

Supplementary Figure 1

A

Novel gene 1: Argonaute/dicer protein

***Leishmania panamensis* MHOM/COL/81/L13Chromosome 11 (Positive strand)**

Current Annotation

Gene: LPAL13_110009800

**Transcription modulator
/accessory protein**

Gene: LPAL13_110009900

MCCC2

B

Novel_1	RESWAVSAAQANARTLARVPVPVETNCFPIDLSEGRFHNHYIVSFEFLENATDMAGDMWKI	120
LPMP_110590	RESWAVSAAQANARTLARVPVPVETNCFPIDLSEGRFHNHYIVSFEFLENATDMAGDMWKI	120
LbrM.11.0360	RESWAVSAAQANARTLARVPVPVETNCFPIDLSEGRFHNHYIVSFEFLENATDMAGDMWKI	120

Novel_1	SLQNELLR <i>TIRKNRTAEK</i> <i>RT</i> RTSAEVEDLCVCTGQAILAPAKLSVEDGFSIECTRKEKVS	180
LPMP_110590	SLQNELLR <i>TIRKNRTAEK</i> <i>RT</i> RTSAEVEDLCVCTGQAILAPAKLSVEDGFSIECTRKEKVS	180
LbrM.11.0360	SLQNELLR <i>TIRKNRTAEK</i> <i>RT</i> RTSAEVEDLCVCTGQAILAPAKLSVEDGFSIECTRKEKVS	180

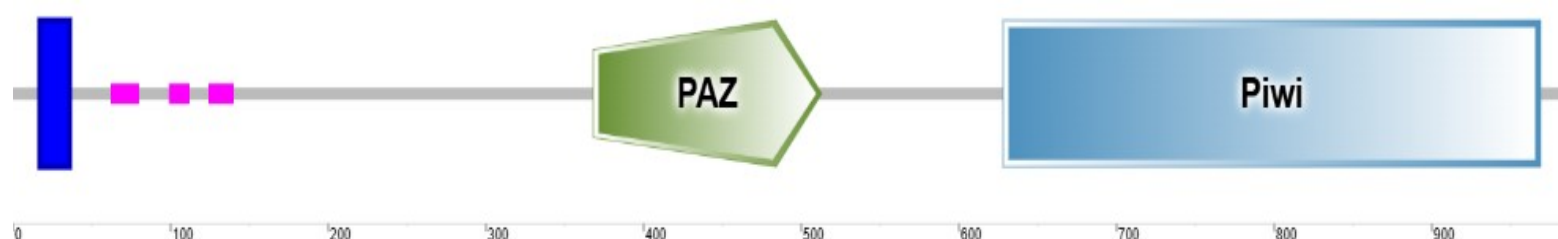
Novel_1	RDNTEERHYRVR <i>IRYDGEVSLKLPEHAQWVNKI</i> IAFGLADTYSEHIGSDYVDMKSTVERG	240
LPMP_110590	RDNTEERHYRVR <i>IRYDGEVSLKLPEHAQWVNKI</i> IAFGLADTYSEHIGSDYVDMKSTVERG	240
LbrM.11.0360	RNNTEERHYRVR <i>IRYDGEVSLKLPEHAQWVNKI</i> IAFGLADTYSEHIGSDYVDMKSTVERG	240
* : *****		
Novel_1	GDLVTMDAISLNALR <i>IVKQSGSTTAMMDVLQLDVSTK</i> ASTKTKCSDEIRRLRQONPQSFR	300
LPMP_110590	GDLVTMDAISLNALR <i>IVKQSGSTTAMMDVLQLDVSTK</i> ASTKTKCSDEIRRLRQONPQGFR	300
LbrM.11.0360	GDLVTMDAISLNALR <i>IVKQSGSTTAMMDVLQLDVSTK</i> ASTKTKCSDEMRLRLRQONPQGFR	300
***** : ***** *		
Novel_1	RAVNEALVGISVTTVFGEPTFLKVK <i>AIDENILASSPTMFK</i> TNPEETFVEYFKRKYDAIID	360
LPMP_110590	RAVNEALVGISVTTVFGEPTFLKVK <i>AIDENILASSPTMFK</i> TNPEETFVEYFKRKYDAIID	360
LbrM.11.0360	RAVNEALVGISVTTVFGEPTFLKVK <i>AIDENILASSPTMFK</i> TNPEETFVEYFKRKYDAIID	360

Novel_1	PTLPLMYCVFADRTKMSRRMPYPADSLLLNKLNEAQLSKLPILCSIYPNERIKRIKAALE	420
LPMP_110590	PTLPLMYCVFADRTKMSRRMPYPADSLLLNKLNEAQLSKLPILCSIYPNERIKRIKAALE	420
LbrM.11.0360	PTLPLMYCIFADRTKMSRRMPYPADSLLLNKLNEAQLSKLPILCSIYPNERMKRIKAALE	420
***** : ***** : *****		
Novel_1	RVLASPLMITVLQQYGVRIQPQFVKVSGRVLPAPTIYVPSGPNMFNRINTAEYTGQAGFA	480
LPMP_110590	RVLASPLMITVLQQYGVRIQPQFVKVSGRVLPAPTIYVPSGPNMFNRINTAEYTGQAGFA	480
LbrM.11.0360	RVLASPLMITVLQQYGVRIQPQFVKVSGRVLPAPTIYVPSGPNMFNRINTAEYTGQAGFA	480

Novel_1	LGLKDLQHPSQPCEFKTLLMDEYFMHGNITHWLQKYNVALPSPRKTSFDSAAQRITEGSG	540
LPMP_110590	LGLKDLQHPSQPCEFKTLLMDEYFMHGNITHWLQKYNVALPSPRKTSFDSAAQRITEGSG	540
LbrM.11.0360	LGLKDLQHPSQPCEFKTLLMDEYFMHGNITHWLQKYNVALPSPRKTSFDSAAQRITEGPG	540
***** : ***** *		
Novel_1	TFAMVKLRTEAGAYNNFKERFARGSIVSQMAVVDLTRNVPQMITQQVAAKIGQLCFVAD	600
LPMP_110590	TFAMVKLRTEAGAYNNFKERFARGSIVSQMAVVDLTRNVPQMITQQVAAKIGQLCFVAD	600
LbrM.11.0360	TFAMVKLRTEAGAYNNFKERFARSSIVSQMAVVDLTRNVPQMITQQVAAKIGQLCFVAD	600

C

Domain: PAZ and PIWI (PAZ after the proteins Piwi Argonaut and Zwiller)



Supplementary Figure 2

A

Novel gene 2: Dihydroorotase protein

***Leishmania panamensis* MHOM/COL/81/L13 Chromosome 16 (Negative strand)**

Current Annotation

Gene: LPAL13_160009700

Gene: LPAL13_160009800

AAA domain

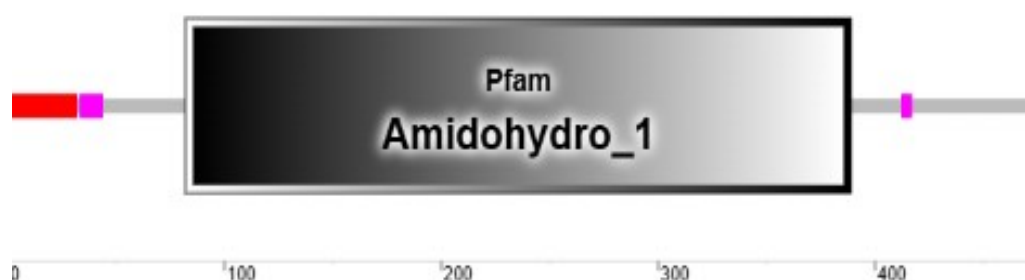
Hypothetical

B

Novel_2	MSSVPSSAPAVIQLPPLIDCHVHFREPGLLEHKANIATESTAAYHGGITSVCDMPNTIPPT	130
LPMP_160570	MSSVPSSAPAVIQLPPLIDCHVHFREPGLLEHKANIATESTAAYHGGITSVCDMPNTIPPT	60
LBRM2903_160012200	MSSVPSSAPAVIQLPPLIDCHVHFREPGLLEHKANIATESTAAYHGGITAVCDMPNTIPPT *****:*****	60
Novel_2	QSIAALADKVARAKATAHTHCHLFFFFGATAEAHLQELEELWTNPAHAELKTHCCGLKLY	190
LPMP_160570	QSIAALADKVARAKATAHTHCHLFFFFGATAEAHLQELEELWTNPAHAELKTHCCGLKLY	120
LBRM2903_160012200	QSIAALADKVARAKATAHTHCHLFFFFGATAEAHLQELEELWTNPAHAELKKHCCGLKLY *****.	120
Novel_2	LDNSTGNMKSSQPVEKSFETCGRLQIVLVTHCEESQINEAAAAQHYPDGPASHSLRRPA	250
LPMP_160570	LDNSTGNMKSSQPVEKSFETCGRLQIVLVTHCEESQINEAAAAQHYPDGPASHSLRRPA	180
LBRM2903_160012200	LDNSTGNMKSSQPVEKSFETCGRLQIVLVTHCEESQINEAAAAQHYPDGPASHSLRRPA *****	180
Novel_2	ESEVASVQEAIALARNYRTPHLHAHVSTAQSLDLVRQARAADPTLHLTCEVTPHHLFLT	310
LPMP_160570	ESEVASVQEAIALARNYRTPHLHAHVSTAQSLDLVRQARAADPTLHLTCEVTPHHLFLT	240
LBRM2903_160012200	ESEVASVQEAIALARNYRTPHLHAHVSTAQSLDLVRQARAADPTLHLTCEVTPHHLFLT *****	240
Novel_2	GDYSCCGARLKVNPPIRPPQHHEALWAGLLDGTVDICISTDHAPHTIAEKDHCGAAQPPS	370
LPMP_160570	GDYSCCGARLKVNPPIRPPQHHEALWAGLLDGTVDICISTDHAPHTIAEKDHCGAAQPPS	300
LBRM2903_160012200	GDYSCCGARLKVNPPIRPPQHHEALWAGLLDGTVDICISTDHAPHTIAEKDHCGAAQPPS *****	300
Novel_2	GMPGIEVVVPLLLTVVAGQWPHTAPKPS TLAAAEQQGRPLVVDDVVRLLHTNPNRIFQL	430
LPMP_160570	GMPGIEVVVPLLLTVVAGQWPHTAPKPS TLAAAEQQGRPLVVDDVVRLLHTNPNRIFQL	360
LBRM2903_160012200	GMPGIEVVVPLLLTVVAGQWPHTAPKPS TLAAAEQQGRPLVVDDVVRLLHTNPNRIFQL *****	360
Novel_2	RQPHTPDRIFDLDCEWTVHGKDLHSRCQWSPYEGWRLRGRAIANE	475
LPMP_160570	RQPHTPDRIFDLDCEWTVHGKDLHSRCQWSPYEGWRLRGRAIANE	405
LBRM2903_160012200	RQPHTPDRIFDLQCEWTVHGKDLHSRCQWSPYEGWRLRGRAMAKE *****:*****.*.*	405

C

Domain: Amidohydro_1

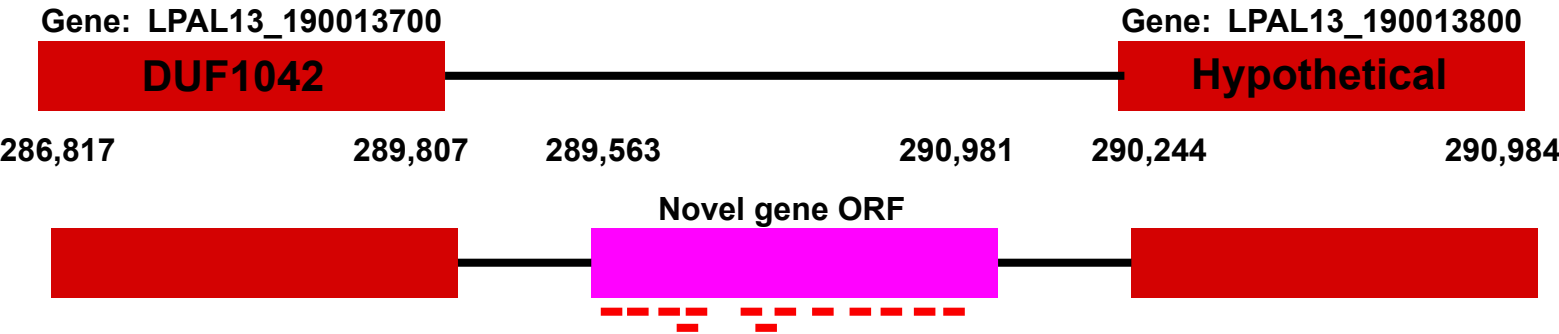


Supplementary Figure 3

A Novel gene 3: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 19 (Positive strand)

