



BIOLOGICAL
CRYSTALLOGRAPHY

Volume 70 (2014)

Supporting information for article:

Structure of the OsSERK2 leucine-rich repeat extracellular domain

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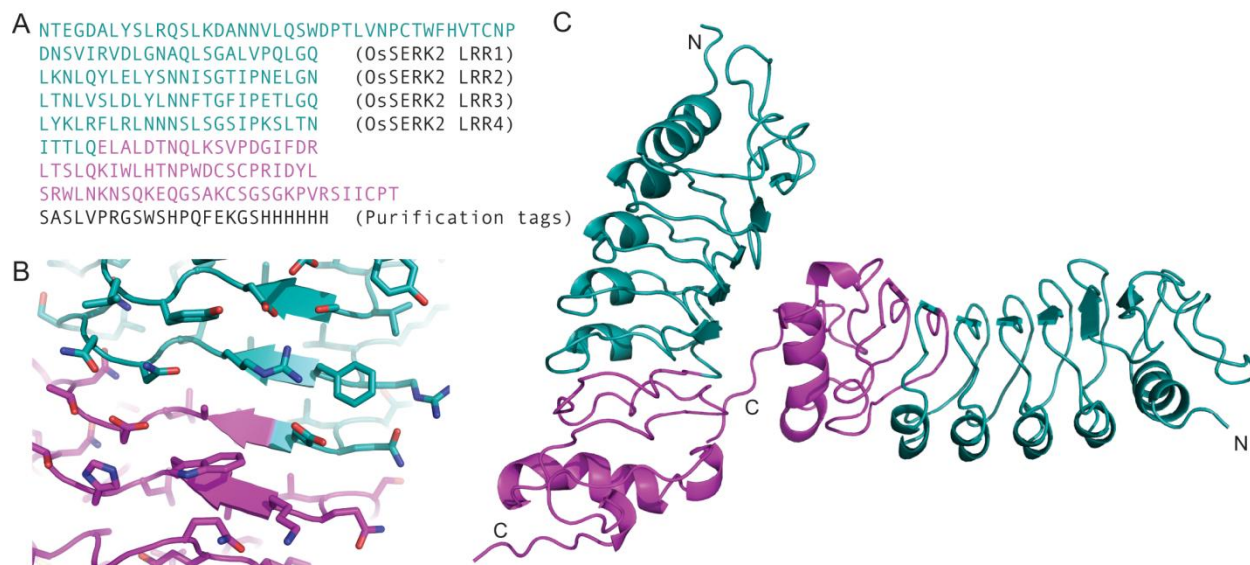


Figure S1 A) Amino acid sequence of the OsSERK2 VLR fusion. The sequence from OsSERK2 is shown in teal. The sequence from VLR is shown in magenta. B) The juncture between OsSERK2 and VLR is in the β -strand of the fifth OsSERK2 LRR. C) There are two OsSERK2-VLR molecules in the asymmetric unit.

