

| ID    | name  | RMSE                 | MAE                  | ME                      | R <sup>2</sup>       | m                     |
|-------|---|----------------------|----------------------|-------------------------|----------------------|-----------------------|
| xvxzd | Full quantum chemical calculation of free ener... | 0.680 [0.544, 0.811] | 0.579 [0.449, 0.714] | 0.235 [-0.007, 0.464]   | 0.937 [0.878, 0.973] | 0.923 [0.837, 1.016]  |
| gyuhx | S+pKa   | 0.732 [0.554, 0.910] | 0.585 [0.437, 0.744] | 0.035 [-0.229, 0.283]   | 0.929 [0.878, 0.966] | 0.979 [0.904, 1.086]  |
| xmyhm | ACD/pKa Classic                                   | 0.787 [0.519, 1.032] | 0.564 [0.383, 0.772] | 0.134 [-0.145, 0.406]   | 0.919 [0.847, 0.968] | 0.961 [0.855, 1.085]  |
| nb017 | MoKa  | 0.943 [0.723, 1.154] | 0.770 [0.586, 0.969] | -0.162 [-0.497, 0.160]  | 0.884 [0.808, 0.937] | 0.939 [0.821, 1.076]  |
| nb007 | Epik Scan   | 0.946 [0.734, 1.159] | 0.776 [0.597, 0.975] | 0.045 [-0.288, 0.369]   | 0.879 [0.764, 0.946] | 0.840 [0.766, 0.922]  |
| yqkga | ReSCoSS conformations // COSMOtherm pKa           | 1.010 [0.779, 1.227] | 0.799 [0.588, 1.020] | -0.166 [-0.511, 0.192]  | 0.867 [0.780, 0.935] | 0.927 [0.763, 1.084]  |
| nb010 | Epik Microscopic                                  | 1.028 [0.769, 1.276] | 0.814 [0.601, 1.049] | 0.243 [-0.113, 0.593]   | 0.869 [0.770, 0.940] | 0.946 [0.827, 1.080]  |
| 8xt50 | ReSCoSS conformations // DSD-BLYP-D3 reranking... | 1.071 [0.786, 1.355] | 0.814 [0.584, 1.065] | -0.475 [-0.821, -0.146] | 0.906 [0.841, 0.952] | 1.078 [0.929, 1.218]  |
| nb013 | Jaguar  | 1.103 [0.710, 1.473] | 0.803 [0.559, 1.091] | -0.148 [-0.548, 0.214]  | 0.884 [0.782, 0.948] | 1.092 [0.905, 1.257]  |
| nb015 | Chemicalize v18.23 (ChemAxon MarvinSketch v18.23) | 1.272 [0.991, 1.567] | 1.044 [0.803, 1.305] | 0.129 [-0.335, 0.562]   | 0.874 [0.799, 0.933] | 1.162 [0.934, 1.336]  |
| p0jba | macroscopic pKa prediction from microscopic pK... | 1.315 [0.687, 1.728] | 1.084 [0.448, 1.720] | -0.924 [-1.720, -0.108] | 0.910 [0.509, 1.000] | 1.185 [0.355, 1.724]  |
| 37xm8 | ACD/pKa GALAS                                     | 1.413 [0.936, 1.849] | 1.008 [0.681, 1.378] | -0.183 [-0.682, 0.326]  | 0.834 [0.693, 0.926] | 1.155 [0.979, 1.333]  |
| mkhqa | EC-RISM/MP2/cc-pVTZ-P2-phi-all-2par               | 1.596 [1.139, 2.043] | 1.239 [0.912, 1.620] | -0.316 [-0.891, 0.215]  | 0.803 [0.668, 0.906] | 1.140 [0.976, 1.339]  |
| ttjd0 | EC-RISM/MP2/cc-pVTZ-P2-phi-noThiols-2par          | 1.642 [1.201, 2.061] | 1.296 [0.956, 1.667] | -0.122 [-0.693, 0.442]  | 0.813 [0.688, 0.908] | 1.198 [1.029, 1.394]  |
| nb001 | EC-RISM/MP2/6-311+G(d,p)-P2-phi-all-2par          | 1.685 [1.059, 2.382] | 1.213 [0.851, 1.668] | 0.442 [-0.100, 1.046]   | 0.797 [0.699, 0.896] | 1.156 [0.955, 1.429]  |
| nb002 | EC-RISM/MP2/6-311+G(d,p)-P2-phi-noThiols-2par     | 1.703 [1.071, 2.377] | 1.246 [0.879, 1.695] | 0.509 [-0.036, 1.112]   | 0.796 [0.700, 0.896] | 1.153 [0.951, 1.427]  |
| 35bdm | macroscopic pKa prediction from microscopic pK... | 1.719 [0.665, 2.338] | 1.442 [0.622, 2.262] | -1.006 [-2.178, 0.134]  | 0.919 [0.463, 1.000] | 1.446 [0.720, 2.130]  |
| ryzue | Adiabatic scheme with single point correction ... | 1.774 [1.408, 2.117] | 1.500 [1.172, 1.843] | 1.298 [0.862, 1.724]    | 0.910 [0.863, 0.948] | 1.229 [1.060, 1.401]  |
| 2ii2g | EC-RISM/MP2/cc-pVTZ-P2-q-noThiols-2par            | 1.795 [1.297, 2.254] | 1.389 [1.005, 1.816] | -0.744 [-1.307, -0.170] | 0.792 [0.655, 0.892] | 1.149 [0.961, 1.375]  |
| mpwiy | EC-RISM/MP2/cc-pVTZ-P3NI-phi-noThiols-2par        | 1.816 [1.382, 2.218] | 1.482 [1.125, 1.869] | 0.103 [-0.561, 0.717]   | 0.820 [0.705, 0.906] | 1.294 [1.116, 1.505]  |
