

| Group/ Protein/Strain |      |                                          | Alignment |            |            |            |            |            |            |             |         |  |
|-----------------------|------|------------------------------------------|-----------|------------|------------|------------|------------|------------|------------|-------------|---------|--|
|                       |      |                                          |           | 20         | 30         | 40         | 50         | 60         | 70         | 80          | 90      |  |
| 1                     | HyaD | <i>Escherichia coli</i> K12              | 6 aa-     | VVMGLGNLLW | ADEGFGVRVA | ERLYAHYHWP | -----EYVE  | IVDGGTQGLN | LLGYVES--A | SHLLILDAID  | -108 aa |  |
|                       | HybD | <i>Escherichia coli</i> K12              | 3 aa-     | LVLGVGNILL | TDEAIGVRIV | EALEQRYILP | -----DYVE  | ILDGGTAGME | LLGDMAN--R | DHLIIADAIV  | - 79 aa |  |
|                       | Hycl | <i>Escherichia coli</i> K12              | 3 aa-     | VLLCVGNSMM | GDDGAGPLLA | EKCAAAPKGN | -----WV    | VIDGGSAPEN | DIVAIRELRP | TRLLIVDATD  | - 72 aa |  |
|                       | HupD | <i>Thiocapsa roseopersicina</i>          | 7 aa-     | LVLGIGNLLW | ADEGFGVRAV | EALQRHWVMS | -----SNVQ  | LLDGGTQGIY | LVDVRVK--A | DVLVVFDADV  | -133 aa |  |
|                       | HynD | <i>Thiocapsa roseopersicina</i>          | 5 aa-     | LILGLGNVLM | TDEAVGAEVV | RRMEQESGTD | -----ASMV  | FIDGGTLSFT | LALPIGD--C | SRLIVVDAAT  | - 70 aa |  |
|                       | HoxC | <i>Ralstonia eutropha</i> H16            | 2 aa-     | VAMGIGNVLW | ADEGFGVRCI | ETLQORYQFA | -----PQVC  | LVDGGTQGLY | LIHHVQA--A | SRLLIFDAID  | -118 aa |  |
|                       | HoxG | <i>Ralstonia eutropha</i> H16            | 4 aa-     | LVAGIGNVFL | GDDGFGVEVV | QRLGARQAAH | ALPPFPEGVV | VADFGIRGID | LCYALLDG-V | DAAILVDATQ  | - 91 aa |  |
| 2                     | HupW | <i>Nostoc</i> sp. strain PCC 7120        | 2 aa-     | TIIGCGNLNR | SDDAVGVIIA | QRLQKYLAEN | PH----PHVQ | VYDCGTAGME | VMFQARG--S | KQLVIIDASS  | - 69 aa |  |
|                       | HupW | <i>Nostoc punctiforme</i> ATCC 29133     | 2 aa-     | TIIGCGNLNR | SDDAVGVIIA | QHLQKYLAEN | PH----PYVR | VYDCGTAGME | VMFQARG--S | QQLIIIDASS  | - 72 aa |  |
|                       | HupW | <i>Anabaena variabilis</i> ATCC 29413    | 2 aa-     | TIIGCGNLNR | SDDAVGVIIA | QRLQKYLAEN | PR----PHVQ | VYDCGTAGME | VMFQARG--S | KQLVIIDASS  | - 68 aa |  |
|                       | HupW | <i>Lyngbya</i> sp. strain PCC 8106       | 2 aa-     | TIIGCGNLNR | CDDAVGVIVA | QRLQQYLSQN | PH----PNIR | IFDCGTAGME | VMFQARG--S | QQLIIIDASS  | - 85 aa |  |
|                       | HupW | <i>Gleotheca</i> sp. strain PCC 6909     | 2 aa-     | TIIGCGNINR | SDDAVGVVVV | QRFQQFLKEH | PC----SDVR | IYDCGTAGME | VMFRARG--S | KELIIVDACM  | - 78 aa |  |
| HOXBOX                |      |                                          |           |            |            |            |            |            |            |             |         |  |
| 3d                    | HoxW | <i>Nostoc</i> sp. strain PCC 7120        | 5 aa-     | MVIGYGNDLR | SDDGIGQRIA | NEVASWRLPS | -----VE    | SLAVHQLTPD | LADSLAS--V | DLAIFIDACL  | - 77 aa |  |
|                       | HoxW | <i>Anabaena variabilis</i> ATCC 29413    | 5 aa-     | MVIGYGNDLR | SDDGIGKWIA | NEVDSWHLPS | -----VE    | SLAVHQLTTD | LADSLAN--V | NMAIFIDACL  | - 77 aa |  |
|                       | HoxW | <i>Lyngbya</i> sp strain PCC 8106        | 6 aa-     | LVMGYGNPIR | GDDGIGERVA | TEVENWNFSN | -----VR    | SQSLHQLVPE | VAEDLTQ--V | DVVIFVDASI  | - 63 aa |  |
|                       | HoxW | <i>Synechocystis</i> sp. strain PCC 6803 | 9 aa-     | LIIGYGNTLR | GDDGVGRYLA | EEIAQQNWPH | -----CG    | VISTHQLTPE | LAEAIAA--V | DRVIFIDAQL  | - 68 aa |  |
|                       | HoxW | <i>Ralstonia eutropha</i> H16            | 20 aa-    | LIYGIGNVGR | QDDGLGWAFI | DRLEAESLCS | -----GAE   | VQRHYQLHLE | DADLISR--K | RKVLFI DATK | - 69 aa |  |
|                       | HoxW | <i>Thiocapsa roseopersicina</i>          | 10 aa-    | LIIGYGSPIR | GDDAIGPLVA | DRLQAEGMPE | G-----VE   | VVSRHILTAE | LVADLVE--H | DRVIFLDAAV  | - 93 aa |  |