Current Annotation

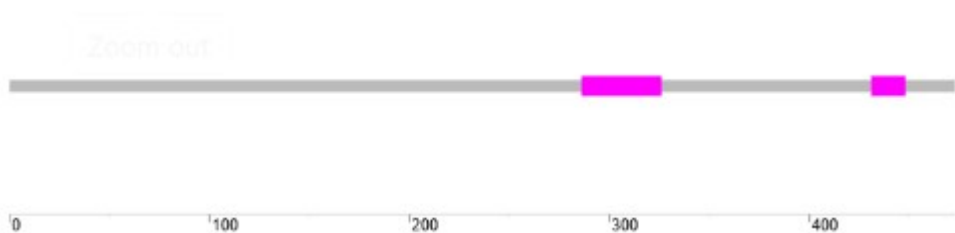


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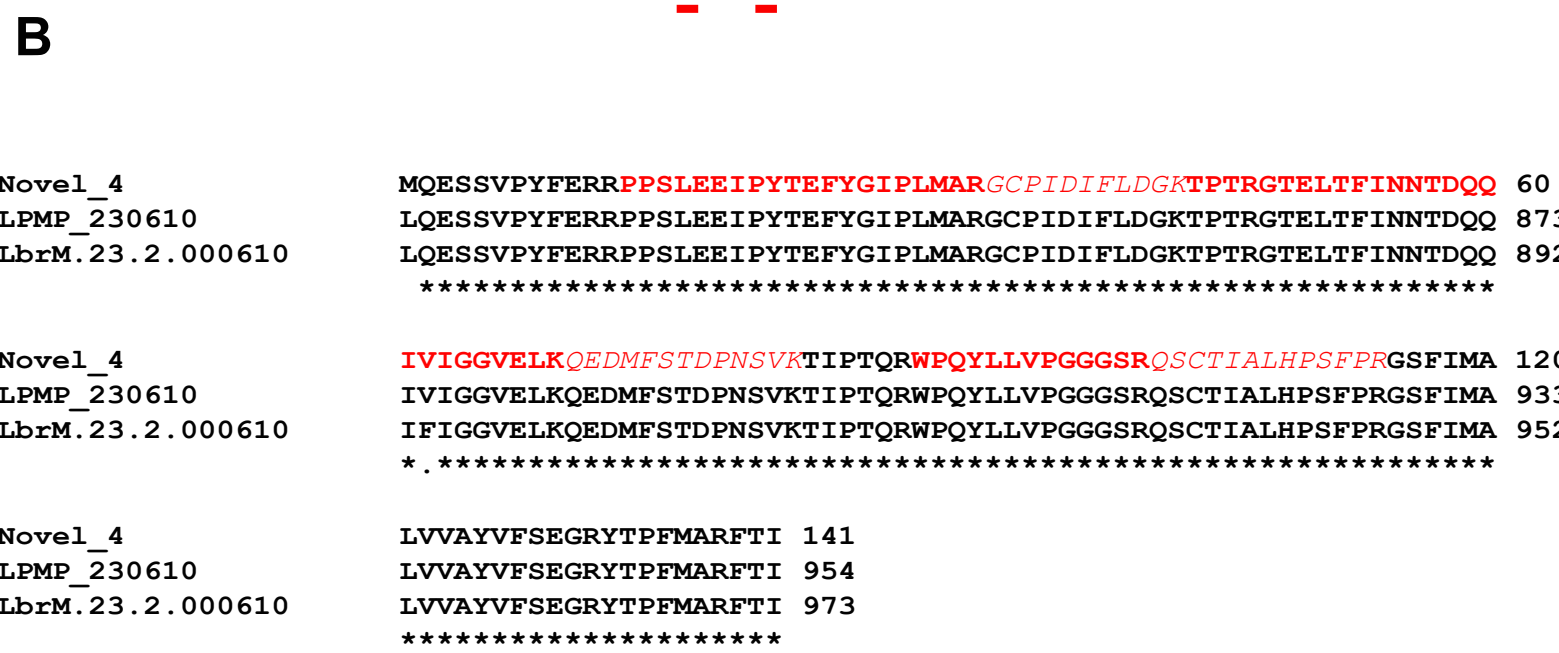
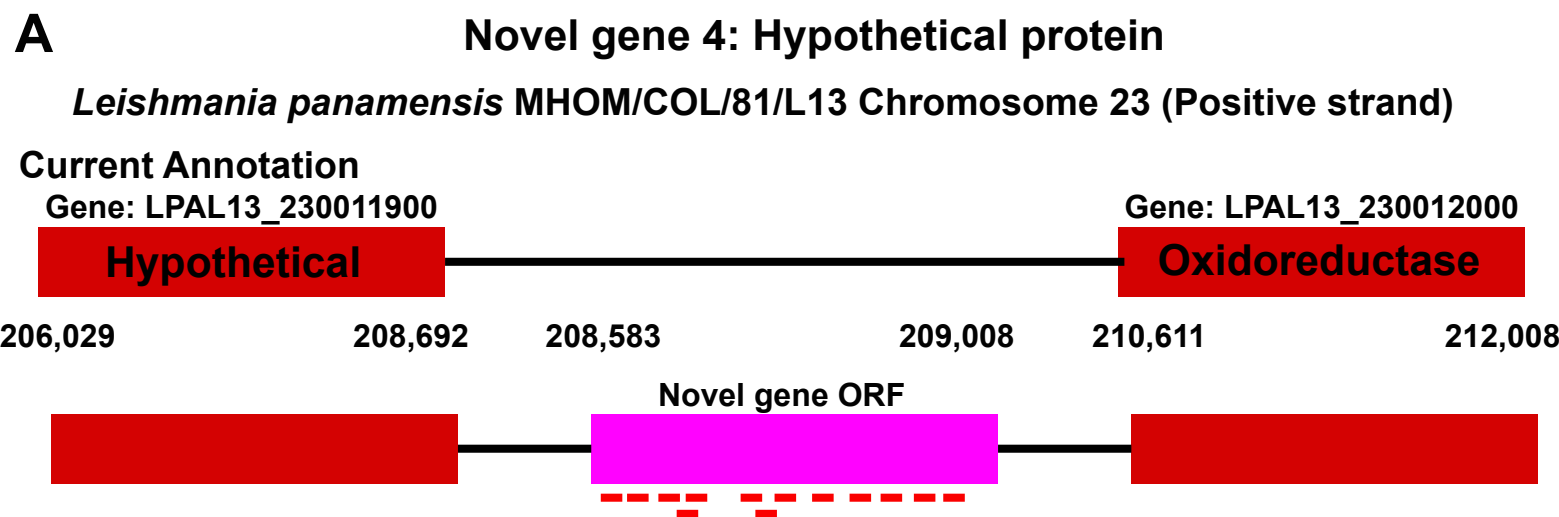
LPMP_190530	MAPRGLTFDNAVTHARDLFSHVLPPPLGSAGNQLSAPWWD	TQTTNTWECRLMVLR	LCNALL	1002
LBRM2903_190014600	MAPRGLTFDNAVTHARDLFSHVLPPPLGSAGKQLSAPWWD	TQTTNTWECRLMVLR	LCNALL	1002
Novel_3	MWRHVAWPLTTPWHARDLFSHVLPPPLGSAGNQLSAPWWD	TQTTNTWECRLMVLR	LCNALL	60
LPMP_190530	AHPLFAAAGEPSKASTEGSSDDDSAVPRSWRTIVDTAAAKCLWTFANTPSWQLQLALGVT			1062
LBRM2903_190014600	AHPLFAAAGEPSKASTEGSSDDDSAVPRSWRTIVDTAAAKCLWTFANTPSWQLQLALGVT			1062
Novel_3	AHPLFAAAGEPSKASTEGSSDDDSAVPRSWRTIVDTAAAKCLWTFANTPSWQLQLALGVT			120
LPMP_190530	AKSVDQTLTPALTNTWRQLLLGIPAASLLTQLLPYDEAPVRLRILRPLQLAEGIKYEAE			1122
LBRM2903_190014600	AKSVDQNLTPALTNTWRQLLLGIPAASLLTQLLPYDESPVRLRILRPLQLAEGIKYEAE			1122
Novel_3	AKSVDQTLTPALTNTWRQLLLGIPAASLLTQLLPYDEAPVRLRILRPLQLAEGIKYEAE			180
LPMP_190530	DGRKGPQSSARQQLTLISSTKNNRAVPLQSATSALAGKPESWTLAPAMDNGDNSRDLGTR			1182
LBRM2903_190014600	DGRKGPQSSARQQLTLISSTKNNRAVPLQSATSALAGEPEWTLAPAMDNGDNSRDLGTR			1182
Novel_3	DGRKGPQSSARQQLTLISSTKNNRAVPLQSATSALAGKPESWTLAPAMDNGDNSRDLGTR			240
LPMP_190530	ATAESALHLVWGRVLSAYAVLPLNQTWNAQGVDVAVLPPLPVSGGTAPTSSPPAALATAP			1242
LBRM2903_190014600	ATAESALHLVWGRVLSAYAVLPLNQTWNAQGVDVAVLPPLPVSGGTAPTSSPPAALATAP			1242
Novel_3	ATAESALHLVWGRVLSAYAVLPLNQTWNAQGVDVAVLPPLPVSGGTAPTSSPPAALATAP			300
LPMP_190530	ALPLLVMMAAALLSPPTTVTKTAPAAVSMDSPLGLSTSFADDVPVDIDEPNGAFWLEALRR			1302
LBRM2903_190014600	ALPLLVMMAAALLSPPTTVTTTAPAAVSMDSPLGLSTSFADDVPVDIDEPNGAFWLEALRR			1302
Novel_3	ALPLLVMMAAALLSPPTTVTKTAPAAVSMDSPLGLSTSFADDVPVDIDEPNGAFWLEALRR			360
LPMP_190530	AWPLFQACGASQVSMKQRAPRNVTEETSPQSGDDEEMAALSTGSTTVGVSAGLGVLHDDL			1362
LBRM2903_190014600	AWPLFQACGASQVSMKQRAPRNVTEETSPQSGDDEEMAALSTGSTTVGVSAGLGVLHEDL			1362
Novel_3	AWPLFQACGASQVSMKQRAPRNVTEETSPQSGDDEEMAALSTGSTTVGVSAGLGVLHDDL			420
LPMP_190530	TVVLSLFLRFADDAAVASAMAAAGNGAELCGCAIRWAEELCSDAPTAVEQPQ			1412
LBRM2903_190014600	TVVLSLFLRFADDAAVASAMAAAGNGAELCGCAIRWAEELCSDAPTAVEQPQ			1412
Novel_3	TVVLSLFLRFADDAAVASAMAAAGNGAELCGCAIRWAEELCSDAPTAVEQPQ			473

C

No domain found



Supplementary Figure 4

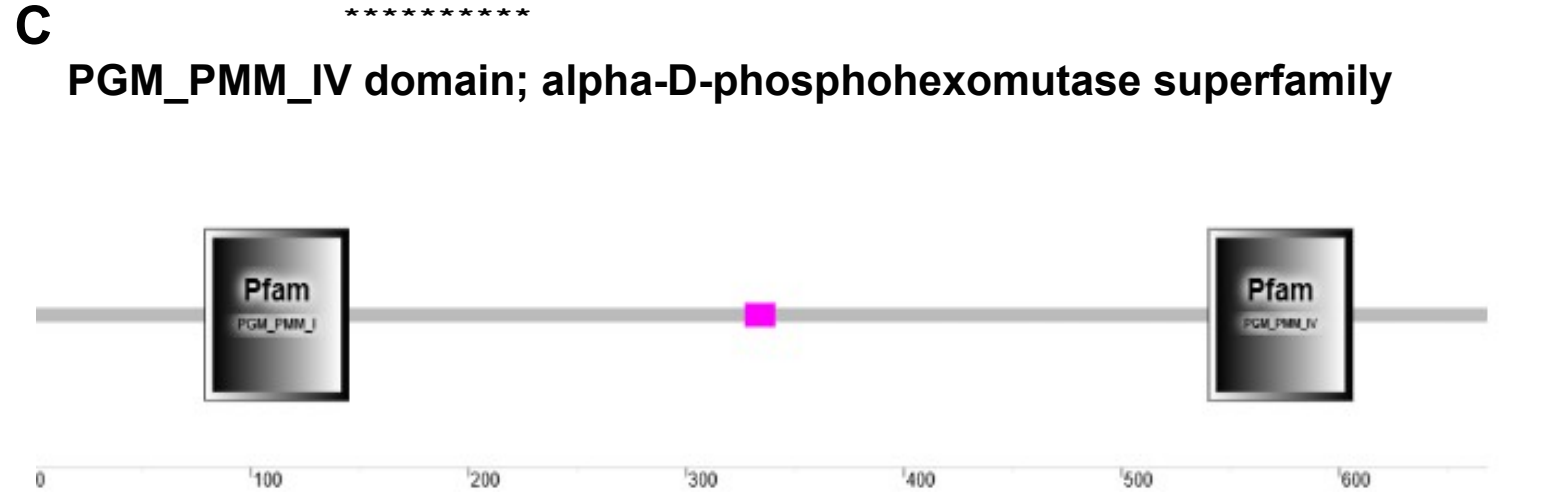
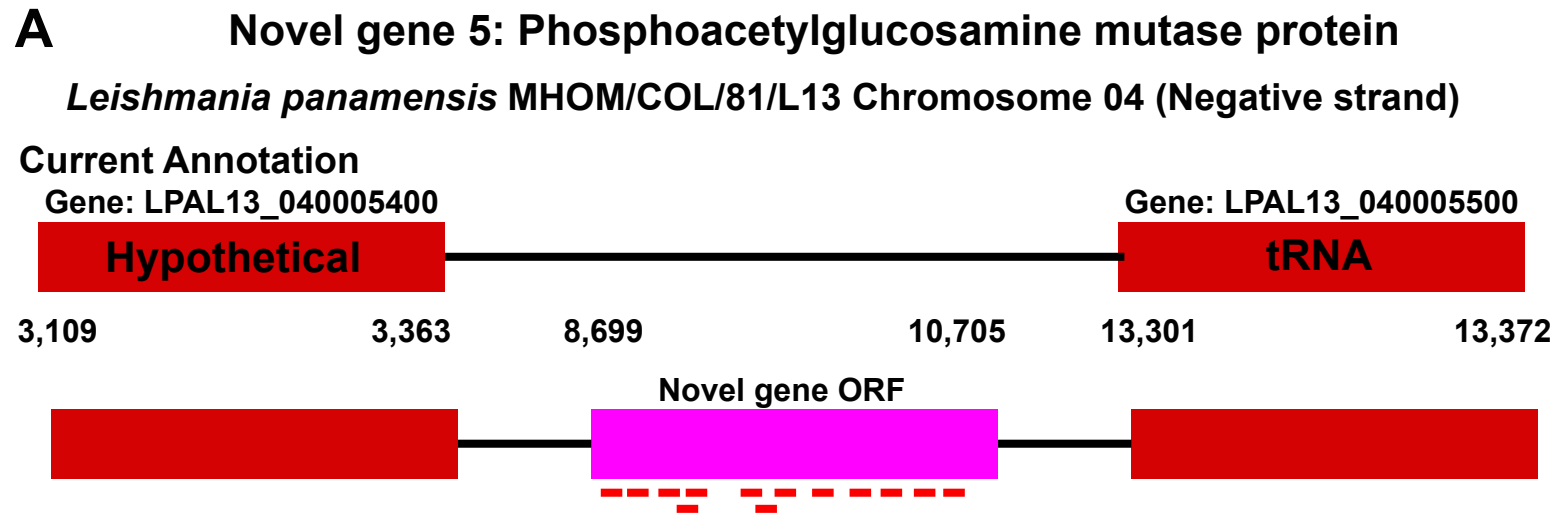


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No domain found



Supplementary Figure 5



Supplementary Figure 6

A

Novel gene 6: Lipase (class 3) protein

***Leishmania panamensis* MHOM/COL/81/L13 Chromosome 29 (Positive strand)**

Current Annotation

Gene: LPAL13_280034000

Gene: LPAL13_280034100

LRR

ADP-ribosylglycohydrolase

985,267

987,879

986,565

988,895

989,217

990,458

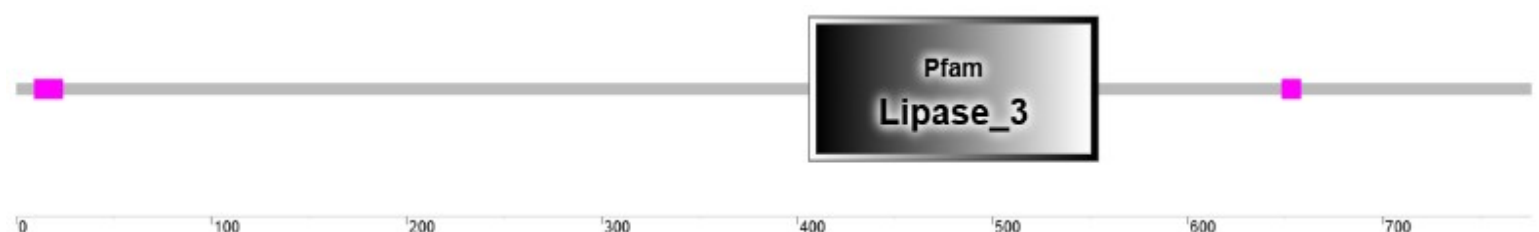
Novel gene ORF

B

Novel_6	MKKLFGSRNSANTSSPTPRTTAAAVDSNKRDELYEAAVGDGKGGLVNLKDGDMMSGSTMTDA	60
LPMP_130200	MKKLFGSRNSANTSSPTPRTTAAAVDSNKRDELYEAAVGDGKGGLVNLKDGDMMSGSTMTDA	60
LbrM.13.2.203990	MKKLFGSRNSANTSSPTPRTTAAVDPGKRDELYEAAMGDGKGGMVNKDGDMGLGSTMTDA *****:*****:*****:*****:*****:*****:*****:*****:*****	60
Novel_6	ASIYTGGRQGLDPAKRHGGSCYIGGTNGRCGTGGLSKIAACNCQTCCHCCGRFLMSPSSRRHC	120
LPMP_130200	ASIYTGGRQGLDPAKRHGGSCYIGGTNGRCGTGGLSKIAACNCQTCCHCCGRFLMSPSSRRHC	120
LbrM.13.2.203990	ASIYTGGRQGPDPAKRHGGSCYIGGTNGRCGTGGLSKIAACNCQTCCHCCGRFLMSPSSRRHC *****:*****:*****:*****:*****:*****:*****:*****:*****	120
Novel_6	RQCWRATCADCSTSVRTNDFMGGRVTLTCNFCVAPKALCFVTQMRYSYDAVGAVDLTMG	180
LPMP_130200	RQCWRATCADCSTSVRTNDFMGGRVTLTCNFCVAPKALCFVTQMRYSYDAVGAVDLTMG	180
LbrM.13.2.203990	RQCWRATCADCSTSVRTNDFMGGRVTLTCNFCVAPKALCFVTQMRYSYDMVGAVDLTMG *****:*****:*****:*****:*****:*****:*****:*****:*****	180
Novel_6	NGAVRNDDVGAKPPQANMRAAMEPCTFRWGVYALGCAIESPRRCINPSCAPLSYAEVCV	240
LPMP_130200	NGAVRNDDVGAKPPQANMRAAMEPCTFRWGVYALGCAIESPRRCINPSCAPLSYAEVCV	240
LbrM.13.2.203990	NGAGRNDDVSAKPPQPNMRAAMEPCAFRWGVYALGCAVESPRRCINPSCAPLSYAEVCV ***:*****:*****:*****:*****:*****:*****:*****:*****	240
Novel_6	RCKMPTVVMTFHDQRHIVMONTSVGKRPDANDSSVRMVEAVEDAVRSAYDNMATSR TSA	300
LPMP_130200	RCKMPTVVMTFHDQRHIVMONTSVGKRPDANDSSVRMVEAVEDAVRSAYDNMATSR TSA	300
LbrM.13.2.203990	RCKTPTVVMTFHDQRHIVMONTSMGKRPDANDSSVRMVEAVEDAVRSAYDNMATSR TPE :***:*****:*****:*****:*****:*****:*****:*****:*****	300
Novel_6	DEEEIFASALPSGNETQLFSSALSGPAVRKVLVLSVACIAGESSGTPCVSLALTDLPLY	360
LPMP_130200	DEEEIFASALPSGNETQLFSSALSGPAVRKVLVLSVACIAGESSGTPCVSLALTDLPLY	360
LbrM.13.2.203990	EEEEIFASALPSGNETQLFSSALSGPAVRKVLVLSVACIAGESSGTPCVSLALTDLPLY :*****:*****:*****:*****:*****:*****:*****:*****:*****	360
Novel_6	GRLLRPTNVTELFVFDGPGRTRFISFSSGTTTRPALHQVLGTRMVPRELWSNATMKKEN	420
LPMP_130200	GRLLRPTNVTELFVFDGPGRTRFISFSSGTTTRPALHQVLGTRMVPRELWSNATMKKEN	420
LbrM.13.2.203990	GRLLRPTNITELFTVFDGPGRTRFIAFSSGTTTRRSALHQVLGTRMVPRELWSNATMKKEL *****:*****:*****:*****:*****:*****:*****:*****:*****	420
Novel_6	VVGKVVGGKEAARKGGLNTNVATWTMRAGLLAYMAEDNIMDRVQSLALRIVKSSSEVVIC	480
LPMP_130200	VVGKVVGGKEAARKGGLNTNVATWTMRAGLLAYMAEDNIMDRVQSLALRIVKSSSEVVIC	480
LbrM.13.2.203990	VVGKVVGGKEAARKGGLNTNVATWAMRSGLLAYMAEDNIMDRVQSLVLRIVKSSSEVVIC *****:*****:*****:*****:*****:*****:*****:*****:*****	480
Novel_6	GHGVGGAAAALWLTTCLLLENTPETDRILMCVTFGAPLIASQSLSEVLVKNDLAKNFHHFV	540
LPMP_130200	GHGVGGAAAALWLTTCLLLENTPETDRILMCVTFGAPLIASQSLSEVLVKNDLAKNFHHFV	540
LbrM.13.2.203990	GHGVGGAAATWLTTCLLLENTPETDRILMCVTFGAPLIANQSLSEVLKNDLAKNFHHCV *****:*****:*****:*****:*****:*****:*****:*****:*****	540
Novel_6	YGSDMVPRLCYVDSLSSGNTAGCTLSVGLEEEAASGRRVQECTAAWVALHEEPHPNADI	600
LPMP_130200	YGSDMVPRLCYVDSLSSGNTAGCTLSVGLEEEAASGRRVQECTAAWVALHEEPHPNADI	600
LbrM.13.2.203990	YGSDMVPRLCYVDSLSSGNTAGCTFSVGLEEEATSGRRVQECTAAWVALHEEPHPNADV *****:*****:*****:*****:*****:*****:*****:*****:*****	600
Novel_6	AQAMAEIGDDNLSLTNFSSAQQAIEGPIAAPPDKKELSKQPTQPADTAARTAAATAMG	660
LPMP_130200	AQAMAEIGDDNLSLTNFSSAQQAIEGPIAAPPDKKELSKQPTQPADTAARTAAATAMG	660
LbrM.13.2.203990	AQAMAEIGDDNLSLTNFSSAQQAIEGGIDAAPPDKKESKQPAQPADTAARTAAATAMG *****:*****:*****:*****:*****:*****:*****:*****:*****	660