| 5byn6 | Adiabatic scheme for type III submission          | 1.890 [1.512, 2.262] | 1.588 [1.238, 1.955] | 1.317 [0.828, 1.791]    | 0.905 [0.848, 0.947] | 1.284 [1.107, 1.471]  |
| y75vj | Direct scheme for type III submission             | 1.901 [1.508, 2.259] | 1.584 [1.225, 1.962] | 1.039 [0.473, 1.600]    | 0.891 [0.794, 0.952] | 1.345 [1.161, 1.528]  |
| w4iyd | Vertical scheme for type III submission           | 1.926 [1.516, 2.284] | 1.584 [1.190, 1.975] | 1.257 [0.729, 1.767]    | 0.853 [0.738, 0.922] | 1.206 [0.998, 1.401]  |
| np6b4 | EC-RISM/B3LYP/6-311+G(d,p)-P2-phi-noThiols-2par   | 1.938 [1.219, 2.724] | 1.435 [1.038, 1.950] | -0.467 [-1.069, 0.231]  | 0.709 [0.604, 0.868] | 1.083 [0.809, 1.448]  |
| nb004 | EC-RISM/MP2/6-311+G(d,p)-P3NI-phi-noThiols-2par   | 2.009 [1.379, 2.646] | 1.568 [1.166, 2.051] | 0.557 [-0.082, 1.264]   | 0.823 [0.725, 0.902] | 1.350 [1.149, 1.607]  |
| nb003 | EC-RISM/MP2/6-311+G(d,p)-P3NI-phi-all-2par        | 2.010 [1.387, 2.660] | 1.577 [1.172, 2.049] | 0.524 [-0.131, 1.242]   | 0.825 [0.726, 0.903] | 1.358 [1.154, 1.607]  |
| yc70m | PCM/B3LYP/6-311+G(d,p)                            | 2.034 [1.730, 2.323] | 1.805 [1.477, 2.135] | -0.405 [-1.095, 0.319]  | 0.469 [0.283, 0.643] | 0.559 [0.346, 0.825]  |
| hytjn | OE Gaussian Process                               | 2.161 [1.243, 3.049] | 1.389 [0.858, 2.031] | 0.709 [0.016, 1.483]    | 0.449 [0.129, 0.783] | 0.621 [0.257, 0.997]  |
| f0gew | EC-RISM/B3LYP/6-311+G(d,p)-P3NI-phi-noThiols-2par | 2.184 [1.384, 2.955] | 1.578 [1.099, 2.153] | -0.733 [-1.414, 0.039]  | 0.769 [0.665, 0.891] | 1.291 [1.023, 1.642]  |
| q3pfp | OE Gaussian Process Resampled                     | 2.193 [1.330, 3.086] | 1.505 [0.997, 2.129] | 0.589 [-0.117, 1.403]   | 0.443 [0.124, 0.766] | 0.658 [0.269, 1.068]  |
| ds62k | EC-RISM/MP2/6-311+G(d,p)-P3NI-q-noThiols-2par     | 2.218 [1.615, 2.835] | 1.778 [1.332, 2.289] | 0.784 [0.064, 1.538]    | 0.822 [0.695, 0.905] | 1.406 [1.198, 1.627]  |
| xikp8 | Direct scheme with single point correction for... | 2.348 [1.937, 2.722] | 2.056 [1.654, 2.472] | 0.773 [-0.042, 1.575]   | 0.890 [0.799, 0.947] | 1.588 [1.392, 1.804]  |
| nb005 | EC-RISM/MP2/6-311+G(d,p)-P2-phi-all-1par          | 2.378 [1.803, 2.941] | 1.915 [1.452, 2.432] | 0.313 [-0.484, 1.156]   | 0.842 [0.739, 0.912] | 1.557 [1.346, 1.818]  |
| 5nm4j | Substructure matches from experimental data       | 2.450 [1.418, 3.329] | 1.583 [0.943, 2.348] | 0.046 [-0.824, 1.015]   | 0.192 [0.002, 0.696] | 0.398 [-0.064, 0.815] |
| ad5pu | EC-RISM/B3LYP/6-311+G(d,p)-P3NI-q-noThiols-2par   | 2.536 [1.674, 3.294] | 1.826 [1.245, 2.476] | -0.651 [-1.507, 0.230]  | 0.761 [0.634, 0.875] | 1.432 [1.125, 1.765]  |
| pwn3m | Analog_search                                     | 2.604 [1.446, 3.497] | 1.539 [0.823, 2.350] | 0.788 [-0.071, 1.725]   | 0.208 [0.003, 0.635] | 0.369 [0.003, 0.782]  |
| nb006 | EC-RISM/MP2/6-311+G(d,p)-P3NI-phi-all-1par        | 2.982 [2.366, 3.575] | 2.525 [1.979, 3.115] | 0.424 [-0.606, 1.466]   | 0.844 [0.738, 0.915] | 1.784 [1.554, 2.055]  |
| 0hxtm | COSMOtherm_FINE17                                 | 3.263 [1.788, 4.386] | 1.918 [1.003, 2.966] | 1.377 [0.346, 2.546]    | 0.075 [0.000, 0.477] | 0.281 [-0.171, 0.839] |

#### Notes

- Mean and 95% confidence intervals of statistic values were calculated by bootstrapping.
- Submissions with submission IDs nb001, nb002, nb003, nb004, nb005 and nb005 include non-blind corrections to pKa predictions of only SM22 molecule. pKas of the rest of the molecules in these submissions were blindly predicted before experimental data was released.

- pKa predictions of Epik, Jaguar, Chemicalize, and MoKa were not blind (submission IDs noted as nbXXX). They were submitted after the submission deadline as reference methods.