

## Features of structurally resolved 2OG-Fe(II)-dependent dioxygenases in comparison to Jmjd6

| Protein | Major $\beta$ -sheets                                                                                                            | Minor $\beta$ -sheets                                                                                                            | Iron chelating aa *                  | 2-OG binding aa **                   | pdb entry |
|---------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|-----------|
| alkB    | $\beta$ 1 : Ala 116 - Tyr 122<br>$\beta$ 3 : Ile 143 - Gly 149<br>$\beta$ 6 : Val 175 - Trp 178<br>$\beta$ 8 : Arg 204 - Phe 209 | $\beta$ 2 : Leu 128 - His 131<br>$\beta$ 4 : Ala 152 - Phe 156<br>$\beta$ 5 : Lys 166 - Leu 170<br>$\beta$ 7 : His 187 - Ile 189 | His 131<br><b>Asp</b> 133<br>His 187 | Tyr 122<br><b>Arg</b> 204<br>Asn 206 | 2FD8      |
| ABH3    | $\beta$ 1 : Ser 175 - Tyr 181<br>$\beta$ 3 : Ile 204 - Gly 210<br>$\beta$ 6 : Leu 244 - Gly 249<br>$\beta$ 8 : Arg 269 - Phe 274 | $\beta$ 2 : Val 188 - His 191<br>$\beta$ 4 : Arg 213 - Lys 219<br>$\beta$ 5 : Arg 234 - Leu 239<br>$\beta$ 7 : Trp 255 - Val 259 | His 191<br><b>Asp</b> 193<br>His 257 | Tyr 181<br><b>Arg</b> 269<br>Asn 271 | 2IUW      |
| PHD2    | $\beta$ 1 : Ala 298 - Tyr 303<br>$\beta$ 3 : Arg 322 - Tyr 329<br>$\beta$ 6 : Arg 362 - Trp 367<br>$\beta$ 8 : Arg 383 - Asp 392 | $\beta$ 2 : Tyr 310 - His 313<br>$\beta$ 4 : Leu 343 - Ile 345<br>$\beta$ 5 : Ala 354 - Ile 356<br>$\beta$ 7 : His 374 - Val 376 | His 313<br><b>Asp</b> 315<br>His 374 | Tyr 303<br>Tyr 329<br><b>Arg</b> 383 | 2G1M      |
| PAHX    | $\beta$ 1 : Ile 151 - Lys 161<br>$\beta$ 3 : Ile 189 - Ala 195<br>$\beta$ 6 : Thr 255 - Phe 256<br>$\beta$ 8 : Arg 275 - Ser 284 | $\beta$ 2 : (165-172)<br>$\beta$ 4 : Leu 206 - Val 208<br>$\beta$ 5 : Val 246 - Leu 248<br>$\beta$ 7 : His 264 - Ser 266         | His 175<br><b>Asp</b> 177<br>His 264 | Lys 120<br>Ser 266<br><b>Arg</b> 275 | 2A1X      |
| P4H     | n.d.                                                                                                                             | n.d.                                                                                                                             | His 412<br><b>Asp</b> 414<br>His 483 | <b>Lys</b> 493<br>His 501            |           |
| Hif1an  | $\beta$ 1 : Leu 186 - Gly 190<br>$\beta$ 3 : Gln 203 - Lys 211<br>$\beta$ 6 : Val 270 - Ile 273<br>$\beta$ 8 : Thr 290 - Lys 298 | $\beta$ 2 : Val 195 - His 199<br>$\beta$ 4 : Lys 214 - Phe 219<br>$\beta$ 5 : Gly 260 - Val 265<br>$\beta$ 7 : Trp 278 - Ser 283 | His 199<br><b>Asp</b> 201<br>His 279 | Tyr 145<br>Thr 196<br><b>Lys</b> 214 | 1H2K      |
| Jmjd2a  | $\beta$ 1 : Tyr 175 - Gly 179<br>$\beta$ 3 : Tyr 195 - Gly 203<br>$\beta$ 6 : Phe 267 - Thr 270<br>$\beta$ 8 : Asn 284 - Phe 291 | $\beta$ 2 : Ser 184 - His 188<br>$\beta$ 4 : Lys 206 - Val 211<br>$\beta$ 5 : Asp 258 - Gln 262<br>$\beta$ 7 : Tyr 275 - Asn 280 | His 188<br><b>Glu</b> 190<br>His 276 | Tyr 132<br>Asn 198<br><b>Lys</b> 206 | 2GP3      |
| Jmjd6   | $\beta$ 1 : Arg 173 - Gly 178<br>$\beta$ 3 : Ser 194 - Val 200<br>$\beta$ 6 : Glu 263 - Val 267<br>$\beta$ 8 : Thr 281 - Phe 288 | $\beta$ 2 : Ser 182 - Ile 188<br>$\beta$ 4 : His 203 - Phe 209<br>$\beta$ 5 : Leu 255 - Gln 259<br>$\beta$ 7 : Trp 272 - Leu 278 | His 187<br><b>Asp</b> 189<br>His 273 | Trp 174<br>Asn 197<br><b>Lys</b> 204 |           |

\* red and orange coloured amino acids (aa) indicate HxDx<sub>n</sub>H or HxEx<sub>n</sub>H motifs, \*\* green and blue aa indicate Arg or Lys 2OG-binding residues