KinaseNET - The Human Kineome Knowledgebase

TK GROUP

Abl Family — xxxndxxYxxPxxxx
ABL P00519 — 1149 aa / 123K
ARG P42684 — 1182 aa / 128K

Ack Family
ACK1 Q07912 — 1036 aa / 114K
TNK1 Q13470 — 666 aa / 72.5K

Alk Family
ALK Q9UM73 — 1620 aa / 176K
LTK P29376 — 864 aa / 92K

Axl Family
TYRO3 Q06418 — 890 aa / 97K
AXL P30530 — 887 aa / 97K
MER Q12866 — 999 aa / 110K

CCK4 Family
CCK4 Q13308 — 1070 aa / 118K

Csk Family — ftatexqYqpqxxxx
CSK P41240 — 450 aa / 51K
CTK P42679 — 507 aa / 56.5K

DDR Family
DDR1 Q08345 — 913 aa / 101K
DDR2 Q16832 — 855 aa / 97K

EGFR Family — xxxedxxYvnfxxxx
EGFR P00533 — 1210 aa / 134K
ErbB2 P04626 — 1255 aa / 138K
ErbB3 P21860 — 1342 aa / 148K
ErbB4 Q15303 — 1308 aa / 147K

Eph Family — xxxxxxxYxexxxxx
EPHA1 P21709 — 976 aa / 108K
EPHA2 P29317 — 976 aa /108K
EPHA3 P29320 — 983 aa / 110K
EPHA4 P54764 — 986 aa / 110K
EPHA5 P54756 — 1037 aa / 115K
EPHA6 Q9UF33 — 1036 aa / 115K
EPHA7 Q15375 — 998 aa / 112K
EPHA8 P29322 — 1005 aa / 111K
EPHA10 Q5JZY3 — 1008 aa / 110K
EPHB1 P54762 — 984 aa / 110K
EPHB2 P29323 — 1055 aa / 117.5K
EPHB3 P54753 — 998 aa / 110K
EPHB4 P54760 — 987 aa / 108K
EPHB6 O15197 — 1006 aa / 109K

Fak Family — xxxexxdYdxxxxx
FAK Q05397 — 1052 aa / 119K
PYK2 Q14289 — 1009 aa / 116K

Fer Family — xxxxexxYxxxxxxx
FER P16591 — 822 aa / 95K
FES P07332 — 822 aa / 93.5K

FGFR Family — xxxxxxxYxxxpxxx
FGFR1 P11362 — 822 aa / 92K
FGFR2 P21802 — 821 aa / 92K
FGFR3 P22607 — 806 aa / 88K
FGFR4 P22455 — 802 aa / 88K

InsR Family — xxxexddYmxMxxxx
IGF1R P08069 — 1367 aa / 155K
INSR P06213 — 1382 aa / 156K
IRR P14616 — 1297 aa / 144K

Jak Family — xxxxldxYlklxxxx
JAK1 P23458 — 1142 aa / 132K
JAK2 O60674 — 1132 aa / 131K
JAK3 P52333 — 1124 aa / 125K
TYK2 P29597 — 1187 aa / 134K

Lmr Family
LMR1 O75136 — 1326 aa / 140K
LMR2 Q8IWU2 — 1503 aa / 165K
LMR3 Q96Q04 — 1480 aa / 156K

Met Family — xxdxdxxYvxvxxxx
MET P08581 — 1390 aa / 155.5K
RON Q04912 — 1400 aa / 152K

Musk Family — xxxxxxxYxxxxgxx
MUSK O15146 — 869 aa / 97K

PDGFR Family — xxxedxnYvxxxpxx
FLT3 P36888 — 993 aa / 113K
FMS P07333 — 972 aa / 108K
KIT P10721 — 976 aa / 110K
PDGFRα P16234 — 1089 aa / 123K
PDGFRβ P09619 — 1106 aa / 124K

Ret Family — txxxxxxYxxxxxxr
RET P07949 — 1114 aa / 124K

Ror Family
ROR1 Q01973 — 937 aa / 104K
ROR2 Q01974 — 943 aa / 105K

Ryk Family
RYK P34925 — 604 aa / 67.5K

Sev Family
ROS P08922 — 2347 aa / 264K

Src Family — xxxeedvYgxvxxxx
BLK P51451 — 504 aa / 58K
BRK Q13882 — 451 aa / 52K
FGR P09769 — 529 aa / 59.5K
FRK P42685 — 505 aa / 58K
FYN P06241 — 536 aa / 61K
HCK P08631 — 525 aa / 59.5K
LCK P06239 — 508 aa / 58K
LYN P07948 — 511 aa / 58K
SRC P12931 — 535 aa / 60K
SRM Q9H3Y6 — 488 aa / 54.5K
YES P07947 — 542 aa / 61K

Syk Family — xeddddDYExpexxx
SYK P43405 — 635 aa / 72K
ZAP70 P43403 — 619 aa / 70K

Tec Family — xxxxxxIYxxxxxxx
BMX P51813 — 675 aa / 78K
BTK Q06187 — 659 aa / 76K
ITK Q08881 — 620 aa / 72K
TEC P42680 — 631 aa / 74K
TXK P42681 — 527 aa / 61K

Tie Family — xxxxxxxYxxxtxxx
TIE1 P35590 — 1138 aa / 125K
TIE2 Q02763 — 1124 aa / 126K

TK-Unique Family
SuRTK106 Q6J9G0 — 422 aa / 48K

Trk Family — xgxxxdyYyxxggxx
TRKA P04629 — 796 aa / 87.5K
TRKB Q16620 — 822 aa / 92K
TRKC Q16288 — 839 aa / 94.5K