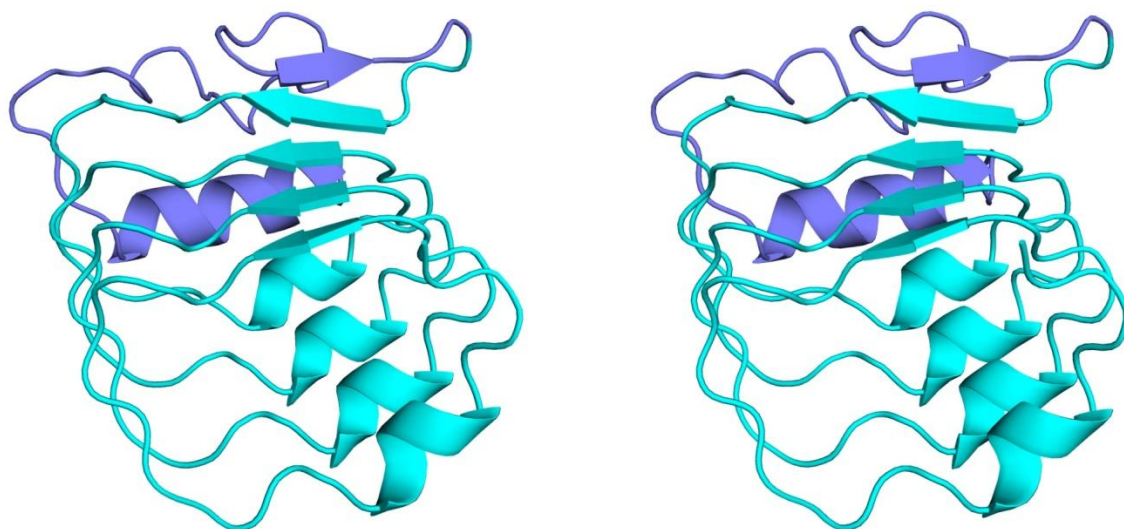


Figure S2 The OsSERK2 portion of the structure is shown in stereo. LRRNT is shown in dark blue. The LRRs are twisted relative to each other as seen in other plant LRRs such as BRI1 (3RGX) and TMK1 (4HQ1).

OsSERK2 1 MAEARLLRRRLCLAVPFVAVAVSVRGANTEGDALYSLRQSLKD...ANNVLSQSWDPTLVNPTWFHVTCNPDNSVI
TaSERK1 1 MAASPMLRR.CWAAAAAVLSAVLTVSVRGANTEGDALYSLRQSLKD...ANNVLSQSWDPTLVNPTWFHVTCNPDNSVI
ZmSERK1 1 MAAS...LR..WWSAVFVSVVGVIVVANTEGDALYSLRQSLKD...ANNVLSQSWDPTLVNPTWFHVTCNPDNSVI
ZmSERK2 1 MAAS...ASAGRWVAVLAVAVLLGGPGVAVANTEGDALYSLRQSLKD...ANNVLSQSWDPTLVNPTWFHVTCNPDNSVI
OsSERK1 1 MAHR...WAVWAVLLRLLPAAARVLANMEGDALHSRLTNLD...PNNVLSQSWDPTLVNPTWFHVTCNPDNSVI
AtSERK1 1 MES...SVVFILLSLILPNHSLWLASSNLEGDALHSLRVTLVD...PNNVLSQSWDPTLVNPTWFHVTCNPDNSVI
AtSERK2 1 MGRKKFEAFGPFVCLISLLLFN.SLWLASSNMEGDALHSLRANLVD...PNNVLSQSWDPTLVNPTWFHVTCNPDNSVI
AtSERK4 1 MTSSKMEQSRLL.CFLYLILLLFNFTLRVAGNAEGDAITOLKNSLSSGDPANNVLSQSWDPTLVNPTWFHVTCNPDNSVI
AtSERK5 1 MEHGSSR.GFIWLLILFLDFVSRVTGKTQVDALIALRSSLSGSDHTNNILQSWNATHVTPCSWFHVTCNPDNSVI
AtSERK3 1 MERRLMIPCFFWLLLVLDLVLVRVSGNAEGDAISALKNSLAD...PNNVLSQSWDPTLVNPTWFHVTCNPDNSVI

OsSERK2 78 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
TaSERK1 77 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
ZmSERK1 72 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
ZmSERK2 75 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
OsSERK1 72 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
AtSERK1 73 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
AtSERK2 76 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
AtSERK4 79 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
AtSERK5 74 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS
AtSERK3 72 RVDLGNALQSCALVLPOLGOLKNLOYLELYSNNISGTHNELGNLTNLVSLDLYLNNFTGPIPELGLQVYKLRFLRLNNNS

