**Supplementary dataset 1.** *A. niger* AQPs sequences and domains identification



Picture from Kruse et al., 2006

Remark:

- Transmembrane helices I to VI were written with blue, orange, purple, green, yellow and pink letter, respectively

- Cysteine residue was written in red bold letter.

- NPA motif was written in green bold letter.

- Conserved sequences in loop B and E were underlined.

- Conserved sequences of Yfl054-AQGPs were written in bold letter with underline.

>AQPA\_ATCC64974\_2160

MGPQQWFRKRNPDSQTAPMYRSSNNQLPMLHLADTTRNN**FIAAVGEFVGTFLFLFFSFA**GTQVSNTPKPAPGSPPNTSNLLYSSL**C**FGFSLMVNVWAFYR**VTGGLFNPAVTLALCLVGGL**SPIRG**VILFGVQLIAGIASAGVVGAL**FPGDLNVGTRLGGGASISQG**LFIEVFLTAQLVFIIIMLAV**VKHKST**FLAPVGIGLVFFVTEMVG**DYYTGGSL**NPA**RSLGPDVINRSFPGYHWIY**WVGPLLGSLLACGFFTFL**KMFQYTTVNPGQDYNE

>AQPB\_ATCC64974\_25380

MVHPVRSLNKELDQVDTESRGYRSSDTTEGGSSKVEDGDEPIEETSRRGVSRNKSHGTQRTNFSRNKSHASHRTGVSQNQSYRSQPPATLRNQSYGSQAQFSLAGPNAYYGPLPQQGAYMHPEYQSFNPQYGNMQGDK**PVWSLAQPLPH**VVRDGMRYGALPEDRKEERDEDGRERPPPASEEPPTDIPKTDEARENGEEPQNEMGFFNKWSKIRYYLREP**LGEWLGTTIAITLGLCGGLS**TYTSDGQAGSWMTQSA**C**WGF**SFMIGIYIVGGISGGHLNPAITI**SMSLWRGFPARR**CVIYILAQLIGAITAGGFAYAI**YHDAIVNLSVETNLPQSETTASQAFLTLPKQFVSP**ATAFFNEFLGTAILVGTIMALG**DDTNAPPGAGMQ**AFIIGILITVLVLALGYNTGGAF**NGPRDFGPRLVAVMAGWGGHLFKEYHAWWIWGP**WVADIFGGLFGAFIYDLVVFTGG**ESPINYPPRRRKRALLIKEKNLRSKLRFGRRKIGDIERAVEENQD

>AQPC\_ATCC64974\_26080

MAGLLFRPQNDIDPSVNVQQLS**C**KPHVQPFVGRIGGNQGIVLDRADPDNAEYLRKVPDAAPLMSARDAFNVRGFTDLDLWR**FAVVECVGTMMLAFITAWAA**ATPA**N**V**A**PPSPSTPAGIFATTAFLGP**LVGAVTNWLLLTLFIFSFSS**VSGSHL**NP**TITLATFFARLISLPR**MVLYLCGQILGGALAGWML**QSAFGSGQYSVGG**C**VVDTALVPVREA**FVLEFICSLTLIFLSFGVGL**DPRQVR**VYGAALSPWLVGMVLGAVSLGSA**YTREGYGGA**C**VLFFYTLTSK**C**SVPSE**C**PEANFRFQR

>AQPD\_ATCC64974\_52260

MFLNTGLSRKFLKPYVAE**FLGTALLIVIGDGVVAQCLL**SDYQYGTW**LSINIAWAAAVCISGYLS**DPGPTI**NPA**VTI**C**MALVRPTPGQWRKLPGK**LFAQFLGGFVGAAIVYINY**RSAIKDWDPEFTIPGGSILSPRGHHSAGIFSTYPAAFFESNWE**AAFSELLGSAVLMFGILSIS**DPVNAVRFHSPQV**TVFFLLTAIGAALGWQTGYAINPA**RDFGPRLFSAFIYGREVFTAANY**YFVVPIFAPIVGCVVGAATY**DTFLYEGDGSRITDALDNVEDRDGALRLH

>AQPE\_ATCC64974\_71680

MDDGETRRPRATSDAISPRGENPPTSPLSPTRGRRGTAGDADFVSPTRRVSGRDGSGAGVRRRSSAASRRSGGSGIPSLAPRTTLAGRTQGRFTMAGPEETPQLRLAHEPFVQPGYGDL**NPS**YEQPANSK**PVWGLAKPLPR**VVRPGMVPTKEELLEARQNIQLPAENSQKLGLEVDPNDLELGQIEKTADPRKMAAQVEDARIQRENNFMNKILSGDATTTRQGSRLSRTSSSRIRRPSAWDLPPENLSTVPEGETPAPSETHEEPPQMSSEEPLEPVLEEPELRADDGKDGMMDDLPNLEEIEAAYPEDLHPLVQELVEEEVHNNHTTWSVIRTHHREALAES**LGVFVQLFVGFCGDLAVTVA**NAGNPNTTDWVWGFAT**MMAIYVSGGVSGAHLNPTITIMLWF**YRGFPKSKMPEY**FAAQFLGAFIAALAAYGLYY**HSIQHYLLTNSTTGIITSFVTSQRETWIGP**GTAFFTEFLGTMILTVVVLALG**DDQNAPPGAGMN**SLIVGLMVTCNTMSFAYQTGAALNPS**RDFGPRLALLALGYGSSLFTNPYWFYG**PWAGSLAGSFLGAFLYDFMIFTGG**ESPVNYPWERTQRAMRKSRMKWGKRLHLSRRDRGEKTVR

>AQPF\_ATCC64974\_75350

MVVTYLPEYESDETHPQHHGLEPAIPPFAGRMGGNQDFVVDRTDPKNSKVLERVPDAAP**C**MTLKEIFDLRGFLSVDLWK**FAVLECIASMMNVFITCWV**TTHPLSATTSPKGQAGVYGTVTFFSPTFGG**LTNLLLTPLLIYTFSPSSGG**HISPTITLATFFARIITFPR**MILYLAGQTLGGALAGFAM**HSAYGTREFTVGG**C**HIDTTMVSAKDG**LVIEFFACLILIFLAFGVAL**DPRQAKVFGHAV**SPWLVGVVLGIVTWGTAFT**REGYIGASV**NPA**R**C**FGAYVASDFPTYHWIH**WVGPLAAAVAHGLVYFVDPLW**KDPRAE

>AQPG\_ATCC64974\_111300

MIPETEKSG**C**REKPAHGIAPFPQTHPDGYQKTVKTDTEMPVWK**C**LASIDMWR**C**TI**LECLASMMYTFMLTWVTIA**PTSKDRDDPGNLSYYSLNNYDWVR**FLPTSIVNVCLLPLIIFTFA**RSTGGYV**NPS**ITFAAYFLRRISLSR**AVMYIGGQVIGIVLAVWAVQ**EAYGSTGFDIG**C**IISRGGVSIRNAY**IAEVVSGFAMVVTVMYIAA**GRKSGVLFGDAM**SPWMVGIATEAAFWLSRLI**WQGHPGASRQLI