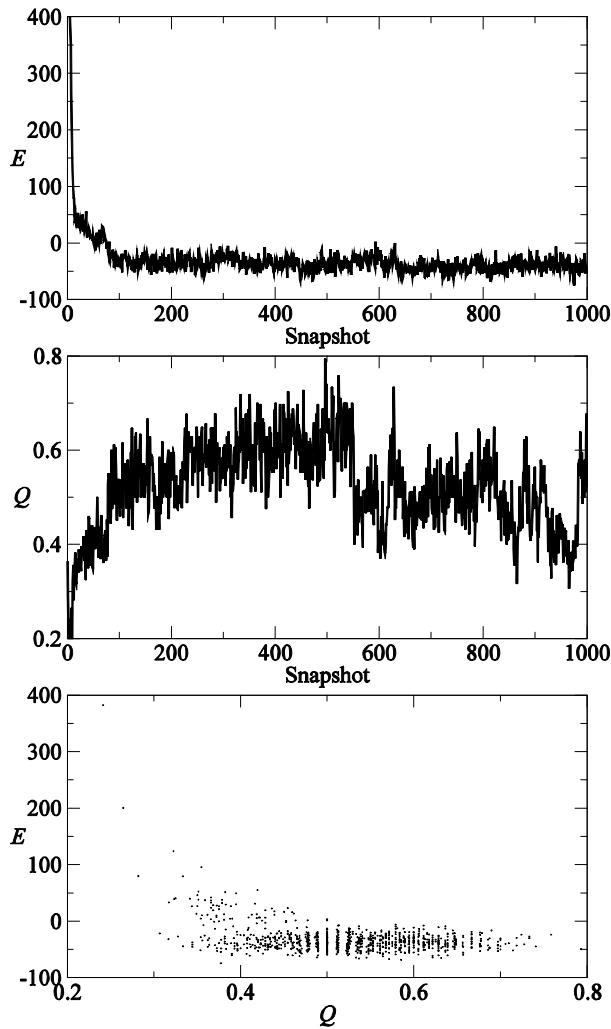


Figure 5S. Reconstruction of the protein G fold by specifying predicted interactions (Case 1). The graphs demonstrate the evolution of the microscopic energy,  $E$ , and fraction of the native contacts,  $Q$ , during the simulation run in the top and middle panel respectively. The bottom panel demonstrated the relationship between  $Q$  and  $E$ .

