Supplementary Table 4. Identity and orthologous relationships for apical complex genes and AP2 transcription factors.

*T. gondii* genes whose products are known to localise to apical complex organelles and their homologues (and AP2 transcription factors) are listed here. Where they exist, *N. caninum* othologues are identified and it is noted whether they occur in synteny or on another chromosome. We and others have identified some novel homologues in *N. caninum* and these are also included.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **ToxoDb Id v5.2** | ***T. gondii* chromosome** | ***N. caninum* Id** | ***N. caninum* chromosome** |
|  |  |  |  |  |
|  |  |  |  |  |
| **Rhoptry genes** |  |  |  |
|  |  |  |  |  |
| BRP1 | TGME49\_114250  | XI | - | - |
| NHE2 | TGME49\_099060  | III | NCLIV\_009440 | Syntenic |
| PP2C-hn | TGME49\_082060  | VIIa | NCLIV\_023710 | Syntenic |
| RAB11 | TGME49\_089680  | IX | NCLIV\_041930 | Syntenic |
| RON1 | TGME49\_110010  | XI | NCLIV\_054120 | Syntenic |
| RON2 | TGME49\_100100  | XII | NCLIV\_064620 | Syntenic |
| RON2L1 | TGME49\_094400  | Ia | NCLIV\_001400 | Syntenic |
| RON2L2 | TGME49\_065120  | IX | NCLIV\_040110 | Syntenic |
| RON3 | TGME49\_023920  | X | NCLIV\_048590 | Syntenic |
| RON3L1 | TGME49\_005360  | VIIa | NCLIV\_020330; NCLIV\_020340 | Syntenic |
| RON4 | TGME49\_029010  | VIII | NCLIV\_030050 | Syntenic |
| RON4L1 | TGME49\_053370  | III | NCLIV\_007800 | Syntenic |
| RON5 | TGME49\_111470  | XI | NCLIV\_055360 | Syntenic |
| RON6 | TGME49\_097960 | II | NCLIV\_006850 | Syntenic |
| ROP1 | TGME49\_109590 | XI | NCLIV\_053840 | Syntenic |
| ROP1B | - | - | NCLIV\_069110 | Unk |
| ROP2A | TGME49\_015780  | X | - | - |
| ROP2B | TGME49\_075300  | X | - | - |
| ROP4 | TGME49\_095110  | Ia | NCLIV\_001950 | Syntenic |
| ROP5 | TGME49\_108080  | XII | NCLIV\_060730 | Syntenic |
| ROP5B | - | - | NCLIV\_060740 | XII |
| ROP6 | TGME49\_058660  | VIIb | NCLIV\_027850 | Syntenic |
| ROP7 | TGME49\_095110  | Ia | NCLIV\_001970 | Syntenic |
| ROP8 | TGME49\_015770  | X | - | - |
| ROP9 | TGME49\_043730  | VI | NCLIV\_018420 | Syntenic |
| ROP10 | TGME49\_115490  | XI | NCLIV\_058180 | Syntenic |
| ROP11 | TGME49\_027810  | X | NCLIV\_045585 | Syntenic |
| ROP12 | TGME49\_003990  | VIIa | NCLIV\_021100 | Syntenic |
| ROP13 | TGME49\_112270  | XI | NCLIV\_055850 | Syntenic |
| ROP14 | TGME49\_115220  | XI | NCLIV\_057960 | Syntenic |
| ROP14B | TGME49\_115210 | XI | NCLIV\_057950 | Syntenic |
| ROP15 | TGME49\_011290  | IV | NCLIV\_011690 | Syntenic |
