**Supporting information**

***Table S1*: Results from non-systemic phenylboronic acid filtering**

| Molecule | Molecular Weight | fSP3 | pKa |
| --- | --- | --- | --- |
|  | 680.265 | 0.361 | 4.8 |
|  | 678.237 | 0.267 | 4.2 |
|  | 674.262 | 0.29 | 4 |
|  | 660.246 | 0.267 | 4.6 |
|  | 631.249 | 0.194 | 8 |
|  | 630.159 | 0.2 | 6 |
|  | 624.256 | 0.235 | 7.1 |
|  | 604.146 | 0.25 | 5.9 |
|  | 604.144 | 0.143 | 6.9 |
|  | 590.131 | 0.222 | 5.6 |
|  | 588.149 | 0.143 | 7.4 |
|  | 576.231 | 0.519 | 7.6 |
|  | 576.19 | 0.3 | 8 |
|  | 573.226 | 0.192 | 5 |
|  | 566.169 | 0.25 | 7.2 |
|  | 562.175 | 0.276 | 7.1 |
|  | 556.199 | 0.286 | 7.7 |
|  | 556.104 | 0.192 | 7.5 |
|  | 554.149 | 0.222 | 5.9 |
|  | 550.175 | 0.25 | 6.3 |
|  | 540.134 | 0.192 | 7.5 |
|  | 540.127 | 0.192 | 6.5 |
|  | 540.127 | 0.192 | 7.2 |
|  | 538.183 | 0 | 6.8 |
|  | 536.159 | 0.222 | 5.6 |
|  | 536.159 | 0.222 | 5.7 |
|  | 532.27 | 0.188 | 5.3 |
|  | 532.162 | 0.214 | 7.5 |
|  | 532.162 | 0.214 | 7.5 |
|  | 531.128 | 0.154 | 7.1 |
|  | 528.178 | 0.179 | 6.9 |
|  | 524.157 | 0.192 | 6.8 |
|  | 524.157 | 0.192 | 6.8 |
|  | 522.143 | 0.192 | 6.5 |
|  | 522.143 | 0.192 | 6.8 |
|  | 516.133 | 0.074 | 5.8 |
|  | 514.171 | 0.214 | 7.7 |
|  | 514.162 | 0.148 | 5.9 |
|  | 513.187 | 0.214 | 7 |
|  | 507.175 | 0.25 | 7.3 |
|  | 506.166 | 0.192 | 6.7 |
|  | 506.166 | 0.192 | 6.7 |
|  | 506.166 | 0.192 | 5.5 |
|  | 506.166 | 0.192 | 6 |
|  | 505.196 | 0.28 | 6.1 |
|  | 505.182 | 0.192 | 6 |
|  | 505.182 | 0.192 | 5.9 |
|  | 501.164 | 0.12 | 4.7 |