VEGFR Family — xxsxxxdYxxxxxxx
FLT1 P17948 — 1338 aa / 151K
FLT4 P35916 — 1298 aa / 146K
KDR P35968 — 1356 aa / 151.5K

TKL GROUP

IRAK Family — xxxxxxxSxxvxxtx
IRAK1 P51617 — 712 aa / 76.5K
IRAK2 O43187 — 590 aa / 65K
IRAK3 Q9Y616 — 596 aa / 68K
IRAK4 Q9NWZ3 — 460 aa / 51.5K

LISK Family, LIMK Subfamily — xxxxxxaSgvxvxdx
LIMK1 P53667 — 647 aa / 73K
LIMK2 P53671 — 638 aa / 7K

LISK Family, TESK Subfamily
TESK1 Q15569 — 626 aa / 68K
TESK2 Q96S53 — 571 aa / 64K

LRRK Family
LRRK1 Q38SD2 — 2053 aa / 225K
LRRK2 Q5S007 — 2527 aa / 286K

MLK Family, HH498 Subfamily
HH498 Q59H18 — 936 aa / 104K

MLK Family, ILK Subfamily — rxrfxqfSyxasxxe
ILK Q13418 — 452 aa / 51K

MLK Family, LZK Subfamily — kxxxxxxTxxxxxxx
DLK Q12852 — 859 aa / 93K
LZK O43283 — 966 aa / 108K

MLK Family, MLK Subfamily — lxxxxxkTxaxxxxx
MLK1 P80192 — 1104 aa / 122K
MLK2 Q02779 — 954 aa / 104K
MLK3 Q16584 — 847 aa / 93K
MLK4 Q5TCX8 — 1036 aa / 114K
ZAK Q9NYL2 — 800 aa / 91K

MLK Family, TAK1 Subfamily — xxLrxtxSxxxxxxx
TAK1 O43318 — 606 aa / 67K

RAF Family — xxrsrrxSxxxxxxx
ARAF P10398 — 606 aa / 68K
BRAF P15056 — 766 aa / 84K
KSR1 Q8IVT5 — 921 aa / 102K
KSR2 Q6VAB6 — 829 aa / 94K
RAF1 P04049 — 648 aa / 73K

RIPK Family
ANKRD3 P57078 — 832 aa / 92K
RIPK1 Q13546 — 671 aa / 76K
RIPK2 O43353 — 540 aa / 6K
RIPK3 Q9Y572 — 518 aa / 57K
SgK288 Q8NFD2 — 765 aa / 85K

STKR Family, Type 1 Subfamily — xxxpxxxSxxxxxxx
ALK1 P37023 — 503 aa / 56K
ALK2 Q04771 — 509 aa / 57K
ALK4 P36896 — 505 aa / 57K
ALK7 Q8NER5 — 493 aa / 55K
BMPR1A P36894 — 532 aa / 60K
BMPR1B O00238 — 502 aa / 57K
TGFβR1 P36897 — 503 aa / 56K

STKR Family, Type 2 Subfamily — xxxdxxxSgxxlxlx
ACTR2A P27037 — 513 aa / 58K
ACTR2B Q13705 — 512 aa / 58K
BMPR2 Q13873 — 1038 aa / 115K
MISR2 Q16671 — 573 aa / 63K
TGFβR2 P37173 — 567 aa / 64.5K

TKL Family, Unique Subfamily
MLKL Q8NB16 — 471 aa / 54.5K

Other GROUP

AUR Family — xxxxrRrSxxxxxxx
AurA O14965 — 403 aa / 46K
AurB Q96GD4 — 344 aa / 39K
AurC Q9UQB9 — 309 aa / 36K

BUB Family
BUB1 O43683 — 1085 aa / 122K
BUBR1 O60566 — 1050 aa / 120K

Bud32 Family
PRPK Q96S44 — 253 aa / 28K

CAMKK Family, Meta Subfamily — xxxxrxxSxxxsxxx
CaMKK1 Q8N5S9 — 505 aa / 56K
CaMKK2 Q96RR4 — 588 aa / 65K

CDC7 Family
CDC7 O00311 — 574 aa / 64K

CK2 Family — xxxeeedSDdEeeee
CK2α1 P68400 — 391 aa / 45K
CK2α2 P19784 — 350 aa / 41K

Haspin Family
Haspin Q8TF76 — 798 aa / 88K

IKK Family — xxdxxxxSlxdxxxx
IKKα O15111 — 745 aa / 85K
IKKβ O14920 — 756 aa / 86.5K
IKKε Q14164 — 716 aa / 80K
TBK1 Q9UHD2 — 729 aa / 84K

IRE Family
IRE1 O75460 — 977 aa / 110K
IRE2 Q76MJ5 — 925 aa / 102K

MOS Family
MOS P00540 — 346 aa / 38K

NAK Family
AAK1 Q2M2I8 — 897 aa / 94K
BIKE Q9NSY1 — 1161 aa / 129K
GAK O14976 — 1311 aa / 143K
MPSK1 O75716 — 304 aa / 34.5K

NEK Family — xxxxfxxSxxxxxxx
NEK1 Q96PY6 — 1258 aa / 143K
NEK2 P51955 — 445 aa / 52K
NEK3 P51956 — 506 aa /58K
NEK4 P51957 — 841 aa / 95K
NEK5 Q6P3R8 — 708 aa / 81K
NEK6 Q9HC98 — 313 aa /36K
NEK7 Q8TDX7 — 302 aa / 35K
NEK8 Q86SG6 — 692 aa / 75K
NEK9 Q8TD19 — 979 aa / 107K
NEK10 Q6ZWH5 — 1175 aa / 133K
NEK11 Q8TBY1 — 645 aa / 74K