| ROP15B | - | - | NCLIV\_011700 | IV |
| ROP16 | TGME49\_062730  | VIIb | NCLIV\_025120 | Syntenic |
| ROP17 | TGME49\_058580  | VIIb | NCLIV\_027930 | Syntenic |
| ROP18 | TGME49\_005250  | VIIa | - | - |
| ROP19 | TGME49\_042240 | VI | NCLIV\_017440 | Syntenic |
| ROP20  | TGME49\_058230 | VIIb | NCLIV\_028170 | Syntenic |
| ROP21 | TGME49\_063220 | VIIb | NCLIV\_024700 | Syntenic |
| ROP22 | TGME49\_007700 | Ib | NCLIV\_002650 | Syntenic |
| ROP23 | TGME49\_039600  | VI | NCLIV\_016220 | Syntenic |
| ROP24 | TGME49\_052360  | III | NCLIV\_007450 | Syntenic |
| ROP25 | TGME49\_002780 | VIIa | NCLIV\_022130 | Syntenic |
| ROP26 | TGME49\_011260  | IV | NCLIV\_011730 | Syntenic |
| ROP27  | TGME49\_113330 | XI | NCLIV\_056620 | Syntenic |
| ROP28 | TGME49\_058370  | VIIb | NCLIV\_028130 | Syntenic |
| ROP29 | TGME49\_042230 | VI | NCLIV\_017430 | Syntenic |
| ROP30 | TGME49\_027010 | X | NCLIV\_046000 | Syntenic |
| ROP31  | TGME49\_058800  | VIIb | NCLIV\_027710 | Syntenic |
| ROP32  | TGME49\_070920  | VIII | NCLIV\_035860 | Syntenic |
| ROP33 | TGME49\_001130  | VIIa | NCLIV\_023260 | Syntenic |
| ROP34 | TGME49\_040090 | VI | NCLIV\_000650 | Ia |
| ROP35 | TGME49\_104740  | VIIa | NCLIV\_044410 | IX |
| ROP36 | TGME49\_007610  | Ib | NCLIV\_002580 | Syntenic |
| ROP37 | TGME49\_094560 | Ia | NCLIV\_001460 | Syntenic |
| ROP38  | TGME49\_042110  | VI | NCLIV\_017410 | Syntenic |
| ROP39 | TGME49\_062050  | VIIb | NCLIV\_028170 | Syntenic |
| ROP40 | TGME49\_091960  | IX | NCLIV\_012920 | Syntenic |
| ROP41  | TGME49\_066100  | X | NCLIV\_048060 | Syntenic |
| ROP42 | TGME49\_009980 | Ib | - | - |
| ROP43 | TGME49\_010090 | Ib | - | - |
| ROP44 | TGME49\_010110 | Ib | NCLIV\_004220 | Syntenic |
| ROP45 | TGME49\_081790 | VIIa | NCLIV\_023580 | Syntenic |
| ROP46 | TGME49\_030470 | VIII | NCLIV\_030990 | Syntenic |
| ROP47 | TGME49\_042120 | VI | NCLIV\_017420 | Syntenic |
| ROP48 | TGME49\_115940 | XI | NCLIV\_058560 | Syntenic |
| ROP49 | TGME49\_052500 | VIIa | NCLIV\_022270 | Syntenic |
| ROP50 | TGME49\_022410 | II | NCLIV\_005800 | Syntenic |
| ROP51 | - | - | NCLIV\_068890 | Unk |
| ROP52 | - | - | NCLIV\_069590 | Unk |
| ROP53 | - | - | NCLIV\_068850 | Unk |
| ROP54 | - | III | NCLIV\_008640 | III |
| ROP55 | - | VIII | NCLIV\_031550 | VIII |
| SUB2 | TGME49\_114500  | XI | NCLIV\_057550 | Syntenic |
| Toxofilin | TGME49\_014080  | X | NCLIV\_051340 | Syntenic |
| Toxopain1 | TGME49\_049670  | XII | NCLIV\_069550 | Unk |
|  |  |  |  |  |
|  |  |  |  |  |
| **Microneme genes** |  |  |  |
