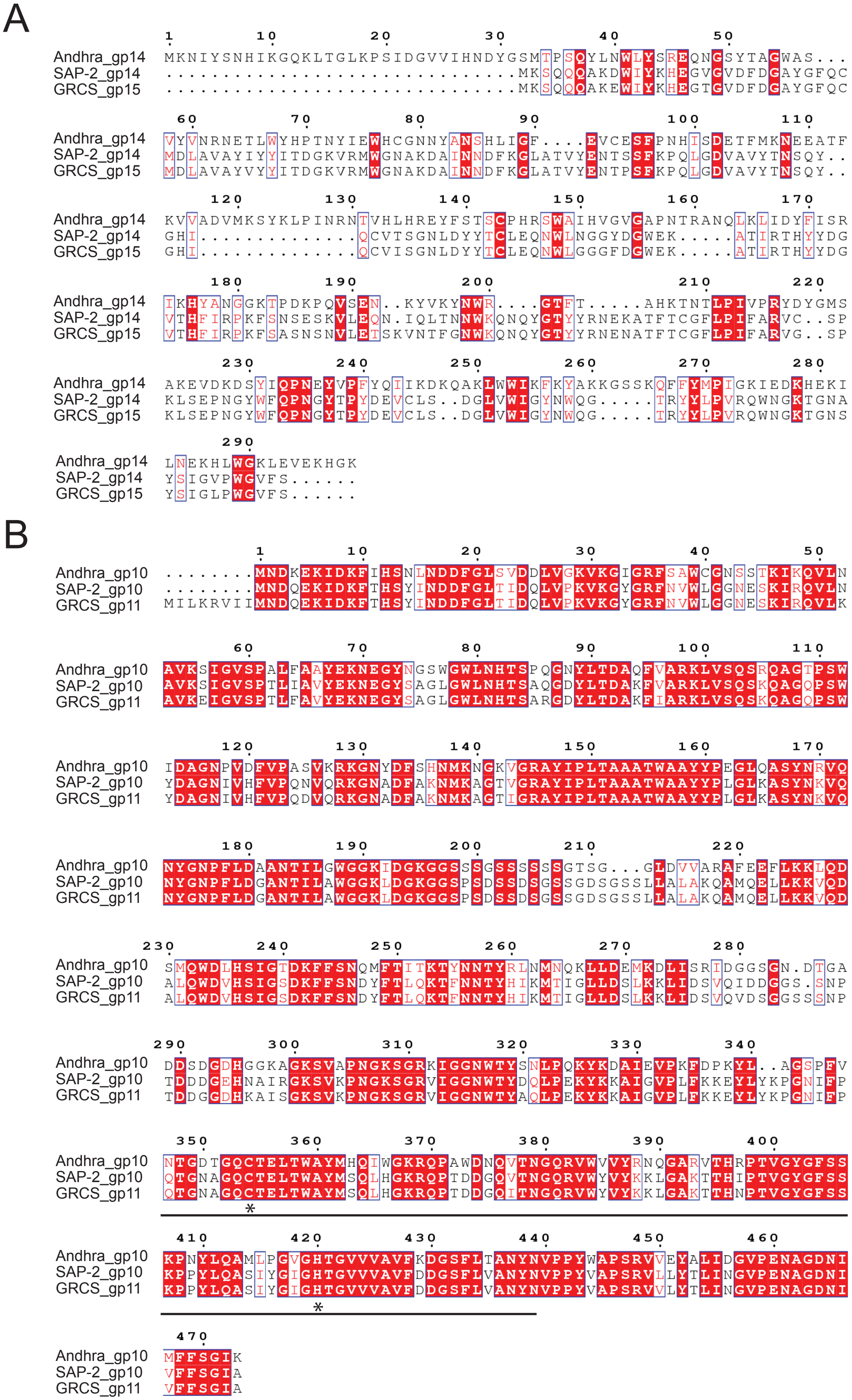

```
A
             1        10        20        30        40        50
Andhra_gp14  MKNIYSNHIKGQKLTGLKPSIDGVVIHNDYGSMTPSQYLNWLYSREQNGSYTAGWAS...
SAP-2_gp14   ...............................MKSQQQAKDWIYKHEGVGVDFDGAYGFQC
GRCS_gp15    ...............................MKSQQQAKEWIYKHEGTGVDFDGAYGFQC

             60        70        80        90        100       110
Andhra_gp14  VYVNRNETLWYHPTNYIEWHCGNNYANSHLIGF....EVCESFPNHISDETFMKNEEATF
SAP-2_gp14   MDLAVAYIYYITDGKVRMWGNAKDAINNDFKGLATVYENTSSFKPQLGDVAVYTNSQY..
GRCS_gp15    MDLAVAYVYYITDGKVRMWGNAKDAINNDFKGLATVYENTPSFKPQLGDVAVYTNSQY..

