

3BH0:A
EcDnaB
HpyDnaB
WildcatGp80
D29Gp65

```

MAGNKP FNKQQAEP RERDPQVAGLKVP PHSIEAEQSVLGGLMLDNERWDDVAERVVADDF
.....MDHLKHLQQLQNIERIVLSGIVLANHKIEEIHSLVLEPSDF
.....MPAYDERAEQSVLGSILINPKCFGEIEG.LRSEHF
.....

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3BH0:A

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```

YTRPHRHIFTEMARLQESGSPIDLITLAE SLERQGLDSVGGFAYLAELSKNTPSAANIS
YYPFHGLFFETALKLHEEDCPIDENFIRQKMPKDKQISEDDLVAIFAAS.....PIDNIE
FIPTHGYIFDLMQRMHAEDTELDAITIFAELDKEGKLAKVGGAGYLHDLLEAPKSPANIG
.....

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3BH0:A

3BH0:A
EcDnaB
HpyDnaB
WildcatGp80
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```

.....GSGPVKP.IQEAVSELMEIEASGTDDDDG..SIDEALV
AYADIVRERAVVREMISVANEIAEAGFDPQGR TSEDLDDLAE SRVFKIAESRANKDEGPK
AYVEEIKNASIKRKLFTLANTIREQALES.AQKSSDILNTVEREVYALLNG..SMIEGFR
YYAKVVMKWKLR....TVNDIGTRLASLQTD DIEDIPILLE RAHTFLDEIDAEDDSESA
.....

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3BH0:A

α1 40 50 60 70 80

3BH0:A
EcDnaB
HpyDnaB
WildcatGp80
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```

TVYEIEESAD.....G..NITGVPSGFTELDRMTYG.YKRRNFVLIAARPSMGKTA
NIADVL DATVARIEQLFQOPHDGVTGVNTGYDDLNKKTAG.LQPSDLIIVAAARPSMGKTT
GIKEVL ESAMNLTENQRKGS LKVTGIP TGFVQLDNYTSG.FNQGS LVIIGARPSMGKTS
DLRELYD GWLEWQAD.....DRPFIETFFLAVNDLLNGGMVRQRMVLVVARPSMGKTV
.....MVLVCAGPGTGKSA

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3BH0:A

α3 90 100 110 120 130 140

3BH0:A
EcDnaB
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```

FALKQAKNMSDN.DDVVNHL SLEMGKKENTKRLIVTAGSINAQTKAARRDFAS EDWGLK
FAMNLVENAAMLQDKPVLIR SLEMPSEQIMMRS LASLSRV DQTKIRTGQLD..DE DWAR I
LMMNMVLSALND.DRGVAVF SLEMSAEQLALRALSDLT INMHDLESGRLD..DQWEN L
FVSQLGFYALQ.HLSVLMFSMELSKNDLMSRIIAMAARVPYKE LNSRRLA..AETR GK V
FVLAAYALKSKVP....TLYFSADSDAFTQISRSVSLSGWSLERTRAVRE...QS I

```

3BH0:A

α7 150 160 170 180 190 200

3BH0:A
EcDnaB
HpyDnaB
WildcatGp80
D29Gp65

```

SMAIGEISNS.NINIFDKAGQSVNYIWSKTRQTKRKNPKGRVIVMIDY LQLLEPAKAN DS
SGTMGILLEKRNIIYIDSSGLTPTEVRSRRRIAREHG.GIGLIMIDY LQLMRVPALSDN
AKCFDHL SQK.KLFFYDKSYVRMDQIRLQLRKLKSQHK.ELGIAFIDY LQLMSGNKATRE
SQWISAAQN L.KFEVD DRADLTIEEIMQKCR IHKQRHG..LDVVVIDYIQEVEESKGN.S
EESITANDLDEIFITRFNYKASPSLDEITENALAYDALYEDFPA LIVVDNITNVRTESGDGD

```

3BH0:A

α9 210 220 230 240 250

3BH0:A
EcDnaB
HpyDnaB
WildcatGp80
D29Gp65

```

RTNQ.ISQISRDLKKMARELDVVVIALS QLSRQVEQRQDKR..PMLSDLRESGQLEQDAD
RTLE.IAEISRS LKALAKELNVVPVVALS QLNRSLEQRADKR..PVNSDLRESGSI EQDAD
RHEQ.IAEISRELKTLARELEIPIIALVQLNRSLENRDDKR..PILSDIKDGGIEEQDAD
REQA.IAYIAKRARQIAKKLDVVVIAAQLNRNLEDPFGKPFRLPVKSDFRESGGIENVAD
DPFSGLES LMDYLHEMARETGSCVIGLHHVTGPYNDGDKA I..PLGG..IKGQIGRVPE

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3BH0:A

β6 260 270 280

3BH0:A
EcDnaB
HpyDnaB
WildcatGp80
D29Gp65

```

TIEFLYR.....DDYYDKE.....SESKNI.....VEVI I A
LIMFIYR.....DEVYHEN.....SDLKGI.....AEI I I G
IVLFLYRGYIYQMRAEDNKIKLKKEGKIEEAQELHLKVNEERRIHKQNGSIEBAE I I V A
VAMILSR.....TVDKDG.....NESKIP.....KMNLTFTV
MVLTLHR.....ESD.....GFGPDS.....LN VST V

```

3BH0:A

β8 290 300 310

3BH0:A
EcDnaB
HpyDnaB
WildcatGp80
D29Gp65

```

KFRDGPVGVTVSLAFIKEYGNFVNLERRFD DR.....
KQRNGPIGTVRLTFNGQWSRFDNYAGPQYDDE.....
KNRNATGTVYTRFNAPFTRYEDMPMDSHLEEGQETKFEIPTT
KNRQGEERTIQLLERFDQQRFDNIFGSTDDMRHNDEAVA...
KNRGCKSDPSGNDYAALEFIGDTMQINDFDH.....

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S7 Figure. Structure based alignment of Wildcat Gp80 protein. Flat figure representation of Wildcat Gp80 alignment using ESPript 3.0. with PDB entry 3BH0: A (*Bacillus* phage G40P ATPase core). *E.coli* DnaB helicase, *Helicobacter pylori* DnaB and D29 Gp65 were also included. Secondary structure elements are presented on top.