Lbr.
C

Lipase 3 domain



Supplementary Figure 7

A Novel gene 7: Microtubule-associated protein

***Leishmania panamensis* MHOM/COL/81/L13 Chromosome 05 (Positive strand)**

Current Annotation

Gene: LPAL13_050008300

Gene: LPAL13_050008400

Hypothetical

Protein kinase

Novel gene ORF	Novel gene ORF	Novel gene ORF	Novel gene ORF	Novel gene ORF	Novel gene ORF
102,716	103,717	107,789	108,046	113,920	116,283

Novel gene ORF

B

[illegible]

C

No domain found



Supplementary Figure 8

A Novel gene 8: Hydroxyneurosporene synthase (CrtC)

***Leishmania panamensis* MHOM/COL/81/L13 Chromosome 19 (Negative strand)**

Current Annotation

Gene: LPAL13_190010300

**ADP,ATP carrier protein 1,
mitochondrial**

Gene: LPAL13_190010400

**Complex 1 protein
(LYR family)**

136,367 137,332 137,886 140,762 148,317 150,311

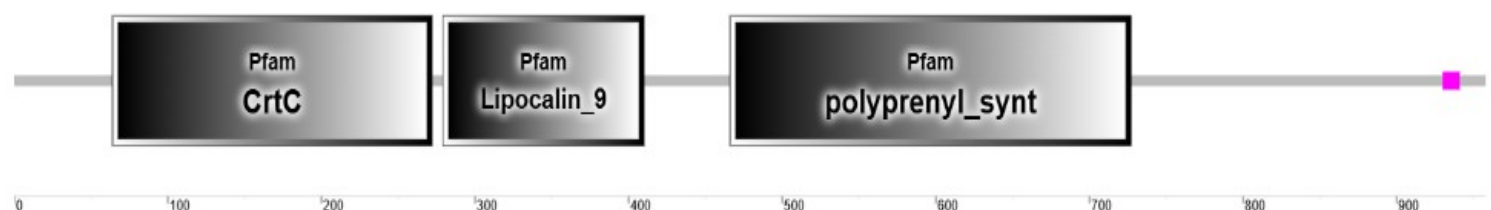
Novel gene ORF

B

Novel_8	MNEDWQPQHFPFPRGTVPNAELYDQCIDACSLQWVYANAHLMVKGEDRPSLAFFVSFFRRAE	94
LPMP_190190	MNEDWQPQHFPFPRGTVPNAELYDQCIDACSLQWVYANAHLMVKGEDRPSLAFFVSFFRRAE	60
LbrM.19.2.000530	MNEDWQPQHFPFPRGTVPNAELYDQCIDACSLQWVYANAHLMVKGEDRPSLAFFVSFFRRAE *****	60
Novel_8	ESCPITITTKHHDACMWALIDLKHQKYYADSVLDPESIEQLKLQLDPAVTGRKLEHVEAAL	154
LPMP_190190	ESCPITITTKHHDACMWALIDLKHQKYYADSVLDPESIEQLKLQLDPAVTGRKLEHVEAAL	120
LbrM.19.2.000530	ESCPITITTKHHDACMWALIDLKHQKYYADSVLDPESIEQLKLQLDPAVTGRKLEHVEAAL *****	120
Novel_8	LELLNKGRVPRPDRILKNKAVYTOQPFISITLDDSCAMRVAQKGPVRQYAFEMRNTADDVY	21
LPMP_190190	LELLNKGRVPRPDRILKNKAVYTOQPFISITLDDSCAMRVAQKGPVRQYAFEMRNTADDVY	180
LbrM.19.2.000530	LELLNKGRVPRPDRILKNKAVYTOQPFISITLDDSCAMRVAQKGPVRQYAFEMRNTADDVY *****	180
Novel_8	VRLYFKTQQQPVFVHGKDGVRVNGMYYYYFPSMRVTGEFVVVKGVKHEVKGLGWYDRELDGSV	274
LPMP_190190	VRLYFKTQQQPVFVHGKDGVRVNGMYYYYFPSMRVTGEFVVVKGVKHEVKGLGWYDRELDGSV	240
LbrM.19.2.000530	VRLYFKTQQQPVFVHGKDGVRVNGMYYYYFPSMRVTGEFVVVKGVKHEVKGLGWYDRELDGSV *****	240
Novel_8	SELGRDAKYSWSWLSLHLSNMSQLNMFHGTSGNEPDTRKMI VVETRTDGSRRHYHDDVVMQ	334
LPMP_190190	SELGRDAKYSWSWLSLHLSNMSQLNMFHGTSGNEPDTRKMI VVETRTDGSRRHYHDDVVMQ	300
LbrM.19.2.000530	SELVRDAKYSWSWLSLHLSNMSQLNMFHGTSGNEPDTRKMI VVETRTDGSRRHYHDDVVMQ *****	300
Novel_8	TKKTWSSSLVTFMQYPVEFHIC SASMGLDVTIHTVFDAQELGTVLVGGAGFYEGVVEGSGV	394
LPMP_190190	TKKTWSSSLVTFMQYPVEFHIC SASMGLDVTIHTVFDAQELGTVLVGGAGFYEGVVEGSGV	360
LbrM.19.2.000530	TKKTWSSSLVTFMQYPVEFHIC SASMGLDVTIHTVFDAQELGTVLVGGAGFYEGVVEGSGV *****	360
Novel_8	CGGEALTMRGFLECKNAAPYSSTSELLKCIGSYVHGALAEVYPLDASDSWVSENVLGRN	454
LPMP_190190	CGGEALTMRGFLECKNAAPYSSTSELLKCIGSYVHGALAEVYPLDASDSWVSENVLGRN	420
LbrM.19.2.000530	CGGEALTMRGFLECKNAAPYSSTSELLKCIGSYVHSALEEVYPLDASDSWVSENVLGRN *****	420
Novel_8	AINRGVPADKVCDTLFRPVRSMIDRGGKSWRSLVLVSCCNALSRQYFDCRRYIAVAELLH	514
LPMP_190190	AINRGVPADKVCDTLFRPVRSMIDRGGKSWRSLVLVSCCNALSRQYFDCRRYIAVAELLH	480
LbrM.19.2.000530	AINRGVPADKVCDTLFRPVRSMIDRGGKSWRSLVLVSCCNALSRQYFDCRRYIAVAELLH *****	480
Novel_8	VGSLIIDD IQDNMVRERGEKCVHVEYGVATAINAGSACYFMAPRAARIQDLPPEKASRIY	574
LPMP_190190	VGSLIIDD IQDNMVRERGEKCVHVEYGVATAINAGSACYFMAPRAARIQDLPPEKASRIY	540
LbrM.19.2.000530	VGSLIIDD IQDNMVRERGEKCVHVEYGVATAINAGSACYFMAPRAARIQDLPPEKASRIY *****	540
Novel_8	QLYFDVLLAGHAGQGLDIYGLDYLMPPKVIETGDVSTLFDALDAIHTYKTGGAVGTLCAMA	634
LPMP_190190	QLYFDVLLAGHAGQGLDIYGLDYLMPPKVIETGDVSTLFDALDAIHTYKTGGAVGTLCAMA	600
LbrM.19.2.000530	QLYFDVLLAGHAGQGLDIYGLDYLMPPKVIETGDVSTLFDALDAIHTYKTGGAVGTLCAMA *****	600
Novel_8	CVLCEAPAAELSEAVEKFGLTLGLAFQIVDDALNIRGFEKNLKEAAEDIKDGKITYPPIAIA	694
LPMP_190190	CVLCEAPAAELSEAVEKFGLTLGLAFQIVDDALNIRGFEKNLKEAAEDIKDGKITYPPIAIA	660
LbrM.19.2.000530	CVLCEAPAAELSEAVEKFGLTLGLAFQIVDDALNIRGFEKNLKEAAEDIKDGKITYPPIAIA *****	660
Novel_8	MGRGLGAADRHTLWVILRKPTKEAADIRDAVELIMKVEAITECLLIARHRLQEMWDSLDPL	754
LPMP_190190	MGRGLGAADRHTLWVILRKPTKEAADIRDAVELIMKVEAITECLLIARHRLQEMWDSLDPL	720
LbrM.19.2.000530	MGRGLGAADRHTLWVILRKPTKEAADIRDAVELIMKVEAITECLLIARHRLQEMWDSLDPL *****	720
Novel_8	LEDSFPKLMMRITLCSEFLVERTY	776
LPMP_190190	LEDSFPKLMMRITLCSEFLVERTY	742
LbrM.19.2.000530	LEDSFPKLMMRITLCSEFLVERTY *****	742

C

Domain: CrtC domain, Lipocalin 9, polyprenyl synt domain

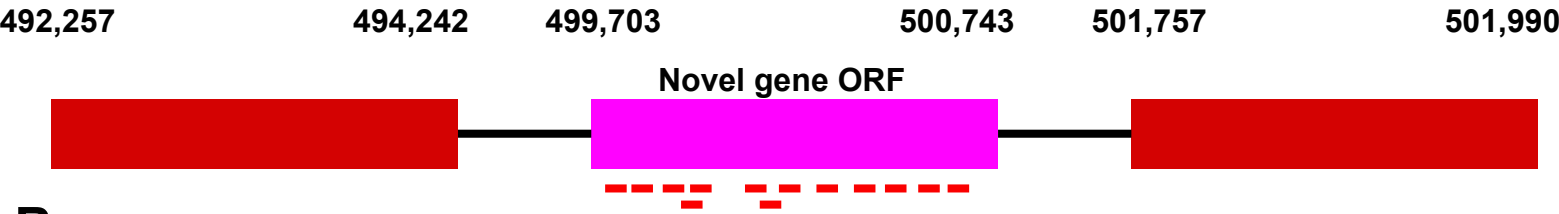


Supplementary Figure 9

A Novel gene 9: Arginase

Leishmania panamensis MHOM/COL/81/L13 Chromosome 34 (Negative strand)

Current Annotation



Novel_9	MEHHLQKYKFYKEK NMSIVLAPFSGGQPLSGVELGPDYLLKQGLQQDMEKLGWNTTLERV	76
LPMP_341340	MEHHLQKYKFYKEKNMSIVLAPFSGGQPLSGVELGPDYLLKQGLQQDMEKLGWNTTLERV	60
LbrM.34.2.001400	MEHHLQKYKFYKEKNMSIVLAPFSGGQPLSGVELGPDYLLKQGLQQDMEKLGWNTTLERV	60

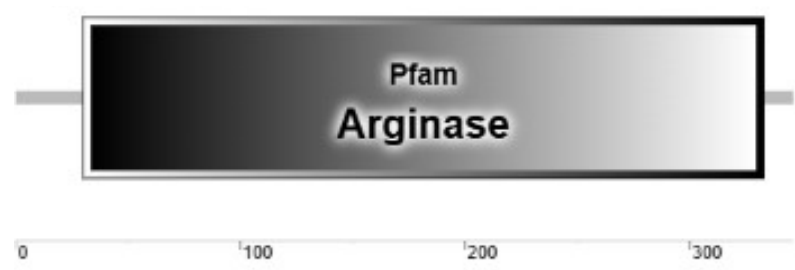
Novel_9	FDGKIVEARKANEKNDSIGHIKRPKLTSECTEKIYNSVRKVAEQGRFPLTVGGDHSIAVG	136
LPMP_341340	FDGKIVEARKANEKND SIGHIKRPKLTSECTEKIYNSVRK VAEQGRFPLTVGGDHSIAVG	120
LbrM.34.2.001400	FDGKIVEARKANEKND LIGHIKRPKLTSECTEKIYNSVRK VAEQGRFPLTVGGDHSIAVG	120

Novel_9	TVAGVLSVYPDTGVIWVDAHADINTMSGTVSGNLHGCPLSILLGLDRENIPECFSWVPQL	196
LPMP_341340	TVAGVLSVYPDTGVIWVDAHADINTMSGTVSGNLHGCPLSILLGLDRENIPECFSWVPQL	180
LbrM.34.2.001400	TVAGVLSVYPDTGVIWVDAHADINTMSGTVSGNLHGCPLSILLGLDRENIPECFSWVPQL	180

Novel_9	LKPHK IAYIGLRDVEEAEKKILHDLNIAAFSMHHVDRYGIDKVVRMIDAVAPKGTEPVM	256
LPMP_341340	LKPHKIA YIGLRDVEEAEK KILHDLNIAAFSMHHVD RYGIDKVV RM IDA VAPKGTEPVM	240
LbrM.34.2.001400	LKPHKIA YIGLRDVEEAEK KILHDLNIAAFSMHHVD RYGIDKVV RM IDA VSPKGTEPVM	240
	***** : *****	
Novel_9	VSYDVDTIDPLYVPATGTPVRGGLSLREGLFLCERIAECGRLVALDVVECNPLLAATEAH	316
LPMP_341340	VS YD VD TID PLYVPATGTPVRGGLSL REGLFLCERIAEC GRLVALDVVEC NPLLA ATEAH	300
LbrM.34.2.001400	VS YD VD TID PLYVPATGTPVRGGLSL REGLFLCERIAEC GRLVALDVVEC NPLLA ATEAH	300

Novel_9	VKDTISFGCAIARCMMGETLLYTPRKKAKL	346
LPMP_341340	V KD TISFGCAIARCMMGETLLYTP R KKAKL	330
LbrM.34.2.001400	V KD TISFGCAIARCMMGETLLYTP R KKAKL	330

C Domain: Arginase



Supplementary Figure 10

A

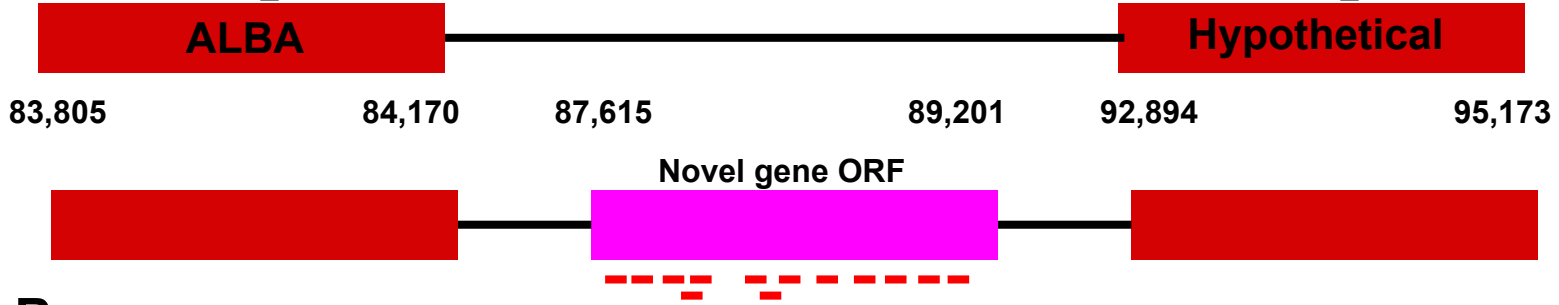
Novel gene 10: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 13 (Positive strand)