NKF1 Family
SBK Q52WX2 — 424 aa / 46K
SgK069 XP_372749 — 935 aa / 102K

NKF2 Family
PINK1 Q9BXM7 — 581 aa / 63K

NKF3 Family
SgK223 Q86YV5 — 1383 aa / 147K
SgK269 Q8NCM3 — 1746 aa / 193K

NKF4 Family
CLIK1 Q8TDR2 — 401 aa / 45K
CLIK1L Q8N165 — 341 aa / 39K

NKF5 Family
SgK307 Q7RTP3 — 1451 aa / 163K
SgK424 — 485 aa / 52K

NRBP Family
NRBP1 Q9UHY1 — 535 aa / 60K
NRBP2 Q8NCX8 — 294 aa / 34K

Other-Unique Family — xxxxxxxSPxxxxxx
KIS Q8TAS1 — 419 aa / 46.5K
RNASEL Q05823 — 741 aa / 83.5K
SgK071 Q8NE28 — 680 aa /76K
SgK196 Q9H5K3 — 350 aa / 40K
SgK396 Q9BXU1 — 1019 aa / 116K
SgK493 Q504Y2 — 294 aa /33KK
SgK496 Q6IN87 — 929 aa /105K

PEK Family, GCN2 Subfamily
GCN2 Q9P2K8 — 1649 aa / 187K

PEK Family, PEK Subfamily
PEK Q9NZJ5 — 1115 aa / 125K

PEK Family, Unique Subfamily — xxxxxkxTxxxrxxx
HRI Q9BQI3 — 630 aa / 71K
PKR P19525 — 551 aa / 62K

PLK Family — xxxxxdxSxxxrxxx
PLK1 P53350 — 603 aa / 68K
PLK2 Q9NYY3 — 685 aa / 78K
PLK3 Q9H4B4 — 646 aa / 72K
PLK4 O00444 — 970 aa / 109K

SCY1 Family
SCYL1 Q96KG9 — 808 aa / 90K
SCYL2 Q6P3W7 — 929 aa / 104K
SCYL3 Q8IZE3 — 741 aa / 83K

Slob Family
Slob Q7Z7A4 — 578 aa / 65K

TBCK Family
TBCK Q8TEA7 — 893 aa / 101K

TLK Family — xxxxxexSxxxrxxx
TLK1 Q9UKI8 — 766 aa /87K
TLK2 Q86UE8 — 772 aa / 88K

TOPK Family
PBK Q96KB5 — 322 aa / 36K

TTK Family
TTK P33981 — 841 aa / 95K

ULK Family
Fused Q8TC32 — 1315 aa / 144K
ULK1 O75385 — 1050 aa / 113K
ULK2 Q8IYT8 — 1036 aa / 113K
ULK3 Q9UFS4 — 472 aa / 53K
ULK4 Q96C45 — 580 aa / 65K

VPS15 Family
PIK3R4 Q99570 — 1357 aa / 153K

WEE Family
MYT1 O14731 — 499 aa / 54.5K
WEE1 P30291 — 646 aa / 72K
WEE1B P0C1S8 — 567 aa / 63K

Wnk Family — xrxvxxkSxxgtxxx
Wnk1 Q9H4A3 — 2382 aa / 251K
Wnk2 Q9Y3S1 — 2297 aa / 243K
Wnk3 Q9BYP7 — 1743 aa / 192K
Wnk4 Q96J92 — 1243 aa / 135K

AGC GROUP

AKT Family — gfRrRrxSfxxsxxx
AKT1 P31749 — 480 aa / 56K
AKT2 P31751 — 481 aa / 56K
AKT3 Q9Y243 — 479 aa / 56K

DMPK Family, GEK Subfamily — xxxxrrxSxxxxxxx
DMPK1 Q09013 — 639 aa / 70.4K
DMPK2 Q6DT37 — 1551 aa / 172K
MRCKα Q5VT25 — 1719 aa / 196K
MRCKβ Q9Y5S2 — 1711 aa / 194K

DMPK Family, ROCK Subfamily — xxrxrRxSxvxxxxx
ROCK1 Q13464 — 1354 aa / 158K
ROCK2 O75116 — 1388 aa / 161K

DMPK Family, Unique Subfamily
CRIK O14578 — 2027 aa / 231K

GRK Family, BARK Subfamily — xxxdxxxSdxxgxxx
BARK1 P25098 — 689 aa / 80K
BARK2 P35626 — 688 aa / 80K

GRK Family, GRK Subfamily — xxxxxxxSxtaxax
GPRK4 P32298 — 578 aa / 67K
GPRK5 P34947 — 590 aa / 68K
GPRK6 P43250 — 576 aa / 66K
GPRK7 Q8WTQ7 — 553 aa / 62K
RHOK Q15835 — 563 aa / 63.5K

MAST Family
MAST1 Q9Y2H9 — 1570 aa / 171K
MAST2 Q6P0Q8 — 1798 aa / 196K
MAST3 O60307 — 1309 aa / 143K
MAST4 O15021 — 2626 aa / 284K
MASTL Q96GX5 — 879 aa / 97K

NDR Family
LATS1 O95835 — 1130 aa / 127K
LATS2 Q9NRM7 — 1088 aa / 120K
NDR1 Q15208 — 465 aa / 54K
NDR2 Q9Y2H1 — 464 aa / 54K