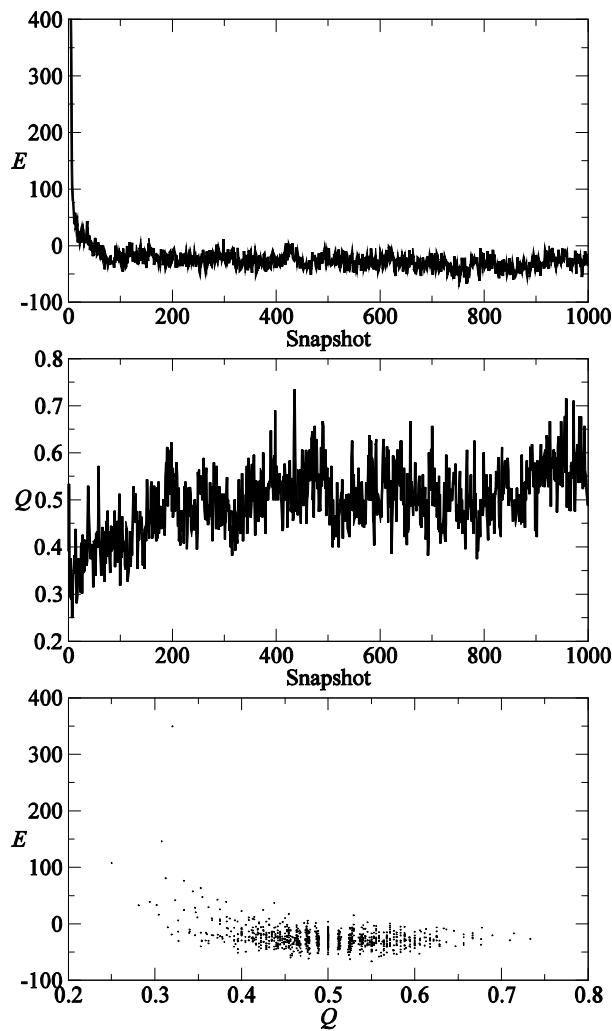


Figure 6S. Reconstruction of the protein G fold by specifying predicted interactions (Case 2). The graphs demonstrate the evolution of the microscopic energy,  $E$ , and fraction of the native contacts,  $Q$ , during the simulation run in the top and middle panel respectively. The bottom panel demonstrated the relationship between  $Q$  and  $E$ .

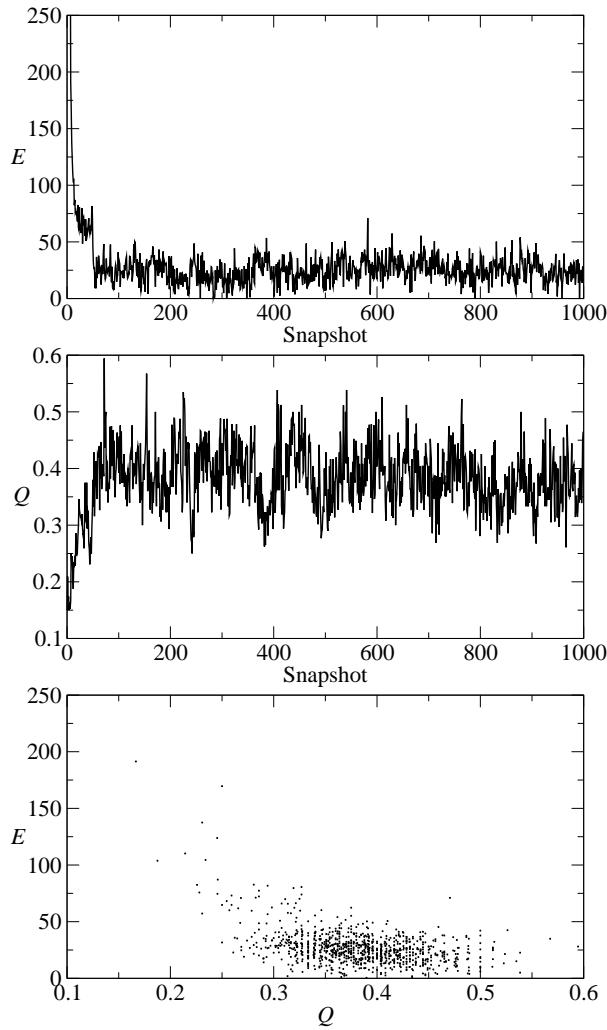


Figure 7S. Reconstruction of chymotrypsin inhibitor 2 CI2 fold by specifying predicted interactions. The graphs demonstrate the evolution of the microscopic energy,  $E$ , and fraction of the native contacts,  $Q$ , during the simulation run in the top and middle panel respectively. The bottom panel demonstrated the relationship between  $Q$  and  $E$ .