Current Annotation

Gene: LPAL13_130007700

Gene: LPAL13_130007800



B

Novel_10	MVSGLVFEFEILRGKNYPQTEDDPNPCTTQVTVAVVGALSGAILSAVQLSSIQQNSNAPFY	60
LPMP_130350	MVSGLVFEFEILRGKNYPQTEDDPNPCTTQVTVAVVGALSGAILSAVQLSSIQQNSNAPFY	60
LbrM.13.2.000280	MVSGLVFEFEILRGKNYPQTEDDPNPCTTQVTVAVVDALSGAILSAVQLSSIQQNSNAPFY	60

Novel_10	NDKLNFKLEEASENVCFISITVSEHSRRKMPEVLFYFGKQLIELSKLKSQRQFVIPLFPPEE	120
LPMP_130350	NDKLNFKLEEASENVCFISITVSEHSRRKMPEVLFYFGKQLIELSKLKSQRQFVIPLFPPEE	120
LbrM.13.2.000280	NDKLNFKLEEASENVCFISITVSEHSRRKMPEVLFYFGKQLIELSKLKSQRQFVIPLFPPEE	120

Novel_10	NNRQIEIGAEPVLVEKSRTEPLLSVSIQFTKDKILDITVDPYSDVDISGKDLSDGNSQLV	180
LPMP_130350	NNRQIEIGAEPVLVEKSRTEPLLSVSIQFTKDKILDITVDPYSDVDISGKDLSDGNSQLV	180
LbrM.13.2.000280	NNRQIEIGAEPVLVEKSGTAPLLSVSIQFTKDKILDITVDPYSDVDISGKDLSDGNSQLV	180

Novel_10	PEGNQYVWLRLKSDKKWTNSYQCELLVWVRSRAPLEAEPQGNTKPRKGTTGGMGGVAGEV	240
LPMP_130350	PEGNQYVWLRLKSDKKWTNSYQCELLVWVRSRAPLEAEPQGNTKPRKGTTGGMGGVAGEV	240
LbrM.13.2.000280	PEGNQYVWLRLKSDKKWTNSYQCELLVWVRSRAPLEAEPQGNTKPRKGTTGGMGGVAGEV	240

Novel_10	DSARTLGDIIITKKWCCHRTHQVLTRICLTAEKYGKKITDLTFTPREEIEFRTNKKERCVL	300
LPMP_130350	DSARTLGDIIITKKWCCHRTHQVLTRICLTAEKYGKKITDLTFTPREEIEFRTNKKERCVL	300
LbrM.13.2.000280	DSARTLGDIIITKKWCCHRTHQVLTRICLTAEKYGKKITDLTFTPKEEIEFRTNKKERCVL	300

Novel_10	LERICEEKLKYAGSNRLQDWLNRIWILFVTGVDNDPAGPRALSYEVRKAVHDAQFTEEDA	360
LPMP_130350	LERICEEKLKYAGSNRLQDWLNRIWILFVTGVDNDPAGPRALSYEVRKAVHDAQFTEEDA	360
LbrM.13.2.000280	LERICEEKLKYAGSNRLQDWLNRIWILFVTGVDNDPAGPRALSYEVRKAVHDAQFTEEDA	360

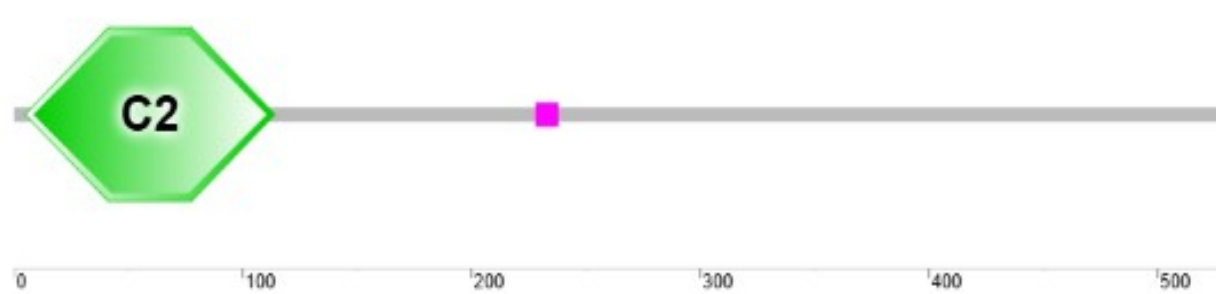
Novel_10	IILQACLLFSFIPSLKYEVCQALSESDYQVSPSEKRRELGTGFEASQCMVTPSQRLFTHVF	420
LPMP_130350	IILQACLLFSFIPSLKYEVCQALSESDYQVSPSEKRRELGTGFEASQCMVTPSQRLFTHVF	420
LbrM.13.2.000280	IILQACLLFSFIPSLKYEVCQALSESDYQVSPSEKRRELGTGFEASQCMVTPSQRLFTHVF	420

Novel_10	IFFVGPLLDLTLEAEIVKAAAEFKPAIWDAQORIAEGAKSTIGHHRRNNDGSIVKGNIGIR	480
LPMP_130350	IFFVGPLLDLTLEAEIVKAAAEFKPAIWDAQORIAEGAKSTIGHHRRNNDGSIVKGNIGIR	480
LbrM.13.2.000280	IFFVGPLLDLTLEAEIVKAAAEFKPAIWDAQORIAEGAKSTIGHHRRNNDGSIVKGNIGIR	480

Novel_10	IDHLDKLGHRKQTPRFV	497
LPMP_130350	IDHLDKLGHRKQTPRFV	497
LbrM.13.2.000280	IDHLDKLGHRKQTPRFV	497

C

Domain: Protein kinase C conserved region 2 (CaB)



Supplementary Figure 11

A Novel gene 11: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 34 (Positive strand)