                 120       130       140       150       160       170
Andhra_gp14  KVVADVMKSYKLPINRNTVHLHREYFSTSCPHRSWAIHVGVGAPNTRANQLKLIDYFISR
SAP-2_gp14   GHI..............QCVTSGNLDYYTCLEQNWLNGGYDGWEK.....ATIRTHYYDG
GRCS_gp15    GHI..............QCVISGNLDYYTCLEQNWLGGGFDGWEK.....ATIRTHYYDG

                 180       190         200                 210       220
Andhra_gp14  IKHYANGGKTPDKPQVSEN..KYVKYNWR....GTFT.....AHKTNTLPIVPRYDYGMS
SAP-2_gp14   VTHFIRPKFSNSESKVLEQN.IQLTNNWKQNQYGTYYRNEKATFTCGFLPIFARVC..SP
GRCS_gp15    VTHFIRPKFSASNSNVLETSKVNTFGNWKQNQYGTYYRNENATFTCGFLPIFARVG..SP

                  230       240       250       260       270       280
Andhra_gp14  AKEVDKDSYIQPNEYVPFYQIIKDKQAKLWWIKFKYAKKGSSKQFFYMPIGKIEDKHEKI
SAP-2_gp14   KLSEPNGYWFQPNGYTPYDEVCLS..DGLVWIGYNWQG.....TRYYLPVRQWNGKTGNA
GRCS_gp15    KLSEPNGYWFQPNGYTPYDEVCLS..DGLVWIGYNWQG.....TRYYLPVRQWNGKTGNS

                  290
Andhra_gp14  LNEKHLWGKLEVEKHGK
SAP-2_gp14   YSIGVPWGVFS......
GRCS_gp15    YSIGLPWGVFS......

B
                     1        10        20        30        40        50
Andhra_gp10  ........MNDKEKIDKFIHSNLNDDFGLSVDDLVGKVKGIGRFSAWCGNSSTKIKQVLN
SAP-2_gp10   ........MNDQEKIDKFTHSYINDDFGLTIDQLVPKVKGYGRFNVWLGGNESKIRQVLN
GRCS_gp11    MILKRVIIMNDQEKIDKFTHSYINDDFGLTIDQLVPKVKGYGRFNVWLGGNESKIRQVLK

                    60        70        80        90        100       110
Andhra_gp10  AVKSIGVSPALFAAYEKNEGYNGSWGWLNHTSPQGNYLTDAQFVARKLVSQSRQAGTPSW
SAP-2_gp10   AVKSIGVSPTLIAVYEKNEGYSAGLGWLNHTSAQGDYLTDAKFVARKLVSQSKQAGQPSW
GRCS_gp11    AVKEIGVSPTLFAVYEKNEGYSAGLGWLNHTSARGDYLTDAKFIARKLVSQSKQAGQPSW

                     120       130       140       150       160       170
Andhra_gp10  IDAGNPVDFVPASVKRKGNYDFSHNMKNGKVGRAYIPLTAAATWAAYYPEGLQASYNRVQ
SAP-2_gp10   YDAGNIVHFVPQNVQRKGNADFAKNMKAGTVGRAYIPLTAAATWAAYYPLGLKASYNKVQ
GRCS_gp11    YDAGNIVHFVPQDVQRKGNADFAKNMKAGTIGRAYIPLTAAATWAAYYPLGLKASYNKVQ

                     180       190       200       210       220
Andhra_gp10  NYGNPFLDAANTILGWGGKIDGKGGSSGSSSSSSGTSG...GLDVVARAFEEFLKKLQD
SAP-2_gp10   NYGNPFLDGANTILAWGGKLDGKGGSPSDSSDSGSSGDSGSSLLALAKQAMQELLKKVQD
GRCS_gp11    NYGNPFLDGANTILAWGGKLDGKGGSPSDSSDSGSSGDSGSSLLALAKQAMQELLKKVQD

             230       240       250       260       270       280
Andhra_gp10  SMQWDLHSIGTDKFFSNQMFTITKTYNNTYRLNMNQKLLDEMKDLISRIDGGSGN.DTGA
SAP-2_gp10   ALQWDVHSIGSDKFFSNDYFTLQKTFNNTYHIKMTIGLLDSLKKLIDSVQIDDGGS.SNP
GRCS_gp11    ALQWDVHSIGSDKFFSNDYFTLQKTFNNTYHIKMTIGLLDSLKKLIDSVQVDSGGSSSNP

               290       300       310       320       330       340
Andhra_gp10  DDSDGDHGGKAGKSVAPNGKSGRKIGGNWTYSNLPQKYKDAIEVPKFDPKYL..AGSPFV
SAP-2_gp10   TDDDGEHNAIRGKSVKPNGKSGRVIGGNWTYDQLPEKYKKAIGVPLFKKEYLYKPGNIFP
GRCS_gp11    TDDGGDHKAISGKSVKPNGKSGRVIGGNWTYAQLPEKYKKAIGVPLFKKEYLYKPGNIFP

                350       360       370       380       390       400
Andhra_gp10  NTGDTGQCTELTWAYMHQIWGKRQPAWDNQVTNGQRVWVVYRNQGARVTHRPTVGYGFSS
SAP-2_gp10   QTGNAGQCTELTWAYMSQLHGKRQPTDDGQVTNGQRVWYVYKKLGAKTTHIPTVGYGFSS
GRCS_gp11    QTGNAGQCTELTWAYMSQLHGKRQPTDDGQITNGQRVWYVYKKLGAKTTHNPTVGYGFSS
                     *

                410       420       430       440       450       460
Andhra_gp10  KPNYLQAMLPGVGHTGVVVAVFKDGSFLTANYNVPPYWAPSRVVEYALIDGVPENAGDNI
SAP-2_gp10   KPPYLQASIYGIGHTGVVVAVFDDGSFLVANYNVPPYVAPSRVLLYTLINGVPENAGDNI
GRCS_gp11    KPPYLQASIYGIGHTGVVVAVFDDGSFLVANYNVPPYVAPSRVVLYTLINGVPENAGDNI
                           *

                470
Andhra_gp10  MFFSGIK
SAP-2_gp10   VFFSGIA
GRCS_gp11    VFFSGIA
```

Figure S2. Cater et al.