PKA Family — xxrxRRISlxxxxxx
PKACα P17612 — 350 aa / 40.5K
PKACβ P22694 — 350 aa / 40.5K
PKACγ P22612 — 350 aa / 40K
PRKX P51817 — 358 aa / 41K
PRKY O43930 — 277 aa / 32K

PDK1 Family — xxgxttxTFCGTpeY
PDK1 O15530 — 556 aa / 63K

PKC Family, Alpha Subfamily — xxxxRRxSfKrkkxx
PKCα P17252 — 671 aa / 77K
PKCβ P05771 — 670 aa / 77K
PKCγ P05129 — 697 aa / 78K

PKC Family, Delta Subfamily — xxxxRRxSfRrxxxx
PKCδ Q05655 — 676 aa / 77.5K
PKCθ Q04759 — 706 aa / 82K

PKC Family, Eta Subfamily — xxxkRRkSfRrrxxx
PKCε Q02156 — 737 aa / 84K
PKCη P24723 — 682 aa / 77K

PKC Family, Iota Subfamily — xxxxrrkSFrrxxxx
PKCι P41743 — 587 aa / 67K
PKCζ Q05513 — 592 aa / 68K

PKG Family — xxrxRRxSxxxvxxx
PKG1 Q13976 — 670 aa / 77K
PKG2 Q13237 — 762 aa / 87K

PKN Family — xxxsrxxSFsgsxxx
PKN1 Q16512 — 942 aa / 104K
PKN2 Q16513 — 984 aa / 112K
PKN3 Q6P5Z2 — 889 aa / 99K

RSK Family, MSK Subfamily — xxxxRRxSxxxxxxx
MSK1 O75582 — 802 aa / 90K
MSK2 O75676 — 772 aa / 86K

RSK Family, p70 Subfamily — xxRsRtxSxssxxxx
p70S6K P23443 — 525 aa / 59K
p70S6Kβ Q9UBS0 — 482 aa / 53.5K

RSK Family, RSK Subfamily — xxRxRxxSxxxxxxx
RSK1 Q15418 — 735 aa / 83K
RSK2 P51812 — 740 aa / 84K
RSK3 Q15349 — 733 aa / 83K
RSK4 Q9UK32 — 745 aa / 84K

RSK Family, Unique Subfamily
SgK494 Q96LW2 — 274 aa / 31K

RSKL Family
RSKL1 Q5VUN8 — 1054 aa /117K
RSKL2 Q9BSU9 — 541 aa / 59K

SGK Family — xxRsRsxSxxxxxsx
SGK O00141 — 431 aa / 49K
SGK2 Q9HBY8 — 427 aa / 48K
SGK3 Q96BR1 — 496 aa / 57K

YANK Family
YANK1 Q8WU08 — 396 aa / 46K
YANK2 Q8IY14 — 414 aa / 48K
YANK3 Q86UX6 — 486 aa / 55K

CK1 GROUP

CK1 Family — gxxxdddSxxgxxxx
CK1α1 P48729 — 337 aa / 39K
CK1α2 Q8N752 — 337 aa / 39K
CK1δ P48730 — 415 aa / 47K
CK1ε P49674 — 416 aa / 47K
CK1γ1 Q9HCP0 — 422 aa / 48.5K
CK1γ2 P78368 — 415 aa / 47K
CK1γ3 Q9Y6M4 — 447 aa / 51K

TTBK Family
TTBK1 Q5TCY1 — 1414 aa / 152K
TTBK2 Q6IQ55 — 1244 aa / 137K

VRK Family — xxxxxxtTxxxxxxx
VRK1 Q99986 — 396 aa / 45.5K
VRK2 Q86Y07 — 508 aa / 58K
VRK3 Q8IV63 — 474 aa / 53K

STE GROUP

STE Family, Unique Subfamily — xxdxxxxSlxxxxxg
COT P41279 — 467 aa / 53K
NIK Q99558 — 947 aa / 104K

STE11 Family — xxgslaxTxaxxxsx
MEKK1 Q13233 — 1495 aa / 164K
MEKK2 Q9Y2U5 — 618 aa / 69.5K
MEKK3 Q99759 — 626 aa / 71K
MEKK4 Q9Y6R4 — 1607 aa / 182K
ASK1 Q99683 — 1374 aa / 154.5K
ASK2 O95382 — 1011 aa / 112.5K
MAP3K15 Q5JPR4 — 1313 aa / 147K
YSK4 Q56UN5 — 1328 aa / 150.5K

STE20 Family, FRAY Subfamily — xxtxxxxTfxxxtxx
OSR1 Q3LR53 — 527 aa / 58K
STLK3 Q9UEW8 — 547 aa / 60K

STE20 Family, KHS Subfamily
GCK Q12851 — 819 aa / 92K
HPK1 Q92918 — 833 aa / 91K
KHS1 Q9Y4K4 — 846 aa / 95K
KHS2 Q8IVH8 — 894 aa / 101K

STE20 Family, MSN Subfamily — xxxxxxxTlxrxxxx
ZC1 O95819 — 1239 aa / 142K
ZC2 Q9UKE5 — 1360 aa / 155K
ZC3 Q8N4C8 — 1332 aa / 150K
ZC4 Q5H9K2 — 1384 aa / 156K

STE20 Family, MST Subfamily — xxkxxxkTlkxxxxx
MST1 Q13043 — 487 aa / 55K
MST2 Q13188 — 491 aa / 56K

STE20 Family, NinaC Subfamily
MYO3A Q8NEV4 — 1615aa / 186K
MYO3B Q8WXR4 — 1341 aa / 152K