Current Annotation

Gene: LPAL13_340045200

Gene: LPAL13_340045300

Hypothetical

Sperm-tail PG-rich repeat

1,386,660 1,387,736 1,390,209 1,392,971 1,393,746 1,395,176

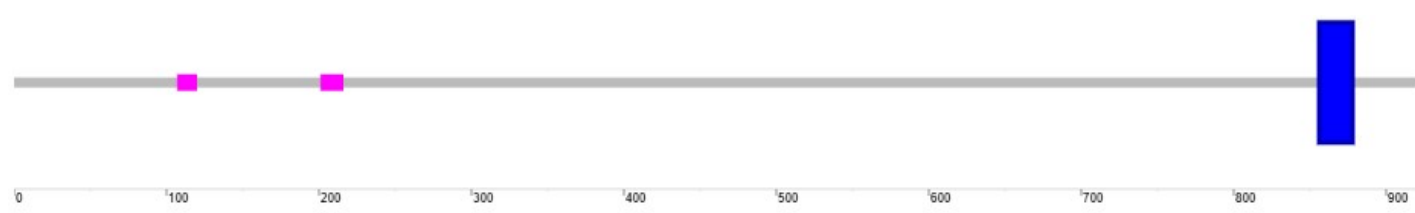
Novel gene ORF

B

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Novel_11      MMDFRDVAAEEQIRGFLEYFDRVNYPLQPLTTETKSFFGRFFGGNGFISFCDLLFGPYYE 130
LPMP_343790   MMDFRDVAAEEQIRGFLEYFDRVNYPLQPLTTETKSFFGRFFGGNGFISFCDLLFGPYYE 60
LbrM.34.2.003900 MMDFRDVAAEEQIRGFLEYFDRVNYPLQPLTTETKSFFGRFFGGNGFISFCDLLFGSYYE 60
*****
Novel_11      KYPAEDEMCMWDYANIAPTCKSLAVTLLGLIHPSSAFISTLEALSIPSTTFGARLKKMWKN 190
LPMP_343790   KYPAEDEMCMWDYANIAPTCKSLAVTLLGLIHPSSAFISTLEALSIPSTTFGARLKKMWKN 120
LbrM.34.2.003900 KYPAEDEMCMWDYANIAPTCKSLAVTLLGLIHPSSAFISTLEALSIPSTTFGARLKKMWKN 120
*****
Novel_11      SPAARSTAYYLLDPLLLALHPQFLKLMGEPADSNLHTLPRSRCHPILLVPEWDDPPIVTRR 250
LPMP_343790   SPAARSTAYYLLDPLLLALHPQFLKLMGEPADSNLHTLPRSRCHPILLVPEWDDPPIVTRR 180
LbrM.34.2.003900 SPAARSTAYYLLDPLLLALHPQFLKLMGEPADSNLHTLPRSRCHPILLVPEWDDPPIVTRR 180
*****
Novel_11      ESSQQQIMTSLPCLPMGYFLFRLLLFGMKRVQRNSTDEFLAWRKNANVVTWLWGAKDRLSS 310
LPMP_343790   ESSQQQIMTSLPCLPMGYFLFRLLLFGMKRVQRNSTDEFLAWRKNANVVTWLWGAKDRLSS 240
LbrM.34.2.003900 ESSQQQIMTSLPCLPMGYFLFRLLLFGMKRVQRNSTDEFLAWRKNANVVTWLWGAKDRLSS 240
*****
Novel_11      AFYKTIPTDMPFYAQLLQSYIQIYVSAALPRHLSSNTNIADISWTTNDATASVLILAPEL 370
LPMP_343790   AFYKTIPTDMPFYAQLLQSYIQIYVSAALPRHLSSNTNIADISWTTNDATASVLILAPEL 300
LbrM.34.2.003900 AFYKTIPTDMPFYAQLLQSYIQIYVSAALPRHLSSNTNIADISWTTNDATASVLILAPEL 300
*****
Novel_11      LAHRELLQPISETDRLSCKNPEALAQILFVVPLYTRMIYAMSEESSSSPFMDCAAITPHD 430
LPMP_343790   LAHRELLQPISETDRLSCKNPEALAQILFVVPLYTRMIYAMSEESSSSPFMDCAAITPHD 360
LbrM.34.2.003900 LAHRELLQPISETDRLSCKNPEALAQILFVVPLYTRMIYAMSEESSSSPFMDCAAITPHD 360
*****
Novel_11      YAVSSSCKAQTDIENIRKTLYRNSLTVLRECFLSLELEPYCKNAHFTYCLELWAVLMNPF 490
LPMP_343790   YAVSSSCKAQTDIENIRKTLYRNSLTVLRECFLSLELEPYCKNAHFTYCLELWAVLMNPF 420
LbrM.34.2.003900 YAVSSSCKAQTDIENIRKTLYRNSLTVLRECFLSLELEPYCKNAHFTYCLELWAVLMNPF 420
*****
Novel_11      EKQQKVTPSQYVAQHFESFGFLMVDVLNMIVKSSFVYSMAESGATVLKKCFLLMSQDPVI 550
LPMP_343790   EKQQKVTPSQYVAQHFESFGFLMVDVLNMIVKSSFVYSMAESGATVLKKCFLLMSQDPVI 480
LbrM.34.2.003900 EKQQKVTPSQYVAQHFESFGFLMVDVLNMIVKSSFVYSMAESGATVLKKCFLLMSQDPVI 480
*****
Novel_11      TLLAEINASPSSHAVAETLARHFEVLNWVGS DGNIQLPNLHGTTTCSLAARAYVSLEKLI 610
LPMP_343790   TLLAEINASPSSHAVAETLARHFEVLNWVGS DGNIQLPNLHGTTTCSLAARAYVSLEKLI 540
LbrM.34.2.003900 TLLAEINASPSSHAVAETLARHFEVLNWVGS DGNIQLPNLHGTTTCSLAARAYVSLEKLI 540
*****
Novel_11      TDDVTEVMQRDLKETLSLMGCIFFPGIVQFLDIWRSSAKATIKNPKYVPTPAMAVVRPLTE 670
LPMP_343790   TDDVTEVMQRDLKETLSLMGCIFFPGIVQFLDIWRSSAKATIKNPKYVPTPAMAVVRPLTE 600
LbrM.34.2.003900 TDDVTEVMQRDLKETLSLMGCIFFPGIVQFLDIWRSSAKATIKNPKYVPTPAMAVVRPLTE 600
*****
Novel_11      SEKSRFFRGKGKHQKVFQAKGLVLPPIRNGHIPGNRDATLQTSRLNEIPALLGLSRLLDIAI 730
LPMP_343790   SEKSRFFRGKGKHQKVFQAKGLVLPPIRNGHIPGNRDATLQTSRLNEIPALLGLSRLLDIAI 660
LbrM.34.2.003900 SEKSRFFRGKGKHQKVFQAKGLVLPPIRNGHIPGNRDATLQTSRLNEIPALLGLSRLLDIAI 660
*****
Novel_11      ARSLEKYYSSSTIPQCDRGHNLWLTYSKNYACTHHAREPAIWECAICETLYGSCCRGLPCR 790
LPMP_343790   ARSLEKYYSSSTIPQCDRGHNLWLTYSKNYACTHHAREPAIWECAICETLYGSCCRGLPCR 720
LbrM.34.2.003900 VRSLEKYYSSSTIPQCDRGHNLWLTYSKNYACTHHAREPAIWECAICETLYGSCCRGLPCR 720
*****
```

C

Domain: Transmembrane region



Supplementary Figure 12

A

Novel gene 12: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 20 (Positive strand)

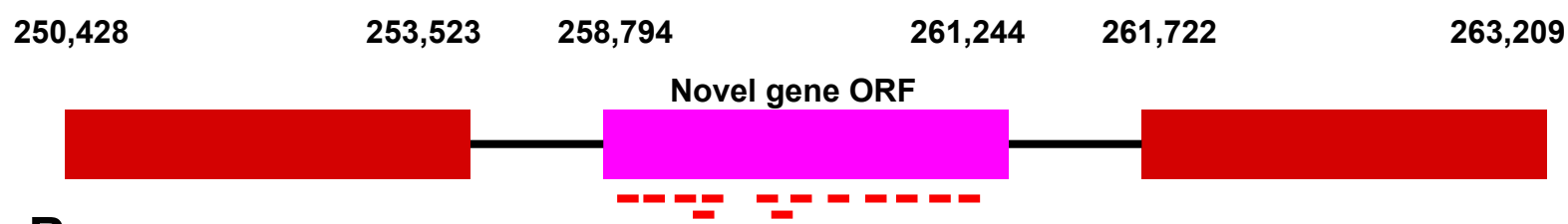
Current Annotation

Gene: LPAL13_200011500

Flagellar attachment
zone protein

Gene: LPAL13_340045300

Hypothetical

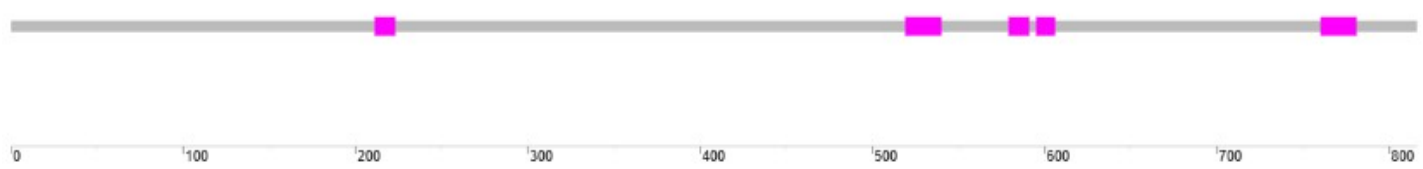


B

LPMP_200740	MFQKRAVMLLSAQWRPHSEQLKLWIIGSASDVTTLSLARDYVNNLDVGSVLQTFEDGLEL	60
LbrM.20.2.000640	-----MLLSAQWRPHSEQLKLWIIGSASDVTTLSLARDYVNNLDVGSVLQTFEDGLEL	53
Novel_12	MFQKRAVMLLSAQWRPHSEQLKLWIIGSASDVTTLSLARDYVNNLDVGSVLQTFEDGLEL	60
LPMP_200740	TGILPVIKYPLGTHTFSTKLSAHFEASAGELSASELHQLASSISLSPENLDYYDATLSTPG	120
LbrM.20.2.000640	TGILPVIKYPLGTHTFSTKLSAHFEASAGELSASELHQLASSISLSPENLDYYDATLSTPG	113
Novel_12	TGILPVIKYPLGTHTFSTKLSAHFEASAGELSASELHQLASSISLSPENLDYYDATLSTPG	120
LPMP_200740	VIAAIRCCCLQRADNSELIAFARPFWRQCEQALQVSTGLASLVTQITADELAFRLSTSSDK	180
LbrM.20.2.000640	VIAAIRCCCLQRADNSELIAFARPFWRQCEQALQVSTGLASLVTQITADELAFRLSTSSDK	173
Novel_12	VIAAIRCCCLQRADNSELIAFARPFWRQCEQALQVSTGLASLVTQITADELAFRLSTSSDK	180
LPMP_200740	ATFFDITLMEGLPLEQKGMGLVKHLQSATEELEKADLLDLLERIAAPRNSQRYATWGMA	240
LbrM.20.2.000640	ATFFDITLMEGLPLEQKGMGLVKHLQSATEELEKADLLDLLERIAAPRNSQRYATWGMA	233
Novel_12	AAFFDITLMEGLPLEQKGMGLVKHLQSATEELEKADLLDLLERIAAPRNSQRYATWGMA	240
LPMP_200740	VQKALIEKGGVTDANCFEVFKMLMTGTIIDDSICRQICKASVCIGSERTLEVLNWRDS	300
LbrM.20.2.000640	VQKALIEKGGVTDANCFEVFKMLMTGTIIDDSICRQICKASVCIGSERTLEVLNWRDS	293
Novel_12	VQKALIEKGGVTDANCFEVFKMLMTGTIIDDSICRQICKASVCIGSERTLEVLNWRDS	300
LPMP_200740	NSTTCSGSTSLEDVQAALQRHIRVQLEQSQPETSTVEYLEWVLCLSFFSQTDASSLLSRA	360
LbrM.20.2.000640	NSTTCSGSTSLEDVQAALQRHIRVQLEQSQPETSTVEYLEWVLCLSFFSQTDASSLLSRA	353
Novel_12	NSTTCSGSTSLEDVQAALQRHIRVQLEQSQPETSTVEYLEWVLCLSFFSQTDASSLLSRA	360
LPMP_200740	VTSGRLSGELSAKETAVVCDVMISTCVIPHSLLSAIRRSVESNELSORASVHALYILQRS	420
LbrM.20.2.000640	VTSGRLSGELSAKETAVVCDVMISTCVIPHSLLSAIRRSVESNELSORASVHALYILQRS	413
Novel_12	VTSGRLSGELSAKETAVVCDVMISTCVIPHSLLSAIRRSVESNELSORASVHALYILQRS	420
LPMP_200740	GIKASPTLIKRAIGRAGARLVAAC TLKKSVDDELFPDRALLVAGLCFVDDEQQPVLLRR	480
LbrM.20.2.000640	GIKASPTLIKRAIGRAGARLVAAC TLKKSVDDELFPDRALLVAGLCFVDDEQQPVLLRR	473
Novel_12	GIKASPTLIKRAIGRAGARLVAAC TLKKSVDDELFPDRALLVAGLCFVDDEQQPVLLRR	480
LPMP_200740	IVESQEVSLSAAMCFLRHAGQATTNSSRWVRKTALSRVLRSASSCSAEELSLVLSALSDDL	540
LbrM.20.2.000640	IVESQEVSLSAAMCFLRHAGQATTNSSRWVRKTALSRVLRSASSCSAEELSLVLSALSDDL	533
Novel_12	IVESQEVSLSAAMCFLRHAGQATTNSSRWVRKTALSRVLRSASSCSAEELSLVLSALSDDL	540
LPMP_200740	GVRDATAFQRVLEELKRKAPRTEDVVVAAKAARNLRLTSLLEQSELIESLSHIASVSSDD	600
LbrM.20.2.000640	GVRDATAFQRVLEELKRKAPRTEDVVVAAKAARNLRLTSLLEQSELIESLSHIASVSSDD	593
Novel_12	GVRDATAFQRVLEELKRKAPRTEDVVVAAKAARNLRLTSLLEQSELIESLSHIASVSSDD	600
LPMP_200740	LLVLLSCCTAKQRQALLLFPDVTALNQISLADSTTSDLVLLFTFLSSQDGKRAEVVAEL	660
LbrM.20.2.000640	LLVLLSCCTAKQRQALLLFPDVTALNQISLADSTTSDLVLLFTFLSSQDGKRAEVVAEL	653
Novel_12	LLVLLSCCTAKQRQALLLFPDVTALNQISLADSTTSDLVLLFTFLSSQDGKRAEVVAEL	660
LPMP_200740	QTREPVERGALSADDVLAAFESVDSSQEEVENLGRVLRIRAVQNCGESHLMRLLRCASRYSK	720
LbrM.20.2.000640	QTREPVERGALSADDVLAAFESVDSSQEEVENLGRVLRIRAVQNCGESHLMRLLRCASRYSK	713
Novel_12	QTREPVERGALSADDVLAAFESVDSSQEEVENLGRVLRIRAVQNCGESHLMRLLRCASRYSK	720
LPMP_200740	VPKTFEFLAGKPIISAANEKRLSPVNASAWLNFYVNNQIRDDSVGRSLLSLLSRAQSRSP	780
LbrM.20.2.000640	VPKTFEFLAGKPIISAANEKRLSPVNASAWLNFYVNNQIRDDSVGRSLLSLLSRAQSRSP	773
Novel_12	VPKTFEFLAGKPIISAANEKRLSPVNASAWLNFYVNNQIRDDSVGRSLLSLLSRAQSRSP	780

C

No domain found



Supplementary Figure 13

A

Novel gene 13: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 34 (Negative strand)

