**Table S1**. **Identity of mTOR-associated genes in *A. pisum* and *M. persicae*. Absence of a gene identifier represents the absence of a gene.**

|  |  |  |
| --- | --- | --- |
| Gene | *A. pisum* | *M. persicae* |
| Akt1 | ACYPI002231 | MYZPE13164\_G006\_v1.0\_000088780 |
| LAMTOR1 | ACYPI005561 | MYZPE13164\_G006\_v1.0\_000001210 |
| LAMTOR2 | ACYPI002727 | MYZPE13164\_G006\_v1.0\_000097780 |
| LAMTOR3 | ACYPI006297 | MYZPE13164\_G006\_v1.0\_000144970 |
| LAMTOR4 | ACYPI001778 | MYZPE13164\_G006\_v1.0\_000185440 |
| LAMTOR5 | ACYPI20920 | MYZPE13164\_G006\_v1.0\_000118310 |
| Iml1 | ACYPI007123 | MYZPE13164\_G006\_v1.0\_000149210 |
| LST8 | ACYPI003573 | MYZPE13164\_G006\_v1.0\_000145010 |
| mio | ACYPI007049 | MYZPE13164\_G006\_v1.0\_000115640 |
| mSin1 | ACYPI009676 | MYZPE13164\_G006\_v1.0\_000135920 |
| mTOR | ACYPI004568 | MYZPE13164\_G006\_v1.0\_000015950 |
| Nprl2 | ACYPI002211 | MYZPE13164\_G006\_v1.0\_000063190 |
| Nprl3 | ACYPI001233 | MYZPE13164\_G006\_v1.0\_000050750 |
| Nup44Ax1 | ACYPI006367 | MYZPE13164\_G006\_v1.0\_000128540 |
| Nup44Ax2 |  | MYZPE13164\_G006\_v1.0\_000164780 |
| PDK1 | ACYPI001303 | MYZPE13164\_G006\_v1.0\_000145270 |
| Pi3K92E | ACYPI001335 | MYZPE13164\_G006\_v1.0\_000161920 |
| PRAS40 | ACYPI007812 | MYZPE13164\_G006\_v1.0\_000100230 |
| PTEN | ACYPI004294 | MYZPE13164\_G006\_v1.0\_000123930 |
| RagA/Bx1 | ACYPI009223 | MYZPE13164\_G006\_v1.0\_000112590 |
| RagA/Bx2 | ACYPI003402 |  |
| RagC/D | ACYPI007498 | MYZPE13164\_G006\_v1.0\_000173650 |
| raptor | ACYPI008174 | MYZPE13164\_G006\_v1.0\_000174310 |
| RHEBx1 | ACYPI008618 | MYZPE13164\_G006\_v1.0\_000003480 |
| RHEBx2 | ACYPI000378 | MYZPE13164\_G006\_v1.0\_000003490 |
| RHEBx3 | ACYPI006392 |  |
| RHEBx4 | ACYPI005487 |  |
| rictor | ACYPI003945 | MYZPE13164\_G006\_v1.0\_000073550 |
| Sec13x1 | ACYPI010060 | MYZPE13164\_G006\_v1.0\_000136660 |
| Sec13x2 | ACYPI009541 |  |
| SESN | ACYPI009413 | MYZPE13164\_G006\_v1.0\_000090090 |
| Skp2x1 | ACYPI001402 | MYZPE13164\_G006\_v1.0\_000105790 |
| Skp2x2 | ACYPI41281 |  |
| SLC38A9 | ACYPI000333 | MYZPE13164\_G006\_v1.0\_000006720 |
| TSC1 | ACYPI005064 | MYZPE13164\_G006\_v1.0\_000177680 |
| TSC2 | ACYPI48217 | MYZPE13164\_G006\_v1.0\_000135870 |
| Tti1 | ACYPI005490 | MYZPE13164\_G006\_v1.0\_000085850 |
| vATPase D1 | ACYPI002584 | MYZPE13164\_G006\_v1.0\_000172080 |
| Wdr24 | ACYPI004222 | MYZPE13164\_G006\_v1.0\_000101360 |
| Wdr59 | ACYPI007485 | MYZPE13164\_G006\_v1.0\_000188560 |

**Table S2**. **Identity of HMM and FlyBase genes used in annotation. ‘PTHR’ indicates that the HMM came from PantherDB. ‘NOG’ indicates that the HMM came from EggNOG. ‘Np’ indicates not present.**

|  |  |  |
| --- | --- | --- |
| GENE | HMM | FLYBASE ID |
| Akt1 | PTHR24356.SF248 | FBgn0010379 |
| DEPTOR | PTHR22829.SF21 | np |
| FLCN | NOG.ENOG410XQ9Y | FBgn0261111 |
| FNIP1 | NOG.ENOG410ZIEC | FBgn0036684 |
| IKKa | NOG.ENOG410XRMU | np |
| LAMTOR1 | PTHR13401.SF3 | FBgn0036932 |
| LAMTOR2 | PTHR13323.SF5 | FBgn0034350 |
| LAMTOR3 | PTHR13378.SF2 | FBgn0032642 |
| LAMTOR4 | euNOG.ENOG410IZEZ | FBgn0035469 |
| LAMTOR5 | euNOG.ENOG410IZVH | FBgn0026090 |
| Iml1 | PTHR13179.SF9 | FBgn0035227 |
| LST8 | PTHR19842.SF4 | FBgn0264691 |
| mSin1 | NOG.ENOG410XR57 | FBgn0033935 |
| mio | PTHR16453.SF11 | FBgn0031399 |
| NPRL3 | PTHR13153.SF6 | FBgn0036397 |
| mTOR | PTHR11139.SF85 | FBgn0021796 |
| NPRL2 | PTHR12991.SF11 | FBgn0030800 |
| Nup44A | PTHR11024.SF12 | FBgn0033247 |
| PDK1 | PTHR24356.SF290 | FBgn0020386 |
| PI3K92E | PTHR10048.SF70 | FBgn0015279 |
| PRAS40 | PTHR21844.SF3 | FBgn0267824 |
| PROTOR | PTHR32428.SF7 | np |
| PTEN | PTHR12305.SF74 | FBgn0026379 |
| RAG A/B | PTHR11259.SF14 | FBgn0037647 |
| RAG C/D | PTHR11259.SF10 | FBgn0033272 |
| RAPTOR | PTHR12848.SF18 | FBgn0029840 |
| RHEB | PTHR24070.SF332 | FBgn0041191 |
| RICTOR | PTHR13298.SF12 | FBgn0031006 |
| RNF152 | NOG.ENOG4111BNB | np |
| Sec13 | inNOG.ENOG410SPR3 | FBgn0024509 |
| SESN | PTHR12474.SF7 | FBgn0034897 |
| SKP2 | euNOG.KOG2120 | FBgn0037236 |
| SLC38A9 | PTHR22950.SF402 | np |
| TBC1D7 | PTHR13530.SF4 | FBgn0039158 |
| TEL2 | PTHR15830.SF11 | FBgn0261279 |
| TSC1 | PTHR15154.SF3 | FBgn0026317 |
| TSC2 | PTHR10063.SF12 | FBgn0005198 |
| Tti1 | PTHR18460.SF4 | FBgn0037741 |
| vATPase | PTHR43607.SF1 | FBgn0265262 |
| Wdr24 | meNOG.ENOG410V766 | FBgn0027518 |
| Wdr59 | PTHR22850.SF163 | FBgn0032339 |