|  |  |  |  |  |
| MIC1 | TGME49\_091890  | IX | NCLIV\_043270 | Syntenic |
| MIC2 | TGME49\_001780  | VIIa | NCLIV\_022970 | Syntenic |
| M2AP | TGME49\_014940  | X | NCLIV\_051970 | Syntenic |
| MIC3 | TGME49\_119560  | IV | NCLIV\_010600 | Syntenic |
| MIC4 | TGME49\_008030  | Ib | NCLIV\_002940 | Syntenic |
| MIC5 | TGME49\_077080  | XII | NCLIV\_068520 | Syntenic |
| MIC6 | TGME49\_018520  | XII | NCLIV\_061760 | Syntenic |
| MIC7 | TGME49\_061780  | VIIb | NCLIV\_025710 | Syntenic |
| MIC8 | TGME49\_045490  | XII | NCLIV\_062770 | Syntenic |
| MIC8-like1/MIC8.2 | TGME49\_086740 | V | NCLIV\_013920 | Syntenic |
| MIC9 | TGME49\_045490  | XII | NCLIV\_062760 | Syntenic |
| MIC10 | TGME49\_050710  | XII | NCLIV\_066250 | Syntenic |
| MIC11 | TGME49\_004530  | VIIa | NCLIV\_020720 | Syntenic |
| MIC12 | TGME49\_067680  | IX | NCLIV\_069310 | Unk |
| MIC13/MCP2 | TGME49\_060190 | VIIb | NCLIV\_026810 | Syntenic |
| MIC14 | - | - | NCLIV\_033690 | VIII |
| MIC15 | TGME49\_044180 | VI | NCLIV\_018780 | Syntenic |
| MIC16 | TGME49\_115520 | XI | NCLIV\_058210 | Syntenic |
| MIC17A | TGME49\_000230 | VIII | NCLIV\_038100 | Syntenic |
| MIC17B | TGME49\_000240 | VIII | NCLIV\_038110 | Syntenic |
| MIC17C | TGME49\_000250 | VIII | NCLIV\_038120 | Syntenic |
| MIC18 | TGME49\_009920 | Ib | NCLIV\_004170 | Syntenic |
| MIC19 | - | - | NCLIV\_038320 | IX |
| MIC20 | TGME49\_038210 | VI | NCLIV\_015580 | Syntenic |
| MIC21 | TGME49\_038220 | VI | NCLIV\_015590 | Syntenic |
| MIC22 | TGME49\_075790 | III | NCLIV\_007140 | Syntenic |
| MIC23 | TGME49\_115540 | XI | NCLIV\_058230 | Syntenic |
| MIC24 | TGME49\_054430 | III | NCLIV\_008720 | Syntenic |
| MIC25 | TGME49\_115550 | XI | NCLIV\_058240 | Syntenic |
| SUB1 | TGME49\_004050  | VIIa | NCLIV\_021050 | Syntenic |
| AMA1 | TGME49\_055260  | VIIb | NCLIV\_028680 | Syntenic |
| AMA2 | TGME49\_115730 | XI | NCLIV\_058410 | Syntenic |
| AMA3 | TGME49\_100130 | XII | NCLIV\_064590 | Syntenic |
| MCP3 | TGME49\_008740 | Ib | NCLIV\_003260 | Syntenic |
| MCP4 | TGME49\_008730 | Ib | NCLIV\_003250 | Syntenic |
| MCP5 | - | - | NCLIV\_066750 | XII |
| MCP6 | - | - | NCLIV\_054450  | XI |
| MCP7 | - | - | NCLIV\_054425  | XI |
|  |  |  |  |  |
|  |  |  |  |  |
| **Dense granule genes** |  |  |  |
|  |  |  |  |  |
| GRA1 | TGME49\_070250  | VIII | NCLIV\_036400 | Syntenic |
| GRA2 | TGME49\_027620  | X | NCLIV\_045650 | Syntenic |
| GRA3 | TGME49\_027280  | X | NCLIV\_045870 | Syntenic |
| GRA4 | TGME49\_110780  | XI | NCLIV\_054830 | Syntenic |