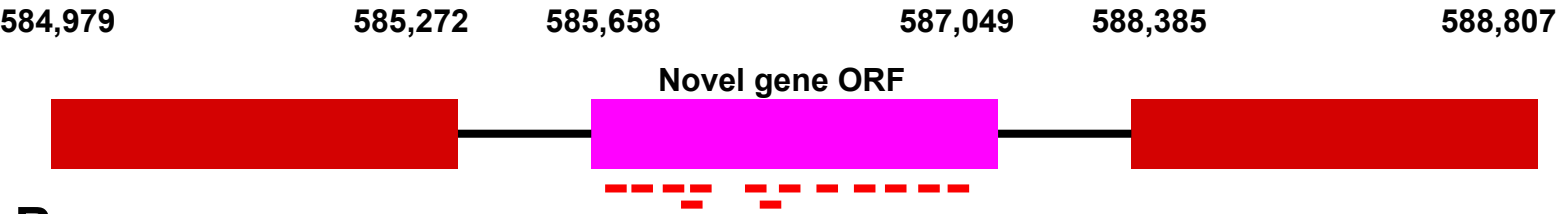
Current Annotation

Gene: LPAL13_340021900

Gene: LPAL13_340022000

Fdynein-associated roadblock

Hypothetical

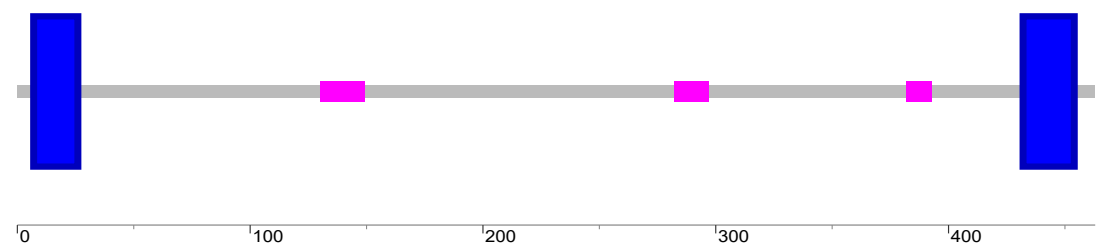


B

Novel_13	MSSQTSRLVVLAIGVLLFMALDVKGLK LAFISSGTPSDLLQIASIVRAAYQRNHSATVLV	60
LPMP_341600	MSSQTSRLVVLAIGVLLFMALDVKGLK LAFISSGTPSDLLQIASIVRAAYQRNHSATVLV	60
LBRM2903_340022900	MSSQTSRLVVLAIGVLLFMALDVKGLK LAFISSGTPSDLLQIASIVRAAYQRNHSATVLV	60
Novel_13	DARELGCKD VFGNAVCTPVICSQEGCQYKSADQSRALLATLRKRSFPPDVIVA AVFLYE	120
LPMP_341600	DARELGCKD VFGNAVCTPVICSQEGCQYKSADQSRALLATLRKRSFPPDVIVA AVFLYE	120
LBRM2903_340022900	DARELGCKD VFGNAVCTPVICSQEGCQYKSADQSRALLATLRKRSFPPDVIVA AVFLYE	120
Novel_13	ADRISEHLGVPLVIVSSSSNNVPSIR STSFHPLPFDMWGRFPLLNTVISAIRGFSASVWD	180
LPMP_341600	ADRISEHLGVPLVIVSSSSNNVPSIR STSFHPLPFDMWGRFPLLNTVISAIRGFSASVWD	180
LBRM2903_340022900	ADRISEHLGVPLVIVSSSSNNVPSIR STSFHPLPFDMWGRFPLLNTVISAIRGFSASVWD	180
Novel_13	LTSSGAPQDTQMARHIITQGIPGIDIVDPICPNVHPIGF FRGDNEVLAKSSFV GIDAYIE	240
LPMP_341600	LTSSGAPQDTQMARHIITQGIPGIDIVDPICPNVHPIGF FRGDNEVLAKSSFV GIDAYIE	240
LBRM2903_340022900	LTSSGAPQDTQMARHIITQGIPGIDIVDPICPNVHPIGF FRGDNEVLAKSSFV GIDAYIE	240
Novel_13	SCRGRFIYASFLVESSVHGQQVYSALQAVANETNSCILWYMSSGELSSLRFRRSSEGQRV	300
LPMP_341600	SCRGRFIYASFLVESSVHGQQVYSALQAVANETNSCILWYMSSGELSSLRFRRSSEGQRV	300
LBRM2903_340022900	SCRGRFIYASFLVESSVHGQQVYSALQAVANETNSCILWYTTS GELSSLRFRRSSEGQRV	300
Novel_13	KVTDDTFAAPFYVLHRHNP IVVLSNNVKEIMYDAILAESPIVYVGSN RLSCFQLWNAGIA	360
LPMP_341600	KVTDDTFAAPFYVLHRHNP IVVLSNNVKEIMYDAILAESPIVYVGSN RLSCFQLWNAGIA	360
LBRM2903_340022900	KVTDDTFAAPFYVLHRHNP IVVLSNNVKEIMYDAILAESPIVYVGSN RLSCFQLWNAGIA	360
Novel_13	ACASTPRTADVVSAILS SVYNKSSVRERVRAARRMG FLMGGAQKAVEVTE LAAAMGTGNMD	420
LPMP_341600	ACASTPRTADVVSAILS SVYNKSSVRERVRAARRMG FLMGGAQKAVEVTE LAAAMGTGNMD	420
LBRM2903_340022900	ACASTPRTADVVSAILS SVYNKSSVRERVRAARRMG FLMGGAQKAVEVTE LAAALGTGNMD	420
Novel_13	FVCDQNVLLSPYGYD STIALSISFVLGV LFFF TLRCCRFPLKW	463
LPMP_341600	FVCDQNVLLSPYGYD STIALSISFVLGV LFFF TLRCCRFPLKW	463
LBRM2903_340022900	FVCDQNVLLSPYGYD STIALSISFVLGV LFFF TLRCCRFPLKW	463

C

Transmembrane region



Supplementary Figure 14

A

Novel gene 14: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 11 (Positive strand)

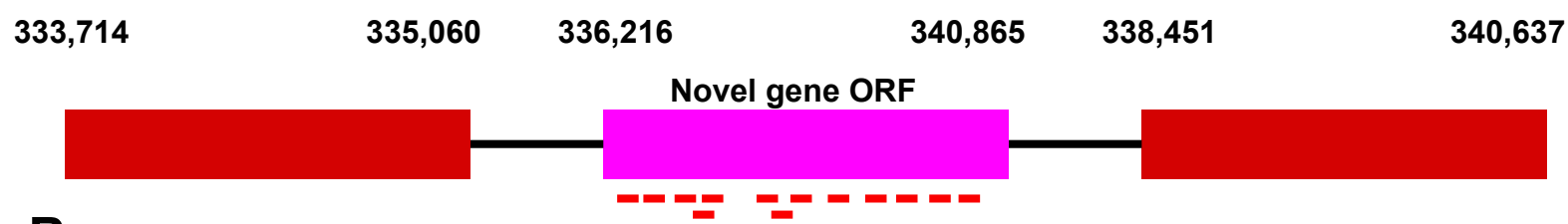
Current Annotation

Gene: LPAL13_110013200

Gene: LPAL13_110013300

Hypothetical

Hypothetical



B

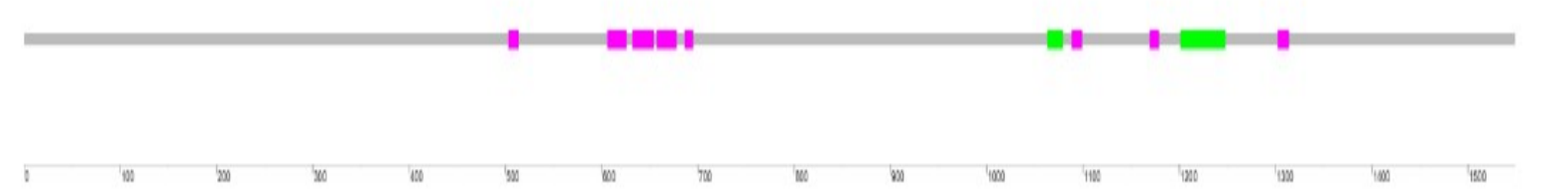
Novel_14	MAHHCHTNMNALSLDCLSCYEEQSRSMKSIDLNYLQQKSNECIQNRCAPSHLHMNYRCHQ	73
LPMP_110950	MAHHCHTNMNALSLDCLSCYEEQSRSMKSIDLNYLQQKSNECIQNRCAPSHLHMNYRCHQ	60
LbrM.11.2.000740	MAHHCHTNMNALSLDCLSCYEEQARMKSIDLNYLQQKSNECIQNRCAPSHLHMNYTCHQ	60
	*****:*****	***
Novel_14	AAEAVAQGSTFPRFVRNGSLPARQSELTTTRVAAQRNYLAYCRKPLECAGHISAQHHSKPP	133
LPMP_110950	AAEAVAQGSTFPRFVRNGSLPARQSELTTTRVAAQRNYLAYCRKPLECAGHISAQHHSKPP	120
LbrM.11.2.000740	AAEAVAQGSTFPRFVRNGSLPARQSELTTTRVAAQRNYLAYCRKPLECAGHISAQHHSKPS	120
	*****.	
Novel_14	SAVPLQQRSMDSVLFDEERFHEDTVFVNGEPVRVSKGYQSEHAIFYGLDSPTAAILDAVSA	193
LPMP_110950	SAVPLQQRSMDSVLFDEERFHEDTVFVNGEPVRVSKGYQSEHAIFYGLDSPTAAILDAVSA	180
LbrM.11.2.000740	SAVPLQQRSMDSVLFDEERFHEDTVFVNGEPVRVSKGYQSEHAIFYGLDSPTAAILDAVSA	180

Novel_14	ANADHVGKSNVAVFSLGAVRKGTPESTRQOSITASRVAEGRRQISGLSGTSKEQHTIGSASS	253
LPMP_110950	ANADHVGKSNVAVFSLGAVRKGTPESTRQOSITASRVAEGRRQISGLSGTSKEQHTIGSASS	240
LbrM.11.2.000740	ANADHVGKSNVAVFSLGAVRKGTPESTRQOSITASRVAEGRRQISGLSGTSKEQHTIGSASS	240

Novel_14	ERYCDYLSSSGRHYRVFHLHKRQLPPIEERKKAEGLSLYAKGAKEVTGTEKARNSESVEG	313
LPMP_110950	ERYCDYLSSSGRHYRVFHLHKRQLPPIEERKKAEGLSLYAKGAKEVTGTEKARNSESVEG	300
LbrM.11.2.000740	ERYCDYLSSSGRHYRVFRLHKRQLPPIEERKKAEGLSLYAKGAKEVTGTEKARNRESVEG	300
	*****:*****	*****
Novel_14	DSEIRGLCEQSKDQVAARCYNSGRKSAENDKSLLPVRRGRIAKPYKLHEALEDARSKHTT	373
LPMP_110950	DSEIRGLCEQSKDQVAARCYNSGRKSAENDKSLLPVRRGRIAKPYKLHEALEDARSKHTT	360
LbrM.11.2.000740	DSEIRGLCEQSKDQVAARCYNSGRKSAENDKSLLPVRRGRITKPYKLHEALEDARSKHTT	360
	*****:*****	
Novel_14	PRRPGAASHQNKSATKSTYRSCGRSLTPMSPVNYVPCSSAPLLLFPSRKPLEDIVDTCA	433
LPMP_110950	PRRPGAASHQNKSATKSTYRSCGRSLTPMSPVNYVPCSSAPLLLFPSRKPLEDIVDTCA	420
LbrM.11.2.000740	PRQPGAASHQNKSATKSTYRSCGRSLTPMSPVNYVPCSSAPLLLFPSRKPLEDIVDTCA	420

C

No domain found



Supplementary Figure 15

A

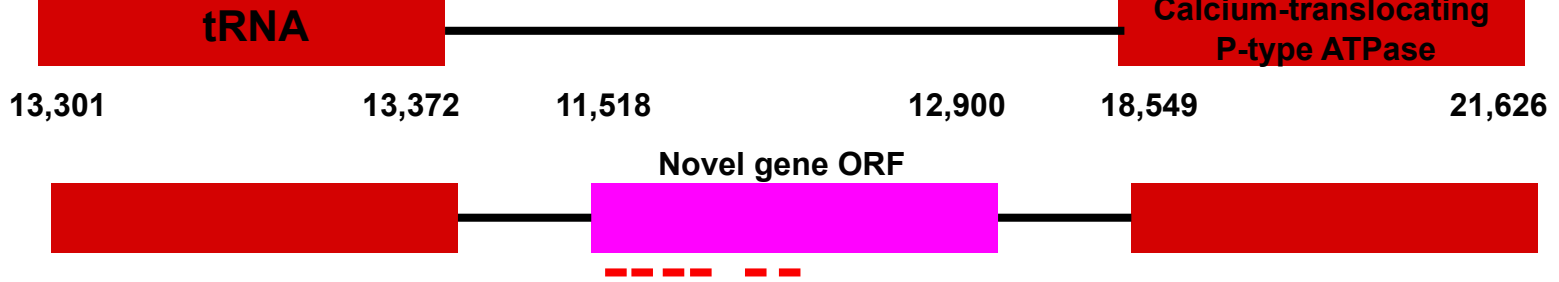
Novel gene 15: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 04 (Negative strand)

Current Annotation

Gene: LPAL13_040005500

Gene: LPAL13_040005600

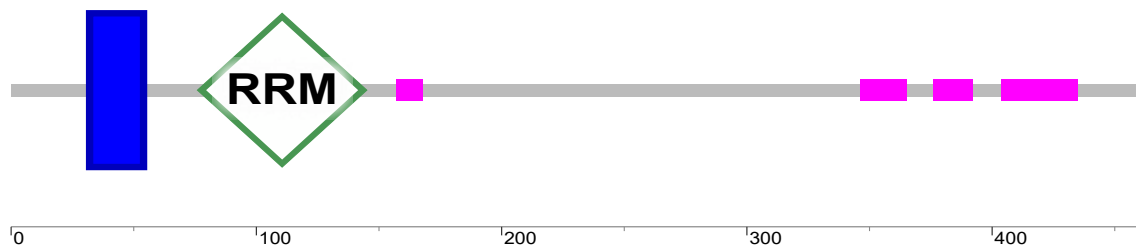


B

Novel 15	MSSSTR HNFFLSGIAR HVNSDVVEDH FREYGS GIRL QLQORDKNGLSLGYGWLTFDHVDVE	128
LPMP_070880	MSSSTRHNFFLSGIARHVNSDVVEDH FREYGS GIRLQLQORDKNGLSLGYGWLTFDHVDVE	60
Novel 15	R VVAV Q HEL G SG P V M LR Y QQSKDSLKSEPGAPSPPPAQSPTNVSVQHGRPQEYSPHHK R Y	188
LPMP_070880	RVVAVQHELGGSPVMLRYQQSKDSLKSEPGAPSPPPAQSPTNVSAQHGRPQEYSPHHKRY	120
Novel 15	REETIK TQACATSRIVQIRKEVMSPK VQ T S PA E Q S LS K EIWNPETAPSSISTTPVVPLQH	248
LPMP_070880	REETIKTQACATSRIVQIRKEVMSPKVQTS PAEQ SL SKEI WNPETAPSSISTTPVVPLQH	180
Novel 15	SFSSFPPDSAAQTVFVCIPLNICPGAFLRDRPVFCCMLDPSQVGK L S I L A TPKQHIGVPE	308
LPMP_070880	SFSSFPPDSAAQTVFVCIPLNICPGAFLRDRPVFCCMLDPSQVGKLSILATPKQHIGVPE	240
Novel 15	HHSTQVSYITSDITQQQRCTTVNANSARAPPQAVFSMP S LS S GLPPSLPPPPGPPPPQST	368
LPMP_070880	HHSTQVSYITSDITQQQRCTTVNANSARAPPQAVFSMP S LS S GLPPSLPPPPGPPPPQST	300
Novel 15	AYARETVPPPPRPPHPPPPSGPPPTQRC L PKTLRDP P PPGPPPSLGLPPPPGPPPPSGPP	428
LPMP_070880	AYARETVPPPPRPPHPPPPSGPPPTQRC L PKTLRDP P PPGPPPSLGLPPPPGPPPPSGPP	360
Novel 15	PLSAPPSRRY	438
LPMP_070880	PLSAPPSRRY	370

C

RNA recognition motif, transmembrane region



Supplementary Figure 16

A

Novel gene 16: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 34 (Positive strand)

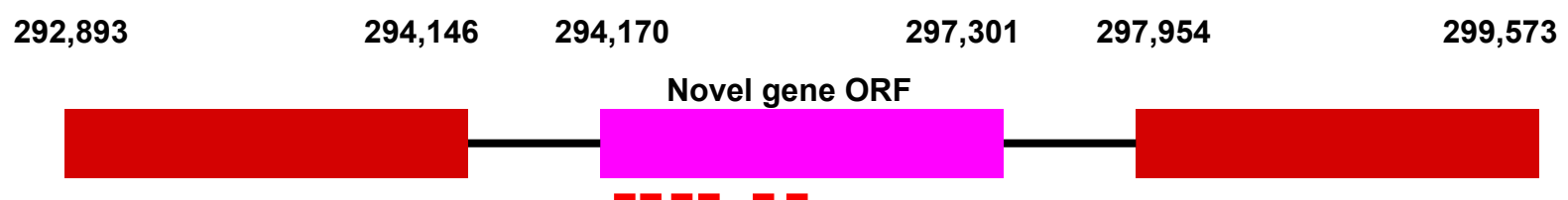
Current Annotation

Gene: LPAL13_340013400

Gene: LPAL13_040005600

Hypothetical

Hypothetical

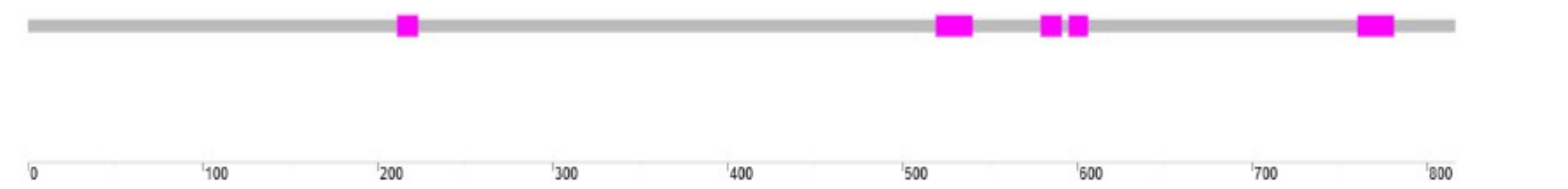


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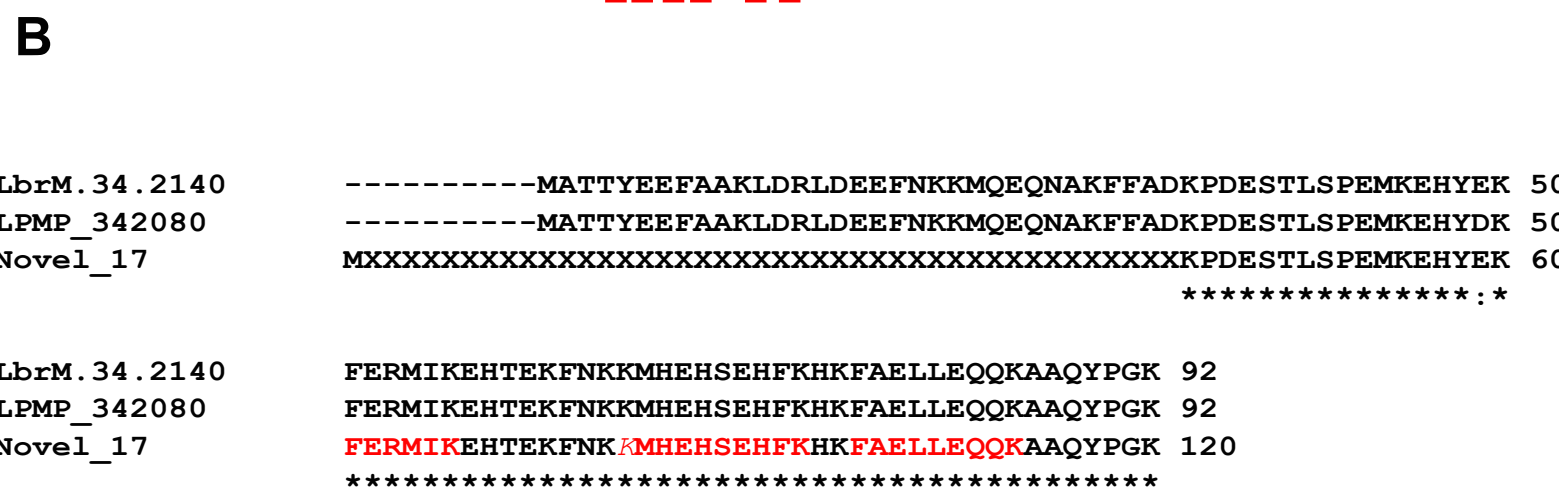
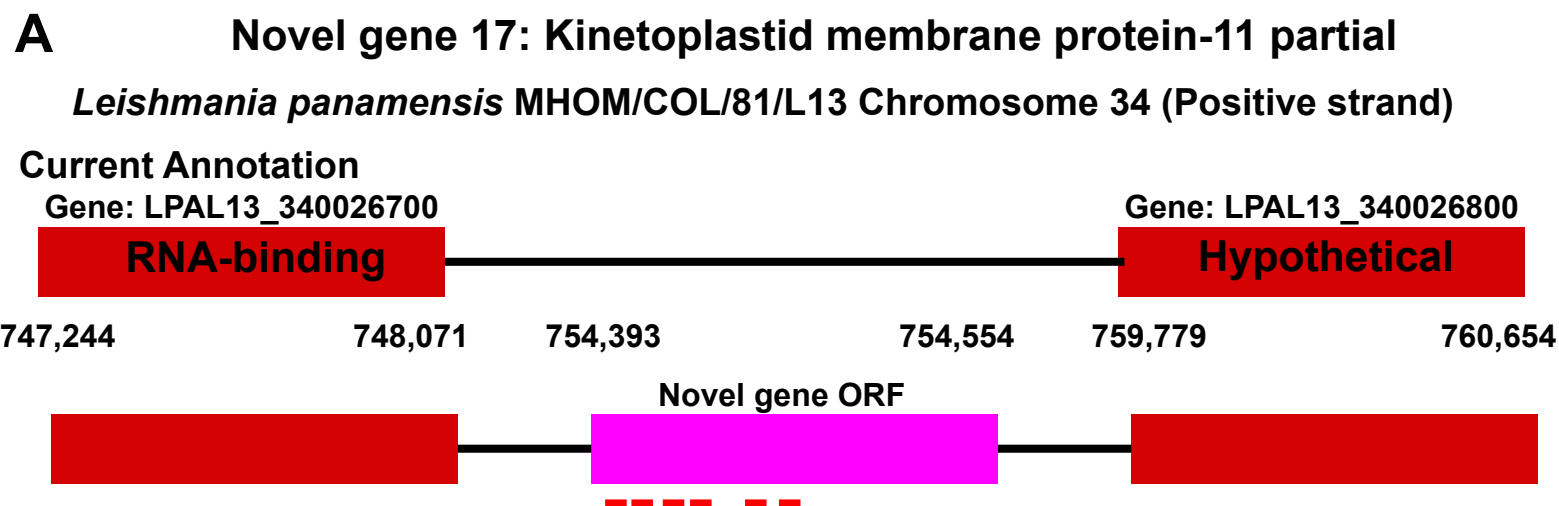
Novel 16	MKQNHKPKQRHRLIHLTTNMADEFTAIERHTLHVLKETSNAIKMPTDQETDRPADILAQLSE	161
LbrM_34.2.000860	-----MADFTAIERHTLHVLKETSNAIKMPTDQETDRPADILAQLSE	
LPMP_340800	MKQNHKPKQRHRLIHLTTNMADEFTAIERHTLHVLKETSNAIKMPTDQETDRPADILAQLSE	60
Novel 16	KLK MNEPVRVSVQGDESGFQKYE CTTPVGKYILALAASTDCSASAVQDQITELKCKLLVS	221
LbrM_34.2.000860	KLKMNEPVRVSVQGDESGFQKYECTTPVGKYILALAASTDCSASAVQDQITELKCKLLVS	
LPMP_340800	KLKMNEPVRVSVQGDESGFQKYECTTPVGKYILALAASTDCSASAVQDQITELKCKLLVS	120
Novel 16	FPERLANVVAQNRS APFLFDAVLYWERLCDTVLLFYFAKGWHANNCEGVQIDTKHLLNIL	281
LbrM_34.2.000860	FPERLANVVAQNRSAPFLFDAVLYWERLCDTVLLFYFAKGWHANNCEGVQIDTKHLLNIL	
LPMP_340800	FPERLANVVAQNRSAPFLFDAVLYWERLCDTVLLFYFAKGWHANNCEGVQIDTKHLLNIL	180
Novel 16	KVLIVSLLRRGKSDIMMRRLGMLPRYLFGGERFCER FAHLM EAAFEASKKPHFSLKSWRR	341
LbrM_34.2.000860	KVLIVSLLRRGKSDIMMRRLGMLPRYLFGGERFCERFAHLM	
LPMP_340800	KVLIVSLLRRGKSDIMMRRLGMLPRYLFGGERFCERFAHLM	240