STE20 Family, PAKA Subfamily — xtxxRRrSvxgxlxx
PAK1 Q13153 — 545 aa / 61K
PAK2 Q13177 — 524 aa / 58K
PAK3 O75914 — 559 aa / 62K

STE20 Family, PAKB Subfamily — xxxxrrxSxxxxxxx
PAK4 O96013 — 591 aa / 64K
PAK5 Q9P286 — 719 aa / 81K
PAK6 Q9NQU5 — 681 aa / 75K

STE20 Family, SLK Subfamily — xxxxxxxTxrxxxxx
LOK O94804 — 968 aa / 112K
SLK Q9H2G2 — 1235 aa / 143K

STE20 Family, STLK Subfamily
STLK5 Q9H272 — 431 aa / 48.5K
STLK6 Q9C0K7 — 418 aa / 47K

STE20 Family, TAO Subfamily
TAO1 Q7L7X3 — 1001 aa / 116K
TAO2 Q9UL54 — 1235 aa / 138K
TAO3 Q9H2K8 — 898 aa / 105K

STE20 Family, YSK Subfamily — xxxxxxxTxrrxxxx
MST3 Q9Y6E0 — 443 aa / 49K
MST4 Q9P289 — 416 aa / 46.5K
YSK1 O00506 — 426 aa / 48K

STE7 Family — hgxxxxLYxYxrxYR
MEK1 Q02750 — 392 aa / 43K
MEK2 P36507 — 400 aa / 44K
MEK3 P46734 — 347 aa / 39K
MEK4 P45985 — 399 aa / 44K
MEK5 Q13163 — 438 aa / 49K
MEK6 P52564 — 334 aa / 37.5K
MEK7 O14733 — 419 aa / 47.5K

Atypical GROUP

ABC1 Family, ABC1-A Subfamily
ADCK3 Q8NI60 — 647 aa / 72K
ADCK4 Q8TAJ1 — 503 aa / 56K

ABC1 Family, ABC1-B Subfamily
ADCK1 Q6PD65 — 523 aa / 60K
ADCK5 Q3MIX3 — 580 aa / 66K

ABC1 Family, ABC1-C Subfamily
ADCK2 Q7Z695 — 626 aa / 69K

Alpha Family, ChaK Subfamily — xxxxxxxSxxkxxxx
ChaK1 Q96QT4 — 1865 aa / 213K
ChaK2 Q9BX84 — 2022 aa / 232K

Alpha Family, eEF2K Subfamily
eEF2K O00418 — 725 aa / 82K

Alpha Family, Unique Subfamily
AlphaK1 Q96QP1 — 1244 aa / 139K
AlphaK2 Q86TB3 — 2170 aa / 237K
AlphaK3 Q96L96 — 1907 aa / 201K

BCR Family
BCR P11274 — 1271 aa / 143K

BRD Family
BRD2 P25440 — 801 aa / 88K
BRD3 Q15059 — 726 aa / 79.5K
BRD4 O60885 — 1362 aa / 152K
BRDT Q58F21 — 947 aa / 108K

FAST Family
FASTK Q14296 — 549 aa / 61K

G11 Family
G11 P49842 — 368 aa / 41K

H11 Family
H11 Q9UJY1 — 196 aa / 22K

PDHK Family — xxxxxgxSxxxxxxs
BCKDK O14874 — 412 aa / 46K
PDHK1 Q15118 — 436 aa / 49K
PDHK2 Q15119 — 407aa / 46K
PDHK3 Q15120 — 406 aa / 47K
PDHK4 Q16654 — 411 aa / 46K

RIO Family, RIO1 Subfamily
RIOK1 Q9BRS2 — 568 aa / 66K

RIO Family, RIO2 Subfamily
RIOK2 Q9BVS4 — 552 aa / 63K

RIO Family, RIO3 Subfamily
RIOK3 O14730 — 519 aa / 59K

TAF1 Family
TAF1 P21675 — 1872 aa / 213K
TAF1L Q8IZX4 — 1826 aa / 207K

TIF1 Family
TIF1α O15164 — 1050 aa / 117K
TIF1β Q13263 — 835 aa / 89K
TIF1γ Q9UPN9 — 1127 aa / 122.5K

PIKK Family, ATM Subfamily — xxxxxxxSQxxxsxx
ATM Q13315 — 3056 aa / 351K

PIKK Family, ATR Subfamily — xxxexxlSQgxxxxx
ATR Q13535 — 2644 aa / 301K

PIKK Family, DNAPK Subfamily — xqxsxqxSQxxxxxx
DNAPK P78527 — 4128 aa / 469K

PIKK Family, FRAP Subfamily — xtxxxpxSPxaxxxx
FRAP P42345 — 2549 aa / 289K

PIKK Family, SMG1 Subfamily
SMG1 Q96QV0 — 3657 aa / 410K

PIKK Family, TRRAP Subfamily
TRRAP Q9Y4A5 — 3859 aa / 436K

CAMK GROUP

CAMK1 Family — xplxRxxSxxxxxxx
CaMK1α Q14012 — 370 aa / 41K
CaMK1β Q6P2M8 — 343 aa / 38.5K
CaMK1δ Q8IU85 — 385 aa / 43K
CaMK1γ Q96NX5 — 476 aa / 53K
CaMK4 Q16566 — 473 aa / 52K
VACAMKL Q8WTT8 — 501 aa / 54K

CAMK2 Family — xxlsRqxSldxxxxx
CaMK2α Q9UQM7 — 478 aa / 54K
CaMK2β Q13554 — 664 aa / 73K
CaMK2δ Q13557 — 499 aa / 56K
CaMK2γ Q13555 — 558 aa / 63K

