Supplementary materials

Figure S1. Validation of HAFP 3D model structure obtained based on homology with HSA. (A) Ramachandran map for the main chain conformation shows that 99.5% residues (black dots) are located in favored (red) and allowed (yellow) regions. (B) Graphs and diagrams of stereo-chemical properties of individual residues demonstrate high quality of the model structure. (C) Secondary structure element (SSE) diagrams demonstrate stability of α-helical regions.
### Table S1. Experimental binding affinities of estrogens to rat AFP

| Ligand     | $K_a$ RAFP (M$^{-1}$) | $K_d$ RAFP (M) | $\Delta G_{RAFP}$ (kcal/mol) | References |
|------------|----------------------|----------------|-------------------------------|------------|
| 17β-estradiol | From 9.3 x 10$^8$  | From 0.107 x 10$^4$ | From -12.232 | [31]        |
|            | To 11.4 x 10$^8$    | To 0.088 x 10$^4$  | To -12.347                  |            |
| 17β-estradiol | From 0.6 x10$^9$    | From 1.667 x 10$^4$ | From -10.606 | [42]        |
|            | To 1.4 x10$^9$      | To 0.714 x 10$^4$  | To -11.106                  |            |
| 17β-estradiol | 2.83±0.78 x10$^9$ | 0.353 x 10$^{-4}$  | -11.525                     | [43]        |
| 17β-estradiol | 5.0 x 10$^7$       | 0.200 x 10$^{-7}$  | -9.135                      | [44]        |
| Estrone     | 5.51±1.01 x 10$^8$ | 0.182 x 10$^{-8}$  | -11.917                     | [43]        |
| Estrone     | 9.0 x 10$^7$       | 0.111 x 10$^{-7}$  | -10.847                     | [44]        |
| DES         | 1.5 x 10$^6$       | 0.667 x 10$^{-6}$  | -8.452                      | [45]        |

### Table S2. Experimental binding affinities of estrogens to mouse AFP

| Ligand     | $K_a$ MAFP (M$^{-1}$) | $K_d$ MAFP (M) | $\Delta G_{MAFP}$ (kcal/mol) | References |
|------------|----------------------|----------------|-------------------------------|------------|
| 17β-estradiol | 0.8 x10$^9$    | 1.25 x 10$^8$  | -10.777                      | [46]        |
| DES        | 0.2 x 10$^7$       | 5.00 x 10$^7$  | -8.592                       | [46]        |