Novel 16	IEVSSTWHHWNSSLFRLVEKRTEIKTAIISAVSMLVNSVPDDNSTSLASNIFNTVCVHQL	401
LbrM_34.2.000860	IEVSSTWHHWNSSLFRLVEKRTEIKTAIISAVSMLVNSVPDDNSTSLASNIFNTVCVHQL	
LPMP_340800	IEVSSTWHHWNSSLFRLVEKRTEIKTAIISAVSMLVNSVPDDNSTSLASNIFNTVCVHQL	300
Novel 16	SVAGPTRATARTIINDFLPTVAGAADVNDALTHRE QECFS ALFRKWKENKEFVTSADLSLN	461
LbrM_34.2.000860	SVAGPTRATARTIINDFLPTVAGAADVNDALTHRE	
LPMP_340800	SVAGPTRATARTIINDFLPTVAGAADVNDALTHRE	360
Novel 16	VGLLHPIMYALLYMHKKKPAGNRFPDAFVGPLLGTGTIRLDSTRGSELNRNSAMTVAAAYT	521
LbrM_34.2.000860	VGLLHPIMYALLYMHKKKPAGNRFPDAFVGPLLGTGTIRLDSTRGSELNRNSAMTVAAAYT	
LPMP_340800	VGLLHPIMYALLYMHKKKPAGNRFPDAFVGPLLGTGTIRLDSTRGSELNRNSAMTVAAAYT	420
Novel 16	ALFVTSPDGVAPLLQDAHFSAAALNEWMKKEPGTPHYAATMNTGMQMKDTPVSTVGLEMRV	581
LbrM_34.2.000860	ALFVTSPDGVAPLLQDAHFSAAALNEWMKKEPGTPHYAATMNTGMQMKDTPVSTVGLEMRV	
LPMP_340800	ALFVTSPDGVAPLLQDAHFSAAALNEWMKKEPGTPHYAATMNTGMQMKDTPVSTVGLEMRV	480
Novel 16	STLMEMFPLDPDEEYHFFSMPSSHRAEKVIAAQCIHSPVSLIQLDSTEAPLPSFGQOKYA	641
LbrM_34.2.000860	STLMEMFPLDPDEEYHFFSMPSSHRAEKVIAAQCIHSPVSLIQLDSTEAPLPSFGQOKYA	
LPMP_340800	STLMEMFPLDPDEEYHFFSMPSSHRAEKVIAAQCIHSPVSLIQLDSTEAPLPSFGQOKYA	540
Novel 16	KDELYDHVPILTSIRECYNALVGVGRGPNAQLHEIQEATEGGLRGLSDAFSKL QQRIGSD	701
LbrM_34.2.000860	KDELYDHVPILTSIRECYNALVGVGRGPNAQLHEIQEATEGGLRGLSDAFSKL	
LPMP_340800	KDELYDHVPILTSIRECYNALVGVGRGPNAQLHEIQEATEGGLRGLSDAFSKL	600
Novel 16	LFNAVSK ETGVLVPVLLPTLISLSIYSPEEQKQRLIQRLRYKIIIVGLIVLNPPLALNQLGE	761
LbrM_34.2.000860	LFNAVSKETGVLVPVLLPTLISLSIYSPEEQKQRLIQRLRYKIIIVGLIVLNPPLALNQLGE	
LPMP_340800	LFNAVSKETGVLVPVLLPTLISLSIYSPEEQKQRLIQRLRYKIIIVGLIVLNPPLALNQLGE	660
Novel 16	MVYRSNYGIYQRTELIKAIGEAAASVLSQVEVVPEPVAATMAASEQIVVTKKCKQIYPPPI	821
LbrM_34.2.000860	MVYRSNYGIYQRTELIKAIGEAAASVLSQVEVVPEPVAATMAASEQIVVTKKCKQIYPPPI	
LPMP_340800	MVYRSNYGIYQRTELIKAIGEAAASVLSQVEVVPEPVAATMAASEQIVVTKKCKQIYPPPI	720
Novel 16	THELPDRKTSILVNEGKHTRRWGNNAVVARQNRTLKHYHNLLGADVATAFVAVFLHKLDA	881
LbrM_34.2.000860	THELPDRKTSILVNEGKHTRRWGNNAVVARQNRTLKHYHNLLGADVATAFVAVFLHKLDA	
LPMP_340800	THELPDRKTSILVNEGKHTRRWGNNAVVARQNRTLKHYHNLLGADVATAFVAVFLHKLDA	780

C

No domain found



Supplementary Figure 17



C Kinetoplastid membrane protein-11 partial



Supplementary Figure 18

A

Novel gene 18: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 23 (Negative strand)

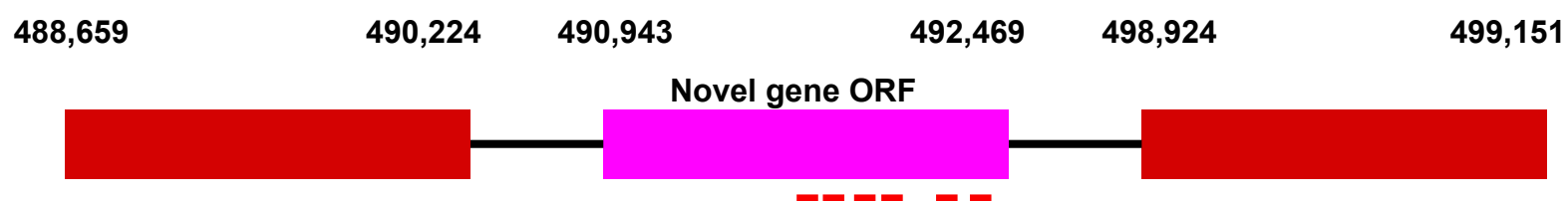
Current Annotation

Gene: LPAL13_230020100

Gene: LPAL13_230020200

RNA-binding protein

Hypothetical



B

Novel_18	MRHNSCCYEPTHLIILLTSLRSFTSFSPLRLRVHLEFCVAASNMMSTTTTAQTELASVCKNIQ	60
LPMP_231280	-----MSTTTTAQTELASVCKNIQ	18
LbrM.23.2.001240	-----MSTTTTAQTELASVCKNIQ	18

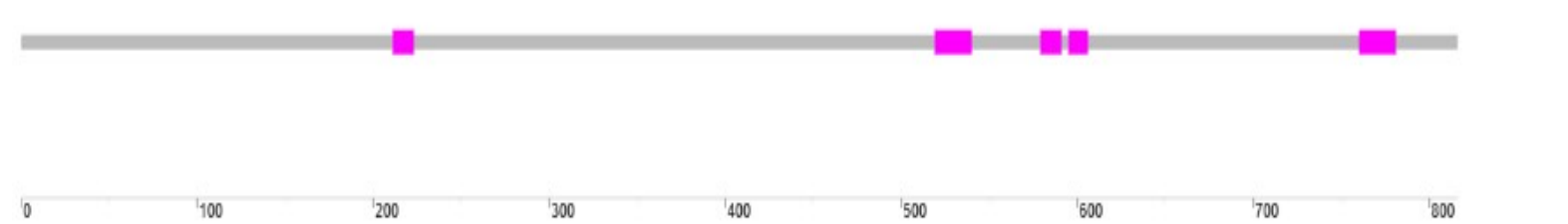
Novel_18	SVLSKIKETSAKRHDQEORLISSVASAKCLAGSFSVYPPTNDEVVQVLKSSGEEEQVEVE	120
LPMP_231280	SVLSKIKETSAKRHDQEORLISSVASAKCLAGSFSVYPPTNDEVVQVLKSSGEEEQVEVE	78
LbrM.23.2.001240	SALSKIQETSAKRHDQEORLISSVASAKCLAGIFSVPPTNDEVVQVLKSSGEEEQVEVE	78
	*.****:*****	
Novel_18	CLQRYRRFVEAKRDCFTAVEADMCTVSKEITNIFGANKEKTEVPTNGDYRLGVEENQCEAE	180
LPMP_231280	CLQRYRRFVEAKRDCFTAVEADMCTVSKEITNIFGANKEKTEVPTNGDYRLGVEENQCEAE	138
LbrM.23.2.001240	CLQRYRQFVEAKRDCFTAVEADMCTVSKEITNIFGANKEKTEVPTNGDYRLGVEENQCEAE	138
	*****:*****	
Novel_18	LLHLFRLWRTVVCLHDWVLAPLLKRGIDVPRYELQCTNADEERSYARELALRNAVADTQA	240
LPMP_231280	LLHLFRLWRTVVCLHDWVLAPLLKRGIDVPRYELQCTNADEERSYARELALRNAVADTQA	198
LbrM.23.2.001240	LLHLFRLWRTVVCLHDVLPAPLLKRGIDVPRYELQCTNADEERSYARELALRNAVADTQA	198
	*****:*****	
Novel_18	MLFEVQKRLRDLTMEAEALRITAESTTLLRFQDSATVLISDERDEALAASIROGLHELQQ	300
LPMP_231280	MLFEVQKRLRDLTMEAEALRITAESTTLLRFQDSATVLISDERDEALAASIROGLHELQQ	258
LbrM.23.2.001240	MLFEVQKRLRDLTMEAEALRITAESTTLLRFQDSATVLISDERDEALAASIROGLHELQQ	258

Novel_18	SSERLRRKKVAVDEDAASLMEKVRNLNSQIAVCNCSMEAFSONSREAADDANGLVNAKTD	360
LPMP_231280	SSERLRRKKVAVDEDAASLMEKVRNLNSQIAVCNCSMEAFSONSREAADDANGLVNAKTD	318
LbrM.23.2.001240	SSERLRRKKVAVDEDAASLMEKVRNLNSQIAVCNCSIEAFSONSREAADDANGLVRAKTD	318
	*****:****:*****.****	
Novel_18	ALRTLHRKAQEYAAEQELLERDIGNYEQLCSLLMERAANDDSKVKLTVAAEQAYHSLSE	420
LPMP_231280	ALRTLHRKAQEYAAEQELLERDIGNYEQLCSLLMERAANDDSKVKLTVAAEQAYHSLSE	378
LbrM.23.2.001240	ALRTLHRKAQEYAAEQELLERDIGNYEQLCSLLMERAANDDSKVKLTVAAEQAYHSLSE	378

Novel_18	EKIQQEKLTRVQLSIESLENEVRDASTERQRIIGEVQYLSKLVSNATVVKRVLARAGEEC	480
LPMP_231280	EKIQQEKLTRVQLSIESLENEVRDASTERQRIIGEVQYLSKLVSNATVVKRVLARAGEEC	438
LbrM.23.2.001240	EKIQQEKLTRVQLSIESLESEVRDASTERQRIIGEVQYLSKLVSNATVVKRVLARAGEEC	438
	*****.*****	
Novel_18	DPVRKVTVIDDYLRFVQKARLERHGFYE	508
LPMP_231280	DPVRKVTVIDDYLRFVQKARLERHGFYE	466
LbrM.23.2.001240	DPVRKVTVIDDYLRFVQKARLERHGFYE	466

C

No domain found



Supplementary Figure 19

A

Novel gene 19: U2 small nuclear ribonucleoprotein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 35 (Negative strand)

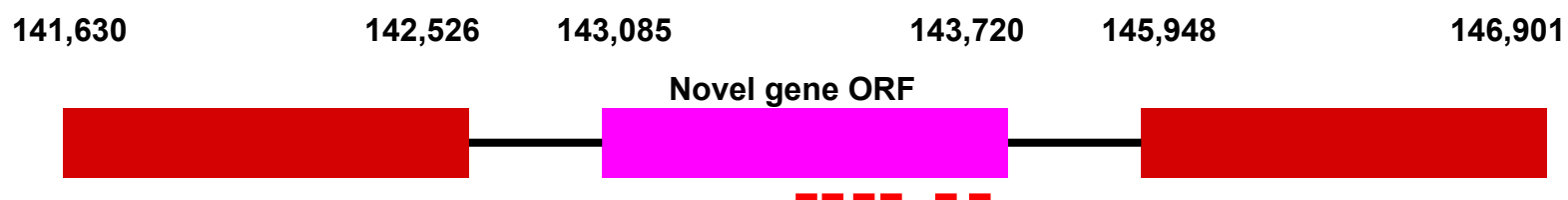
Current Annotation

Gene: LPAL13_350010600

Gene: LPAL13_350010700

Protein phosphatase 2C

Ubiquitin

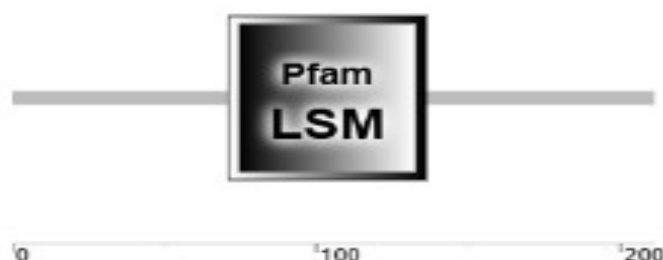


B

Novel_19	MTDTSNCKEDIPSSVVF ALHLR VT VETVEGDLYKGK LAD FDVSRGNIELVDVR HQAKDS	60
LPMP_350540	MTDTSNCKEDIPSSVVF ALHLR VTVETVEGDLYKGK LAD FDVSRGNIELVDVR HQAKDS	60
LbrM.35.2.000630	MTDTSNCKKDIPSSVVF ALHLR VTVETVEGDLYKGK LAD FDVSRGNIELVDVR HQAKDS	60
	*****:*****	
Novel_19	TYRFYERVTVRGSNIR IILLPQEMKAAPSLQWRQDSVQQDLTK SLKRTHFLR SVMPPPRP	120
LPMP_350540	TYRFYERVTVRGSNIR IILLPQEMKAAPSLQWRQDSVQQDLTK SLKRTHFLR SVMPPPRP	120
LbrM.35.2.000630	TYRFYERVTVRGSNIR IILLPQEMKAAPSLQWRQDSVQQELTK SLKRTHFLR SVMPPPRP	120
	*****:*****	
Novel_19	VRT KKGPPKNDKSKQLRRKLR	141
LPMP_350540	VRT KKGPPKNDKSKQLRRKLR	141
LbrM.35.2.000630	VRT KKGPPKNDKSKQLRRKLR	141

C

Domain: U2 small nuclear ribonucleoprotein



Supplementary Figure 20

A Novel gene 20: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 20 (Positive strand)

Current Annotation

Gene: LPAL13_200063500

Gene: LPAL13_200063600



542,537 542,971 543,885 545,186 546,440 547,171

Novel gene ORF



B

Novel_20	MSSGTTTRPEAAMAPVSVQLTPIVPIRVFDAHGEYFDTEMDIDAPLRSLQLAIEDYFKVKP	60
LPMP_205630	MSSGTTTRPEAAMAPVSVQLTPIVPIRVFDAHGEYFDTEMDIDAPLRSLQLAIEDYFKVKP	60
LbrM.20.2.005690	MSSGTTTRPEAAMAPVSVQLTPIVPIRVFDAHGEYFDTEMDIDAPLRSLQLAIEDYFKVKP	60

Novel_20	EVQLLLHNRQQVYADRSLRDNGCLLLKGDYPYVRLVCLLKRGFPVLNLQCEVGPVTYVIACH	120
LPMP_205630	EVQLLLHNRQQVYADRSLRDNGCLLLKGDYPYVRLVCLLKRGFPVLNLQCEVGPVTYVIACH	120
LbrM.20.2.005690	EVQLLLHNRQQVYADRSLRDNGCLLLKGDYPYVRLVCLLKRGFPVLNLQCEVGPVTYVVACH	120
	***** : **	
Novel_20	ETATVWEVKKMLCEEMERQORRAAPADVASRRLTCGPERLRLWLRYMEINDKATLHYYRI	180
LPMP_205630	ETATVWEVKKMLCEEMERQORRAAPADVASRRLTCGPERLRLWLRYMEINDKATLHYYRI	180
LbrM.20.2.005690	ETATVWEVKKMLCEEMERQORRAAPADVASRRLTCGPERLRLWLRYMEINDKATLHYYRI	180

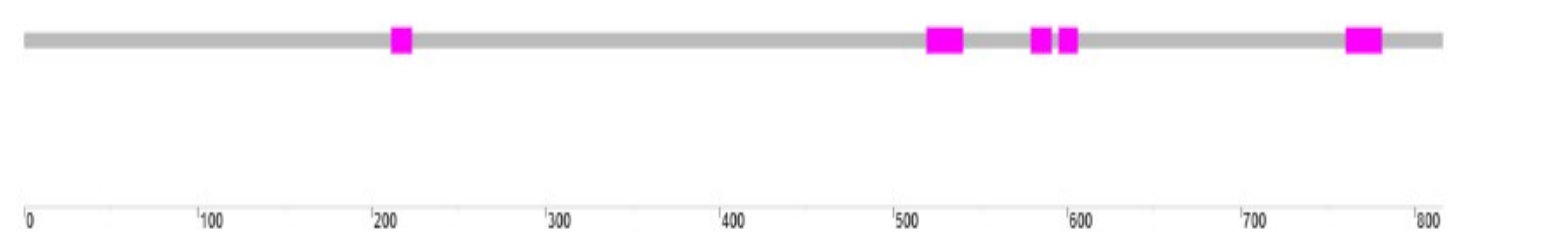
Novel_20	F'TNAVLHVMHRRRASAPSAAATLSPSSPVSLPNRTVIAQQPSTKARWQRPHAALASPSSA	240
LPMP_205630	F'TNAVLHVMHRRRASAPSAAATLSPSSPVSLPNRTVIAQQPSTKARWQRPHAALASPSSA	240
LbrM.20.2.005690	F'TNAVLHVMHRRRASAPSAAATLSPSSPVSLPNRTVIAQQPSTKARWQRPHAALASPSSA	240

Novel_20	AYVPEVQAVHSPADECNDVFDAAARPCRALPMVSAYTPPPPLATCAGSALGAAHQQHHDP	300