CAMKL Family, AMPK Subfamily — xxlrRsxSfxxLxxl
AMPKα1 Q13131 — 550 aa / 63K
AMPKα2 P54646 — 552 aa / 62K

CAMKL Family, BRSK Subfamily — xxxxxxxSxcxxxxx
BRSK1 Q8TDC3 — 794 aa / 87K
BRSK2 Q8IWQ3 — 736 aa / 82K

CAMKL Family, CHK1 Subfamily — xflxRxxSxxxxxxx
CHK1 O14757 — 476 aa / 54K

CAMKL Family, HUNK Subfamily
HUNK P57058 — 714 aa / 80K

CAMKL Family, LKB Subfamily — xxgxxLxTxCGsppY
LKB1 Q15831 — 433 aa / 49K

CAMKL Family, MARK Subfamily — xvlsKxgSxxnlkhx
MARK1 Q9P0L2 — 795 aa / 89K
MARK2 Q7KZI7 — 788 aa / 88K
MARK3 P27448 — 776 aa / 87K
MARK4 Q96L34 — 752 aa / 82.5K

CAMKL Family, MELK Subfamily — xxxxxxxSxxxxlxr
MELK Q14680 — 651 aa / 75K

CAMKL Family, NIM1 Subfamily
NIM1 Q8IY84 — 436 aa / 50K

CAMKL Family, NuaK Subfamily
NuaK1 O60285 — 661 aa / 74K
NuaK2 Q9H093 — 628 aa / 70K

CAMKL Family, PASK Subfamily
PASK Q96RG2 — 1323 aa / 143K

CAMKL Family, QIK Subfamily
QIK Q9H0K1 — 926 aa / 104K
QSK Q9Y2K2 — 1371 aa / 140K
SIK P57059 — 783 aa / 85K

CAMKL Family, SNRK Subfamily
SNRK Q6IQ46 — 765 aa / 84K

CAMK-Unique Family
SgK495 Q96I44 — 435 aa / 49K
STK33 Q8NEF5 — 514 aa / 58K

CASK Family — xxxxxxxSxxxsxxx
CASK O14936 — 926 aa / 105K

DAPK Family — xxRxRRxSxxfxxxx
DAPK1 P53355 — 1431 aa / 160K
DAPK2 Q9UIK4 — 370 aa / 43K
DAPK3 O43293 — 454 aa / 52.5K
DRAK1 Q9UEE5 — 414 aa / 47K
DRAK2 O94768 — 372 aa / 42K

DCAMKL Family
DCAMKL1 O15075 — 740 aa / 82K
DCAMKL2 Q8N568 — 766 aa / 83.6K
DCAMKL3 Q9C098 — 648 aa / 74K

MAPKAPK Family, MAPKAPK Subfamily — xxLxRspSlxxxxxx
MAPKAPK2 P49137 — 400 aa / 46K
MAPKAPK3 Q16644 — 382 aa / 43K
MAPKAPK5 Q8IW41 — 473 aa / 54K

MAPKAPK Family, MNK Subfamily — xxxxsssStxxggx
MNK1 Q9BUB5 — 465 aa / 51K
MNK2 Q9HBH9 — 418 aa / 47K

MLCK Family — kkrKxxxSxrxxxxx
caMLCK Q32MK0 — 819 aa / 88K
SgK085 Q86YV6 — 388 aa / 44.5K
skMLCK Q9H1R3 — 595 aa / 65K
smMLCK Q15746 — 1914 aa / 211K

PHK Family — xxxxxxxSxrxxxxx
PHKγ1 Q16816 — 386 aa / 45K
PHKγ2 P15735 — 406 aa / 46K

PIM Family — xxRxRrxSxxxxxxx
PIM1 P11309 — 404 aa / 45K
PIM2 Q9P1W9 — 311 aa / 34K
PIM3 Q86V86 — 326 aa / 36K

PKD Family — xpLxRrxSxvxxxxx
PKD1 Q15139 — 912 aa / 102K
PKD2 Q9BZL6 — 878 aa / 97K
PKD3 O94806 — 890 aa / 100K

PSK Family
PSKH1 P11801 — 423 aa / 48K
PSKH2 Q96QS6 — 385 aa / 43K

RAD53 Family — pxlxRxxSqxxkxxx
CHK2 O96017 — 543 aa / 61K

Trbl Family
Trb1 Q96RU8 — 372 aa / 41K
Trb2 Q92519 — 343 aa / 39K
Trb3 Q96RU7 — 358 aa / 40K

TSSK Family
SSTK Q9BXA6 — 273 aa / 30K
TSSK1 Q9BXA7 — 367 aa / 42K
TSSK2 Q96PF2 — 358 aa / 41K
TSSK3 Q96PN8 — 268 aa / 30K
TSSK4 Q6SA08 — 328 aa / 37.5K

Trio Family
SPEG Q15772 — 3267 aa / 354K
Trad Q9Y2A5 — 1289 aa / 147K
TRIO O75962 — 3038 aa / 342K
Obscn Q5VST9 — 7968 aa / 868K

MLCK Family
TTN Q4ZG20 — 26926 aa / 2742K

CMGC GROUP

CDK Family, CDC2 Subfamily — xxxxlpxSPxkkxxx
CDK1 P06493 — 297 aa / 34K
CDK2 P24941 — 298 aa / 34K
CDK3 Q00526 — 305 aa / 35K