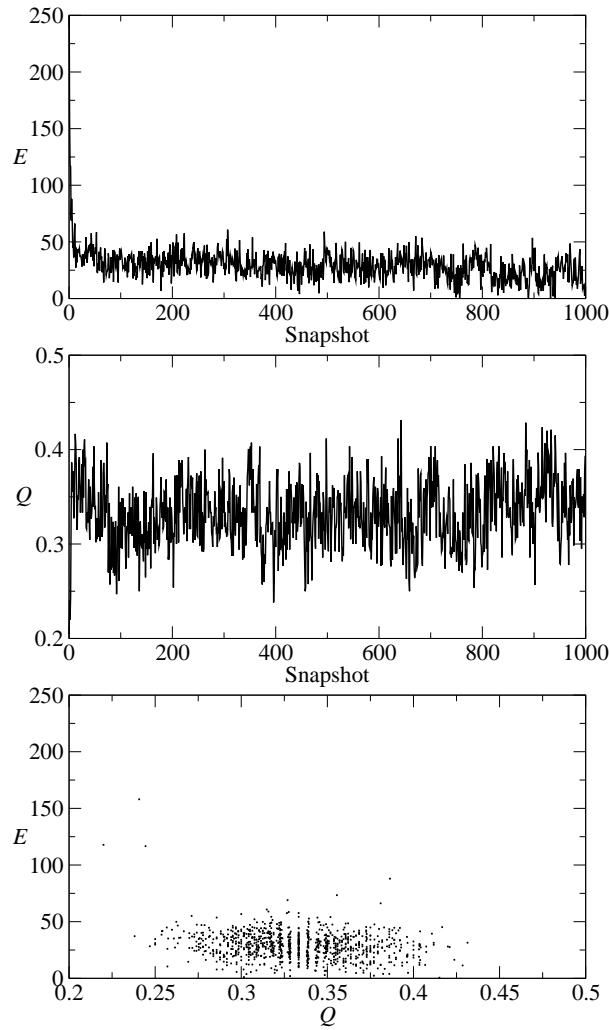


Figure 8S. Reconstruction of the SH3 domain fold by specifying predicted interactions. The graphs demonstrate the evolution of the microscopic energy,  $E$ , and fraction of the native contacts,  $Q$ , during the simulation run in the top and middle panel respectively. The bottom panel demonstrated the relationship between  $Q$  and  $E$ .

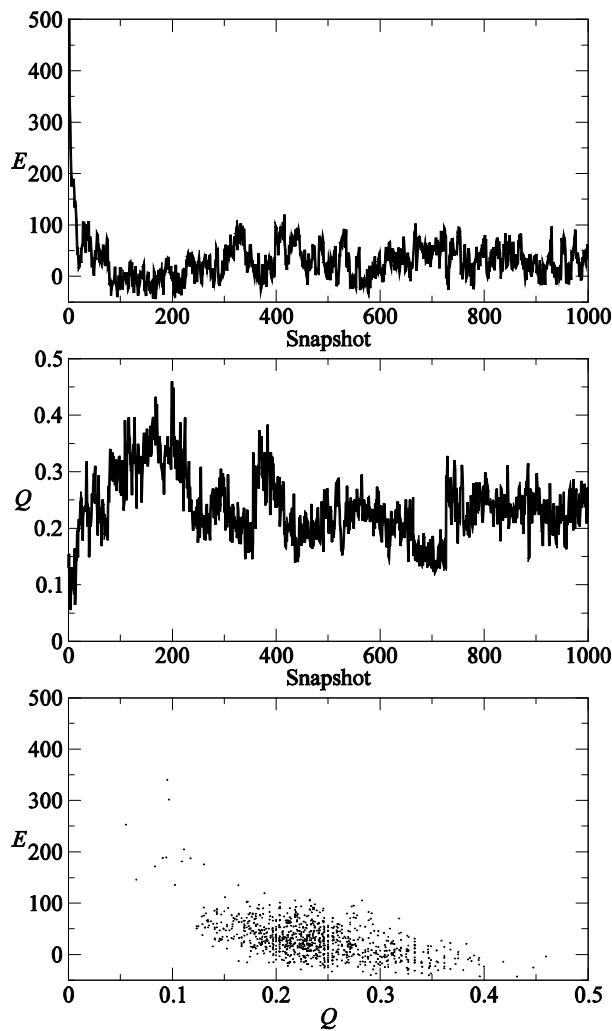


Figure 9S. Reconstruction of the cold-shock protein CspA fold by specifying predicted interactions. The graphs demonstrate the evolution of the microscopic energy,  $E$ , and fraction of the native contacts,  $Q$ , during the simulation run in the top and middle panel respectively. The bottom panel demonstrated the relationship between  $Q$  and  $E$ .