**Supplementary File 1**

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| **Supplementary File 1. MWC allosteric parameters of the hemoglobin evolutionary dataset oxygen saturation curvesa** | | | | | | | |
| **#** | *b***Mammalian species** | ***K*R**  **(mmHg)** | ***K*T**  **(mmHg)** | *a****c* x(10-3)** | *a****L* x(105)** | *c***Calculated**  ***n*HMWC** | **Observed**  *d****n*HHill** |
| 1 | *African elephant* | 1.0±0.2 | 120.2±2.5 | 8.1±1.3 | 1530.5±166.3 | **2.9±0.2** | **2.88±0.12** |
| 2 | *Horse* | 1.4±0.5 | 112.2±26.2 | 12.3±5.6 | 0.7±0.6 | **2.8±0** | **2.76±0.02** |
| 3 | *Camel* | 2.6±0 | 72.4±0.2 | 36.3±0.5 | 0.1±0 | **2.3±0.1** | **2.26±0.05** |
| 4 | *Cow* | 0.2±0 | 89.1±0.1 | 2.2±0.3 | 1565.4±9.7 | **2.9±0.1** | **2.87±0.05** |
| 5 | *Asian elephant* | 0.3±0.2 | 114.8±11.1 | 2.8±1.4 | 240.3±92.5 | **3±0.2** | **3.01±0.16** |
| 6 | *Mole* | 0.7±0 | 91.2±0.6 | 8±0.3 | 9.5±0.3 | **2.7±0.1** | **2.68±0.1** |
| 7 | *Orangutan* | 0.7±0.2 | 120.2±11.3 | 5.6±1.8 | 16.6±6.2 | **2.8±0.1** | **2.76±0.09** |
| 8 | *Gorilla-F* | 0.1±0.1 | 93.3±0.3 | 1.5±0.6 | 7457.4±86.7 | **2.7±0.2** | **2.72±0.16** |
| 9 | *Chimpanzee* | 0.7±0.1 | 95.5±2.1 | 7.6±0.9 | 12±1.1 | **2.9±0.1** | **2.87±0.08** |
| 10 | *Platypus* | 1.3±0.3 | 158.5±27.8 | 8.3±2.5 | 1.3±0.9 | **3.2±0** | **3.18±0.04** |
| 11 | *Human* | 1.1±0.1 | 125.9±4.6 | 8.5±0.9 | 2173.4±480.4 | **2.8±0.2** | **2.87±0.04** |
| 12 | *Antelope* | 0.5±0.5 | 338.8±145 | 1.5±1.6 | 83.4±142.8 | **3.6±0.2** | **3.59±0.15** |
| 13 | *Goat* | 0.4±0.5 | 436.5±196.4 | 0.9±1.1 | 274.5±494.2 | **3.5±0.1** | **3.54±0.11** |
| 14 | *Dog* | 0.8±0 | 104.7±0.3 | 8.1±0.4 | 9.2±0.1 | **2.6±0.1** | **2.62±0.06** |

*a*The MWC allosteric parameters for Hb evolutionary datasets reported in this table were obtained as described in Rapp and Yifrach (2017). The *K*T and *K*R parameters correspond to theaffinity ofoxygen to the **T** and **R**Hb MWC quaternary states, respectively, whereas *c* and *L* correspond to the relative affinity (c= *K*R/ *K*T) and conformational ratio (*L*= [**T**]/[**R**]) of the **T** and **R** states, respectively.

*b*The mammalian Hb species analyzed in the current meta-analysis, as reported in Milo et al (2007).

*c*Hill coefficient at half-saturation calculated based on **Equation 5** and using the *K*R, *K*T, and *L* MWC parameters of the different mammalian Hb binding curves (see Rapp and Yifrach (2017)).

*d*Hill coefficients at half-saturation obtained upon fitting Hb oxygen saturation data to the Hill equation (**Equation 1**), as reported in Milo et al (2007).