CDK Family, CDK10 Subfamily
CDK10 Q15131 — 360 aa / 41K

CDK Family, CDK4 Subfamily — xxxxxPlSPxrxxxx
CDK4 P11802 — 303 aa / 34K
CDK6 Q00534 — 326 aa / 37K

CDK Family, CDK5 Subfamily — xxxsxplSPxkxxxx
CDK5 Q00535 — 292 aa / 33K

CDK Family, CDK7 Subfamily — xxpxxxxSPxvxtlw
CDK7 P50613 — 346 aa / 39K

CDK Family, CDK8 Subfamily
CDK11 Q9BWU1 — 502 aa / 57K
CDK8 P49336 — 464 aa / 53K

CDK Family, CDK9 Subfamily — xPxsgsxSPxyxxxx
CDK9 P50750 — 372 aa / 43K

CDK Family, CRK7 Subfamily
CHED Q14004 — 1512 aa / 165K
CRK7 Q9NYV4 — 1490 aa / 164K

CDK Family, PITSLRE Subfamily
PITSLRE Q9UQ88 — 780 aa / 91K

CDK Family, TAIRE Subfamily
PCTAIRE1 Q00536 — 496 aa / 56K
PCTAIRE2 Q00537 — 523 aa / 60K
PCTAIRE3 Q07002 — 472 aa / 54K
PFTAIRE1 O94921 — 469 aa / 53K
PFTAIRE2 Q96Q40 — 384 aa / 44K

CDK Family, Unique Subfamily
CCRK Q8IZL9 — 346 aa / 39K

CDKL Family
CDKL1 Q00532 — 357 aa / 42K
CDKL2 Q92772 — 493 aa / 56K
CDKL3 Q8IVW4 — 592 aa / 67.5K
CDKL4 Q5MAI5 — 315 aa / 36K
CDKL5 O76039 — 1030 aa / 115.5K

CLK Family — xxrxrxxSxxxxxxx
CLK1 P49759 — 484 aa / 57K
CLK2 P49760 — 499 aa / 60K
CLK3 P49761 — 490 aa / 60K
CLK4 Q9HAZ1 — 481 aa / 57.5K

DYRK Family, Dyrk1 Subfamily — xxpsRpgSPxxxxxx
DYRK1A Q13627 — 763 aa / 86K
DYRK1B Q9Y463 — 629 aa / 69K

DYRK Family, Dyrk2 Subfamily — xxgsRpxSPxpxxpp
DYRK2 Q92630 — 528 aa / 60K
DYRK3 O43781 — 588 aa / 66K
DYRK4 Q9NR20 — 520 aa / 60K

DYRK Family, HIPK Subfamily — xxxqxppSPxxxxxa
HIPK1 Q86Z02 — 1210 aa / 131K
HIPK2 Q9H2X6 — 1198 aa / 131K
HIPK3 Q9H422 — 1215 aa / 134K
HIPK4 Q8NE63 — 616 aa / 69K

DYRK Family, PRP4 Subfamily
PRP4 Q13523 — 1007 aa / 117K

GSK Family — xxxSpppSPppSpxx
GSK3α P49840 — 483 aa / 51K
GSK3β P49841 — 420 aa / 47K

MAPK Family, ERK Subfamily — xxpxpPlSPtppxxx
ERK1 P27361 — 379 aa / 43K
ERK2 P28482 — 360 aa / 41K
ERK3 Q16659 — 721 aa / 83K
ERK4 P31152 — 557 aa / 63K
ERK5 Q13164 — 815 aa / 89K

MAPK Family, ERK7 Subfamily
ERK7 Q8TD08 — 544 aa / 60K

MAPK Family, JNK Subfamily — xxxsalxSPxaxxxx
JNK1 P45983 — 427 aa / 48K
JNK2 P45984 — 424 aa / 48K
JNK3 P53779 — 464 aa / 53K

MAPK Family, nmo Subfamily — xxxxxpxSpxxxxxx
NLK Q9UBE8 — 515 aa / 57K

MAPK Family, p38 Subfamily — xxxxxPlSPxxpxxx
p38α Q16539 — 359 aa / 41K
p38β Q15759 — 372 aa / 42K
p38δ O15264 — 365 aa / 42K
p38γ P53778 — 367 aa / 42K

RCK Family — xxxxrpxSpxxxxxx
ICK Q9UPZ9 — 632 aa / 71K
MAK P20794 — 623 aa / 71K
MOK Q9UQ07 — 419 aa / 48K

SRPK Family — RSRSRSRSRSRSRSR
MSSK1 Q9UPE1 — 533 aa / 59K
SRPK1 Q96SB4 — 826 aa / 92K
SRPK2 P78362 — 688 aa / 77.5K

RGC GROUP

RGC Family
ANPα P16066 — 1061 aa / 119K
ANPβ P20594 — 1047 aa / 117K
CYGD Q02846 — 1103 aa / 120K
CYGF P51841 — 1108 aa / 125K
HSER P25092 — 1073 aa / 123K