| GRA5 | TGME49\_086450  | V | NCLIV\_014150 | Syntenic |
| GRA6 | TGME49\_075440  | X | NCLIV\_052880 | Syntenic |
| GRA7 | TGME49\_003310  | VIIa | NCLIV\_021640 | Syntenic |
| GRA8 | TGME49\_054720  | III | NCLIV\_008990 | Syntenic |
| GRA9 | TGME49\_051540  | XII | NCLIV\_066630 | Syntenic |
| GRA10 | TGME49\_068900  | VIII | NCLIV\_037450 | Syntenic |
| GRA11 | TGME49\_012410 | IV | - | - |
| GRA12 | TGME49\_075850  | III | - | - |
| GRA14 | TGME49\_039740 | VI | NCLIV\_016360 | Syntenic |
| NTPase I | TGME49\_077240  | XII | NCLIV\_068460 | XII but not syntenic |
| NTPase II | TGME49\_077270  | XII | NCLIV\_068400 | Syntenic |
| PI-1 | TGME49\_008450  | Ib | NCLIV\_003120 | Syntenic |
| PI-2 | TGME49\_008430 | Ib | NCLIV\_003100 | Syntenic |
|  |  |  |  |  |
|  |  |  |  |  |
| **AP2 transcription factors** |  |  |  |
|  |  |  |  |  |
| AP2Ib-1 | TGME49\_008020 | Ib | NCLIV\_002930 | Syntenic |
| AP2III-1 | TGME49\_052370 | III | NCLIV\_007460 | Syntenic |
| AP2III-2 | TGME49\_053380 | III | NCLIV\_007810 | Syntenic |
| AP2III-3 | TGME49\_099150 | III | NCLIV\_009360 | Syntenic |
| AP2III-4 | TGME49\_099020 | III | NCLIV\_009480 | Syntenic |
| AP2IV-1 | TGME49\_120700 | IV | NCLIV\_009580 | Syntenic |
| AP2IV-2 | TGME49\_120680 | IV | NCLIV\_009600 | Syntenic |
| AP2IV-3 | TGME49\_118610 | IV | NCLIV\_010930 | Syntenic |
| AP2IV-4 | TGME49\_118470 | IV | NCLIV\_011080 | Syntenic |
| AP2IV-5 | TGME49\_011720 | IV | NCLIV\_011370 | Syntenic |
| AP2IX-1 | TGME49\_067460 | IX | NCLIV\_038720 | Syntenic |
| AP2IX-2 | TGME49\_064590 | IX | NCLIV\_040560 | Syntenic |
| AP2IX-3 | TGME49\_064480 | IX | NCLIV\_040560 | Syntenic |
| AP2IX-4 | TGME49\_088950 | IX | NCLIV\_041340 | Syntenic |
| AP2IX-5 | TGME49\_089710 | IX | NCLIV\_041960 | Syntenic |
| AP2IX-6 | TGME49\_090180 | IX | NCLIV\_042430 | Syntenic |
| AP2IX-7 | TGME49\_090630 | IX | NCLIV\_042620 | Syntenic |
| AP2IX-8 | TGME49\_106000 | IX | NCLIV\_070180 | Syntenic |
| AP2IX-9 | TGME49\_106620 | IX | NCLIV\_044800 | Syntenic |
| AP2V-1 | TGME49\_020530 | V | NCLIV\_012620 | Syntenic |
| AP2V-2 | TGME49\_085890 | V | NCLIV\_014510 | Syntenic |
| AP2VI-1 | TGME49\_040460 | VI | NCLIV\_016660 | Syntenic |
| AP2VI-2 | TGME49\_040900 | VI | NCLIV\_017050 | Syntenic |
| AP2VI-3 | TGME49\_044510 | VI | NCLIV\_019060 | Syntenic |
| AP2VIIa-1 | TGME49\_080470 | VIIa | NCLIV\_019680 | Syntenic |
| AP2VIIa-2 | TGME49\_080460 | VIIa | NCLIV\_019690 | Syntenic |
| AP2VIIa-3 | TGME49\_005650 | VIIa | NCLIV\_020020 | Syntenic |