OsSERK2 158 LSGSIPKSLTNITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.TVSQ
TaSERK1 157 LSGQIPKSLTNITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.PAAQ
ZmSERK1 152 LSGQIPKSLTNITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.TSSK
ZmSERK2 155 LVGPPIVSLTNITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.SPPTQST
OsSERK1 152 LSGSIPKSLTAITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.PVQSPG
AtSERK1 153 LSGSIPKSLTNITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.PPVSTPS
AtSERK2 156 LTGPPIVSLTNITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.PIVPTPG
AtSERK4 159 LSGEIPKSLTNITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.TPPPSG
AtSERK5 154 LSGEIPKSLTNITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.PSG
AtSERK3 152 LSGEIPKSLTAITTLQVLDISNNRLSGVPSGSGSFTPIPSFANNKDLGPGTTKPCPGAPPPSPFPFNPPTP.TPPSPAG

OsSERK2 237 GDSKTGAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
TaSERK1 236 GPKKTGAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
ZmSERK1 231 GVSSKTGAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
ZmSERK2 235 GASTGAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
OsSERK1 232 SSSKTGAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
AtSERK1 233 YGIGTGAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
AtSERK2 236 GYSAKTGAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
AtSERK4 226 G.QMTAAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
AtSERK5 214 ...TSAAIVGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG
AtSERK3 220 SNRIKTGAAGVAAAGAAALFAVPAIGFAWRRRKPEEHFDVPAEEDPEVHLGOLKRFSLRELVATDNFSNKNILGRGG

OsSERK2 317 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
TaSERK1 316 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
ZmSERK1 311 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
ZmSERK2 315 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
OsSERK1 312 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
AtSERK1 313 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
AtSERK2 316 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
AtSERK4 305 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
AtSERK5 286 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ
AtSERK3 300 FGKVKYKGRLLDGLVAVKRLKEERTPGGELQFQTEVEMISMVHRNLLRLRGFCMTPTERLLVYPYMANGSVASRLRERQ

OsSERK2 397 PNDDPTWQTEFTRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
TaSERK1 396 PNDDPTWQTEFTRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
ZmSERK1 391 PNDDPTWQTEFTRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
ZmSERK2 395 PNDDPTWQTEFTRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
OsSERK1 392 PNDDPTWQTEFTRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
AtSERK1 393 PNDDPTWQTEFTRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
AtSERK2 396 PNDDPTWQTEFTRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
AtSERK4 385 EGNPAEDWPKRKRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
AtSERK5 366 EGNPAEDWPKRKRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI
AtSERK3 380 PNDDPTWQTEFTRIALGSARGLSYLHDHCDPKIIHRDVKAANILLDEFEAVVGDFGLAKLMDYDTHVTTAVRGTTIGHI

OsSERK2 477 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
TaSERK1 476 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
ZmSERK1 471 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
ZmSERK2 475 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
OsSERK1 472 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
AtSERK1 473 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
AtSERK2 476 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
AtSERK4 465 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
AtSERK5 446 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI
AtSERK3 460 APEYLTGKSSSEKTDVFGYGMILLELITGQAFDLARLANDDDVMLLDWVGGLLKEKKVEMLVDPDLQSGFVEHEVESLI

OsSERK2 557 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
TaSERK1 556 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
ZmSERK1 551 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
ZmSERK2 555 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
OsSERK1 552 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
AtSERK1 553 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
AtSERK2 556 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
AtSERK4 545 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
AtSERK5 526 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR
AtSERK3 540 QVALLCTQGSMDRPMKSEVVRMLEGDLAERWEWQKEVVRQEAELAPRHN...DWIVDSTYNLRAMEL.SGPR

Figure S3 Alignment of a set of diverse SERK sequences. The accession numbers for the sequences are as follows: OsSERK1 (NP_001061108), OsSERK2 (NP_001052975), AtSERK1(AEE35238), AtSERK2 (AEE31686), AtSERK3 (Q94F62), AtSERK4 (AEC06259), and AtSERK5 (NP_179000), TaSERK1 (AEP14551), ZmSERK1 (NP_001105132), ZmSERK2 (NP_001105133). The figure was generated using ClustalW and ESPript (Thompson *et al.*, 1994, Gouet *et al.*, 1999).