LEGEND

Domain	Freq.	a.a. length low-high (average)	Domain	Freq.	a.a. length low-high (average)	Domain	Freq.	a.a. length low-high (average)
ABC1	5	102-117 (114)	Furin-like	7	153-162 (156)	PQQ	11	31-39 (34)
Activin_recp	11	75-102 (91)	Fz	3	138-142 (139)	PSI	2	44 (44)
ADF	4	129-130 (130)	GCC2_GCC3	14	43-50 (45)	PX	3	108-113 (110)
Alpha_kinase	6	199-231 (213)	GS	7	29-31 (31)	RBD	3	73-76 (74)
ANF_receptor	5	335-364 (348)	GuKc	1	173 (173)	RCC1	11	39-65 (53)
ANK	59	28-35 (31)	HATPase_c	5	124-141 (129)	Recep_L_domain	14	112-122 (116)
Arm	3	41 (41)	HEAT	45	32-41 (37)	RGS	7	119-122 (121)
Autoinhibitory	5	6-41 (27)	HGTP_anticodon	1	92 (92)	Rhodanese	1	107 (107)
B41	6	228-255 (240)	HR1	11	64-85 (71)	RhoGAP	1	185 (185)
BBC	3	127 (127)	HSP20	1	93 (93)	RhoGEF	5	176-189 (180)
BBOX	6	42-48 (45)	If	1	17 (17)	Ribonucl_2-5A	3	127-132 (129)
BROMO	15	73-124 (90)	IG	37	62-183 (86)	RING	4	50-75 (60)
BTK	4	37 (37)	IG_like	91	56-108 (76)	RIO	3	224-249 (237)
C1	32	46-57 (52)	IGc2	129	53-102 (69)	ROC	2	121-222 (172)
C2	9	104-137 (114)	IGv	16	58-151 (80)	RRM	1	83 (83)
Calmodulin-bind	20	11-26 (20)	Ion_trans	2	206-213 (210)	RWD	1	113 (113)
CaMK2 assoc.	4	128 (128)	IQ	6	23-30 (28)	SAM	16	64-75 (68)
CARD	1	92 (92)	KA1	5	48-50 (49)	SAM_1	1	65 (65)
CNH	12	175-316 (287)	KR	2	83 (83)	SARAH	2	48 (48)
cNMP	4	117-124 (120)	L27	2	54-56 (55)	SEC14	1	146 (146)
Coiled-coil	141	21-793 (58)	LDLa	1	37 (37)	Sema	2	445-446 (446)
COR	2	369-401 (385)	LIM	4	52-55 (54)	SH2	30	76-106 (86)
CYCc	5	195-196 (196)	LRR	24	19-25 (23)	SH3	29	53-68 (59)
DCX	4	84-92 (88)	LRRCT	3	45-49 (47)	signal_peptide	78	16-56 (26)
DEATH	6	76-97 (86)	LRRNT	2	28-35 (32)	SPEC	4	107-108 (108)
DnaJ	1	62 (62)	LY	3	39-43 (41)	SerThrKinase	399	192-574 (270)
DSRM	2	66-67 (67)	MAM	1	157 (157)	SWIM	1	29 (29)
EGF	7	26-37 (33)	MIT	4	29-79 (54)	TBC	1	212 (212)
EPH_lbd	14	196-233 (177)	MYSc	2	702-723 (713)	TIG	6	83-95 (90)
Extensin_2	2	357-401 (379)	NUC194	1	398 (398)	TMD	82	18-24 (23)
FA58C	2	137-157 (147)	PAS	2	68 (68)	TPR_1	1	34 (34)
FAST_Leu-rich	1	168 (168)	PB1	5	80-84 (81)	tRNA-synt_2b	1	165 (165)
FAT	5	324-450 (385)	PBD	9	14-74 (48)	TUDOR	1	59 (59)
FATC	6	28-33 (32)	PDZ	7	76-89 (81)	TyrKinase	93	246-359 (269)
FCH	2	92--94 (93)	PH	24	90-130 (121)	UBA	12	38-45 (40)
FHA	1	64 (64)	PHD	4	44-62 (49)	UME	1	107 (107)
FN3	196	69-210 (87)	PI3Kc	6	289-332 (306)	WD40	13	32-61 (45)
Focal_AT	2	138-139 (139)	Pkinase_C	54	46-80 (65)	WH2	1	20 (20)
FU	9	36-52 (49)	POLO_box	6	64-72 (68)	WIF	1	129 (129)

Specific information on these domains can be obtained from www.pfam.wustl.edu/browse.shtml and www.smart.embl-heidelberg.de/browse.shtml. The concensus phosphorylation specificity for representatives of the various protein kinase groups are shown here in yellow text with the key amino acids residues indicated in capital letters. More detailed information for each of these protein kinases is available on-line from Kinexus at www.kinaseNET.ca. Phosphorylation site information for these protein kinases and at least 10,000 substrate poteins can be retrieved from Kinexus at www.phosphoNET.ca.

Reversible phosphorylation is the premier means of post-translational modification of proteins for their regulation in eukaryotic cells. Within the phosphoproteome, there appears to be over 500,000 phosphorylation sites distributed amongst most of the 23,000 proteins encoded by the human genome. This is catalyzed by at least 478 conventional protein kinases and 38 atypical protein kinases, which constitute the human kineome. The conventional protein kinases include 388 protein-serine/threonine kinases and 90 protein-tyrosine kinases. There are 58 receptor-tyrosine kinases and 32 non-receptor tyrosine kinases in humans. Due to alternative splicing, there are at least 140 additional splice variants of human protein kinases besides those shown in this poster. Defective cell signalling through malfunctioning protein kinases have been linked with over 400 human diseases, including cancer, diabetes, Alzheimer disease and other immunological and neurological disorders. More than a third of total R&D expenditures in large pharma is currently directed towards the exploitation of less than 20% of these protein kinases as drug targets. Over 150 compounds that are selective kinase inhibitors are presently undergoing human clinical trials, and at least 500 additional compounds are in pre-clinical animal trials. Ultimately, mapping the complex interactions between protein kinases, their effectors and substrates will yield a rich harvest of reliable biomarkers for patient diagnosis and suitable targets for therapeutic intervention to pave the way for personalized medicine delivery.

CREDITS

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