| AP2VIIa-4 | TGME49\_003710 | VIIa | NCLIV\_021340 | Syntenic |
| AP2VIIa-5 | TGME49\_003690 | VIIa | NCLIV\_021360 | Syntenic |
| AP2VIIa-6 | TGME49\_003050 | VIIa | NCLIV\_021870 | Syntenic |
| AP2VIIa-7 | TGME49\_002490 | VIIa | NCLIV\_022440 | Syntenic |
| AP2VIIa-8 | TGME49\_082210 | VIIa | NCLIV\_023820 | Syntenic |
| AP2VIIa-9 | TGME49\_082220 | VIIa | NCLIV\_023830 | Syntenic |
| AP2VIIb-1 | TGME49\_062420 | VIIb | NCLIV\_025410 | Syntenic |
| AP2VIIb-2 | TGME49\_062000 | VIIb | NCLIV\_025610 | Syntenic |
| AP2VIIb-3 | TGME49\_055220 | VIIb | NCLIV\_028720 | Syntenic |
| AP2VIII-1 | TGME49\_029370 | VIII | NCLIV\_030300 | Syntenic |
| AP2VIII-2 | TGME49\_033120 | VIII | NCLIV\_032930 | Syntenic |
| AP2VIII-3 | TGME49\_073660 | VIII | NCLIV\_034030 | Syntenic |
| AP2VIII-4 | TGME49\_072710 | VIII | NCLIV\_034610 | Syntenic |
| AP2VIII-5 | TGME49\_071200 | VIII | NCLIV\_035650 | Syntenic |
| AP2VIII-6 | TGME49\_071030 | VIII | NCLIV\_035780 | Syntenic |
| AP2VIII-7 | TGME49\_069010 | VIII | NCLIV\_037340 | Syntenic |
| AP2X-1 | TGME49\_027900 | X | NCLIV\_045500 | Syntenic |
| AP2X-10 | TGME49\_015340 | X | NCLIV\_052260 | Syntenic |
| AP2X-11 | TGME49\_015570 | X | NCLIV\_052490 | Syntenic |
| AP2X-2 | TGME49\_025110 | X | NCLIV\_047580 | Syntenic |
| AP2X-3 | TGME49\_024230 | X | NCLIV\_048320 | Syntenic |
| AP2X-4 | TGME49\_024050 | X | NCLIV\_048470 | Syntenic |
| AP2X-5 | TGME49\_037090 | X | NCLIV\_050970 | Syntenic |
| AP2X-6 | TGME49\_037440 | X | NCLIV\_051170 | Syntenic |
| AP2X-7 | TGME49\_014840 | X | NCLIV\_051890 | Syntenic |
| AP2X-8 | TGME49\_014960 | X | NCLIV\_051990 | Syntenic |
| AP2X-9 | TGME49\_015150 | X | NCLIV\_052140 | Syntenic |
| AP2XI-1 | TGME49\_109410 | XI | NCLIV\_053760 | Syntenic |
| AP2XI-2 | TGME49\_110900 | XI | NCLIV\_054920 | Syntenic |
| AP2XI-3 | TGME49\_110950 | XI | NCLIV\_054950 | Syntenic |
| AP2XI-4 | TGME49\_115760 | XI | NCLIV\_058430 | Syntenic |
| AP2XI-5 | TGME49\_016220 | XI | NCLIV\_059950 | Syntenic |
| AP2XII-1 | TGME49\_018960 | XII | NCLIV\_061420 | Syntenic |
| AP2XII-2 | TGME49\_017700 | XII | NCLIV\_062490 | Syntenic |
| AP2XII-3 | TGME49\_046660 | XII | NCLIV\_063450 | Syntenic |
| AP2XII-4 | TGME49\_047700 | XII | NCLIV\_063920 | Syntenic |
| AP2XII-5 | TGME49\_047730 | XII | NCLIV\_063940 | Syntenic |
| AP2XII-6 | TGME49\_049190 | XII | NCLIV\_065400 | Syntenic |
| AP2XII-7 | TGME49\_050070 | XII | NCLIV\_066150 | Syntenic |
| AP2XII-8 | TGME49\_050800 | XII | NCLIV\_066340 | Syntenic |
| AP2XII-9 | TGME49\_051740 | XII | NCLIV\_066800 | Syntenic |