LPMP_205630	AYVPEVQAVHSPADGCNDVFDAAARPCRALPMVSAYTPPPPLATCAGSALGAAHQQHHDP	300
LbrM.20.2.005690	AYVPEVQAAHSPAEGCNDVFDAAARPCRALPMVSAYTPPPPLATCAGSALGAAHQQHHDP	300
	***** . **** : *****	
Novel_20	LTSSEVVTLSLAVRSLEAQLQALQLEQQQVEQYQHSLTAYQRGSLADAQQRILELEETVK	360
LPMP_205630	LTSSEVVTLSLAVRSLEAQLQALQLEQQQVEQYQHSLTAYQRGSLADAQQRILELEETVK	360
LbrM.20.2.005690	LTSSEVVTLSLAVRSLEAQLQALQLEQQQVEQYQHSLTAYQRGSLADAQQRILELEETVK	360

Novel_20	RFHALLQRAVALIPAAA	377
LPMP_205630	RFHALLQRAVALIPAAA	377
LbrM.20.2.005690	RFHALLQRAVALIPAAA	377

C

No domain found



Supplementary Figure 21

A

Novel gene 21: Ribosomal protein S29

Leishmania panamensis MHOM/COL/81/L13 Chromosome 28 (Positive strand)

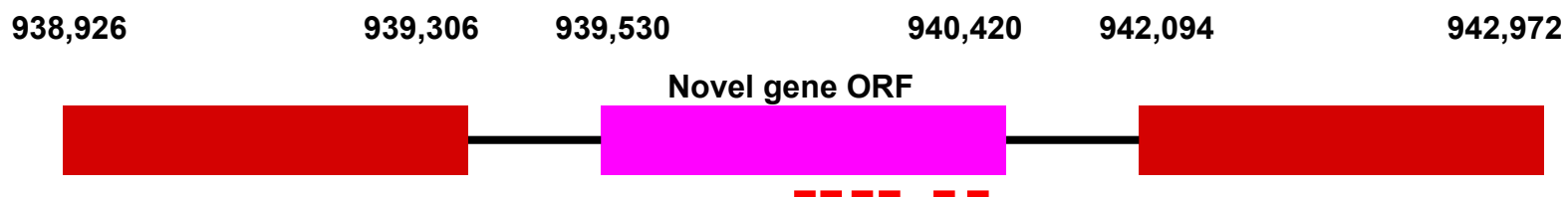
Current Annotation

Gene: LPAL13_280032600

Gene: LPAL13_280032700

Hypothetical

MRP protein

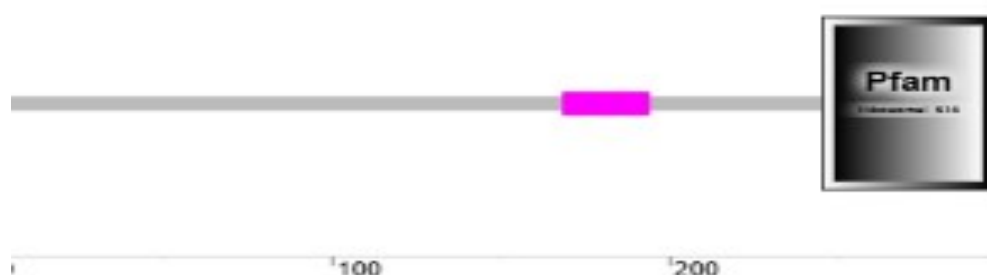


B

Novel_21	MGHLDQWRSRQKIGMGK	GARCCVICSNQKALIRKYELNVCRQCFRENAEHIGFTKLR	57
LbrM.28.2401	MGHLDQWRSRQKIGMGK	GARCCVICSNQKALIRKYELNVCRQCFRENAEHIGFTKLR	57
LtaP28.2540	MGHLDQWRSRQKIGMGK	GARCCVICSNQKALIRKYELNVCRQCFRENAEHIGFTKLR	57

C

Domain: Ribosomal protein S29



Supplementary Figure 22

A Novel gene 22: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 32 (Negative strand)

Current Annotation

Gene: LPAL13_320037700

Gene: LPAL13_320037800

ATP binding protein

Hypothetical

1,149,406 1,150,143 1,150,263 1,150,862 1,156,719 1,158,998

Novel gene ORF



B

Novel_22	MNLFRTLVAICAIILVNHHPEDESV EPLHDLLLGYQKEALKSHYGDARLFNHTETRQI	60
LPMP_323150	MNLFRTLVAICAIILVNHHPEDESV EPLHDLLLGYQKEALKSHYGDARLFNHTETRQI	60
LbrM.32.2.003250	MNLFRTLVAICAIILVNHHPEDESV EPLHDLLLGYQKEALRSHYGDARLFNHTETRQI	60
	*****;*****	
Novel_22	YNLVLSEAQNAILNSHEDADRKAYTCSKIRSQVRQYARSRDGT YKGPWTEIVLQLRDGYV	120
LPMP_323150	YNLVLSEAQNAILNSHEDADRKAYTCSKIRSQVRQYARSRDGT YKGPWTEIVLQLRDGYV	120
LbrM.32.2.003250	YNLVLSEAQNAILNSHEDADRKAYTCSKIRSQVRQYARSRDGT YKGPWTEIVLQLRDGYV	120

Novel_22	HGIKYLPIALRKDVSDSLALQKPTLLNTATVLRQAYYCLAPT LSGGECPSYTFLRVIRGK	180
LPMP_323150	HGIKYLPIALRKDVSDSLALQKPTLLNTATVLRQAYYCLAPT LSGGECPSYTFLRVIRGK	180
LbrM.32.2.003250	HGIKYLPTALRKDVSDSLALQKPTLLNTATVLRQTYYCLAPT LSRGECPSYTFLRVIRGK	180
	***** *****;***** *****	
Novel_22	GDTAILESCLR SNKGFNGI	199
LPMP_323150	GDTAILESCLR SNKGFNGI	199
LbrM.32.2.003250	GDTAILESCLR SNKGFNGI	199

C

No domain found



Supplementary Figure 23

A Novel gene 23: Calpain-like cysteine peptidase

Leishmania panamensis MHOM/COL/81/L13 Chromosome 31 (Negative strand)

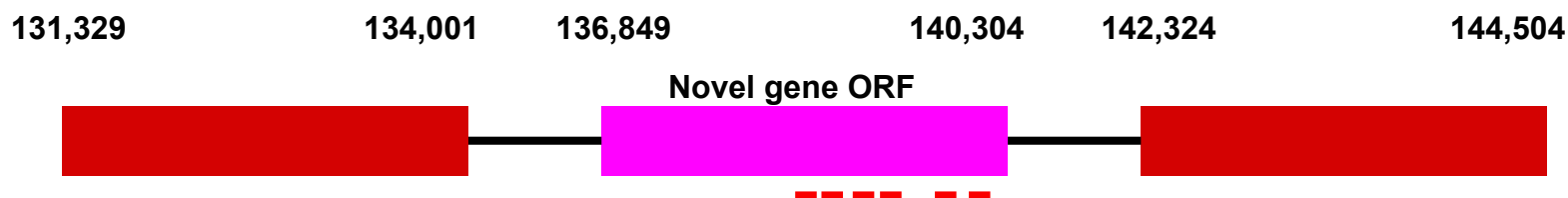
Current Annotation

Gene: LPAL13_310009000

calpain-like cysteine
peptidase

Gene: LPAL13_310009100

CAP5.5



B

Novel_23	CSAACSLAECPTHVVRIFRHPVSTDAGSRERAAGAYRVTLNHGGWWTSTVVDSYLPASLK	540
LPMP_310410	CSAACSLAEYPTHVVRIFRHPVSTDAGSRERAAGAYRVTLNHGGWWTSTVVDSYLPASLK	540
LbrM.31.0590	CSAACSLAEYPTHVVRIFRHPVSTDVGSRERAAGAYRVTLNHGGWWTSTVVDSYLPASLK	540

Novel_23	GPDLGRCSHDLRK LWYPLLEK AYAKLHGSYAAIQCGDPLEALQDLTGYPTRFDEEWA	600
LPMP_310410	GPDLGRCSHDLRK LWYPLLEK AYAKLHGSYAAIQCGDPLEALQDLTGYPTRFDEEWA	600
LbrM.31.0590	GPDLGRCSHDLRK LWYPLLEK AYAKLHGSYAAIQCGDPLEALQDLTGYPTRFDEEWA	600

Novel_23	AQDSTGACASKPTSYSYPQSEQLFVFLEEVEHQRGYLVCLSLPDDGPAESQAAQMGVVF	660
LPMP_310410	AQDSTGACASKPTSYSYPQSEQLFVFLEEVEHQRGYLVCLSLPDDGPAESQAAQMGVVF	660
LbrM.31.0590	AQGSTGACASKPTSYSYPQSEQLFVFLEEVEHQRGYLVCLSLPDDGPAESQAAQTGVVF	660
	*,*****	
Novel_23	YTVLRLVRHGGSRLLQIRCPTLKMDSSGLWYAKSALWQQEPHLAALCGVDGDRPEEAS	720
LPMP_310410	YTVLRLVRHGGSRLLQIRCPTLKMDSSGLWYAKSALWQQEPHLAALCGVDGDRPEEAS	720
LbrM.31.0590	YTVLRLVRHGGSRLLQIRCPTLKMDSSGLWCVKSAWQQEPHLAALCGVDGDRPEEAS	720

Novel_23	WLDWSEALAMFEGGGVCCCRWDWAHDCRVRGSFTDGI PSFVLEVRVDDSSSEDASPVEA	780
LPMP_310410	WLDWSEALAMFEGGGVCCCRWDWAHDCRVRGSFTDGI PSFVLEVRVDDSSSEDASPVEA	780
LbrM.31.0590	WLDWSEALAMFEGGGVCCCRWDWAHDCRVRGSFTDGI PSFVLEVRVDDSSSEDASPVEA	780

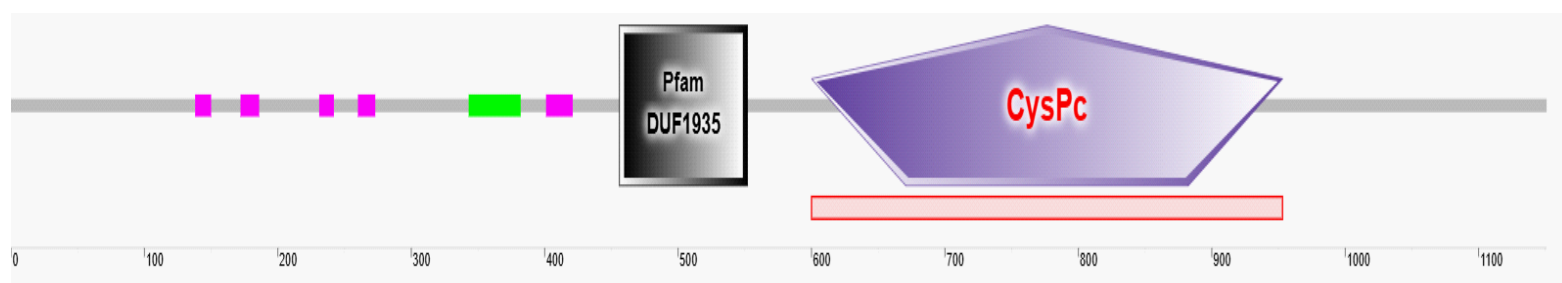
Novel_23	ILSQEDDR GIPADH PHRALRPLMLSVSSRRSENEGCD DAGSDPPADQIRHVCSTNPDIH	840
LPMP_310410	ILSQEDDRGIPADH PHRALR PLMLSVSSRRSENEGCD DAGSDPPADQIRHVCSTNPDIH	840
LbrM.31.0590	ILSQEDDRGIPADH PHRALR PLMLSVSSRRSENEGCD DAGSDPPADQIRHVCSTNPDIH	840

Novel_23	TEQLSFILGRDTALRV TFQPSVHP YYYVIPRSLGEMNNK LFTVGLV SSTPVTTSGKLRVRL	900
LPMP_310410	TEQLSFILGRDTALRV TFQPSVHP YYYVIPRSLGEMNNK LFTVGLV SSTPVTTSGKLRVRL	900
LbrM.31.0590	TEQLSFILGRDTALRV TFQPSVHP YYYVIPRSLGEMNNK LFTVGLV SSTPVTTSGKLRVRL	900

Novel_23	MQLLSSSPV FHNRRDFSTSKLEDVAVASFQIRGPDGRVRIGCGSTIG	947
LPMP_310410	MQLLSSSPV FHNRRDFSTSKLEDVAVASFQIRGPDGRVRIGCGSTIG	947
LbrM.31.0590	MQLLSSSPV FHNRRDFSTSKLEDVAVASFQVRGPDGRVRIGYGSTIG	947
	*****:*****:*****	

C

Domain: Calpain-like cysteine peptidase



Supplementary Figure 24

A

Novel gene 24: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 34 (Positive strand)

Current Annotation

Gene: LPAL13_340018100

Iron-sulfur assembly
protein 2

Gene: LPAL13_340018200

Hypothetical



B

Novel_24	MADDHSLSAGQEGGLSSPCNVYRIK HNPSWIKFGMHPEILTDTNARLSRL TSRGALSRGAS	60
LPMP_341220	MADDHSLSAGQEGGLSSPCNVYRIKHNP SWIKFGMHPEILTDTNARLSRL TSRGALSRGAS	60
LbrM.34.2.001270	MADDHSLSAGQEGGLSSPCNVYRIKHNP SWIKFGMHPEILTDTNARSSRL TSRCALSRGAS	60

Novel_24	RESSAVPSANTPFLSTALARQSASSSSLA AIGARAALRHEQHQQARATSRSTDSQPPAFH	120
LPMP_341220	RESSAVPSANTPFLSTALARQSASSSSLA AIGARAALRHEQHQQARATSRSTDSQPPAFH	120
LbrM.34.2.001270	RESSAVPSANTPFLSTALARQSASSSSLA AIGARAALRHEQHQQARATSRSTDSQPPAFH	120

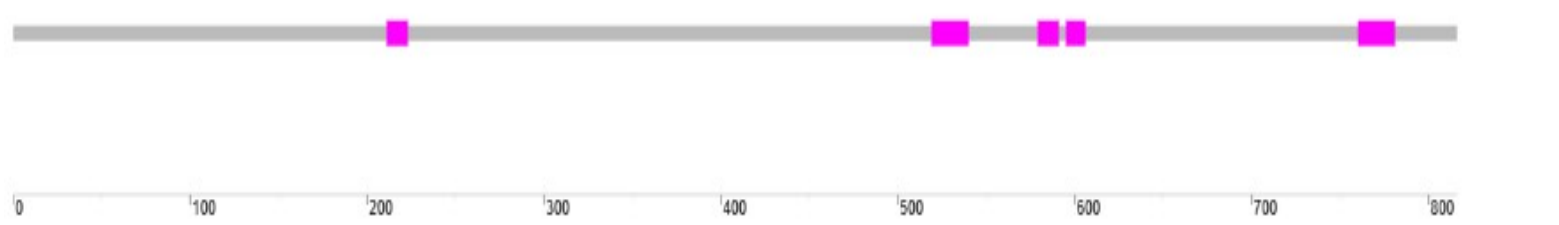
Novel_24	ASAVHRDSHSSVSVSASATPRVRGSDTEACAPESASLER SESMCGGSATGSTPVTTAFK	180
LPMP_341220	ASAVHRDSHSSVSVSASATPRVRGSDTEACAPESASLER SESMCGGSATGSTPVTTAFK	180
LbrM.34.2.001270	ASAVHRDSHSSVSVSGFATPRVRGSDTEACAPESASLER SESMCGGSATGSTPVTTAFK	180

Novel_24	GKGSFCDHESEMSCFPDDTHSSVFTNSSCRAGAARVPSLQPSVFS SLPTASS SRAKNSHLI	240
LPMP_341220	GKGSFCDHESEMSCFPDDTHSSVFTNSSCRAGAARVPSLQPSVFS SLPTASS SRAKNSHLI	240
LbrM.34.2.001270	GKGSFCDHESEMSCFPDDTHSSVFTNSS CKAGAARVPSLQPSVFSFPTASS SRAKNSHLI	240
	*****:*****:*****	
Novel_24	GSAALVGVAGPLDNLYVPLRRPAPRGVAT RQHFSLFEGTNCKGSPGMSAIETRAAPGVH	300
LPMP_341220	GSAALVGVAGPLDNLYVPLRRPAPRGCVAT RQHFSLFEGTNCKGSPGMSAIETRAAPGVH	300
LbrM.34.2.001270	GSAALVGVAGPLDNLYVPLRRPAPRGCVAT RQHFFLFEGTNCKRSPGMSAIETRAAPGVH	300

Novel_24	REVVHISRRGLVGGAPETDTYRTTNSAYGRGC	331
LPMP_341220	REVVHISRRGLVGGAPETDTYRTTNSAYGRGC	331
LbrM.34.2.001270	REVVHISRRGFVGGAPETDTYRTTNSAYGRGC	331
	*****:*****	

C

No domain found



Supplementary Figure 25

A

Novel gene 25: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 11 (Positive strand)

Current Annotation

Gene: LPAL13_110017200

Gene: LPAL13_110017300

Nodulin

Hypothetical

496,552 498,432 501,034 502,935 503,055 503,234

Novel gene ORF

B

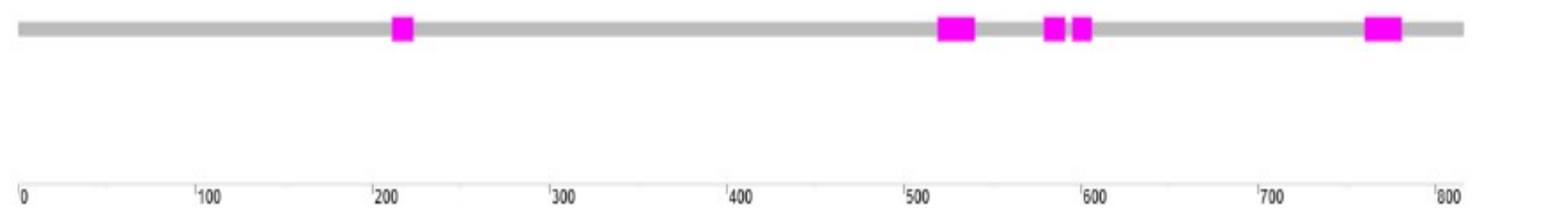
Novel_25	MAAPPSIVPFHVATHKLSFHGAVKDWK TVVQ RIVEDLNTDVWCLQDTSARHLKLLPDGFR	60
LPMP_111290	MAAPPSIVPFHVATHKLSFHGAVKDWKT VVQ RIVEDLNTDVWCLQDTSARHLKLLPDGFR	60
LbrM.11.1100	MAAPPSIVPFHVATHKLSFHGAVKDWKT VVQ RIVEDLNTDVWCLQDTSARHLKLLPDGFR	60

Novel_25	ATGSRGITFVSR SASVQL HAVAYVN MASLLV KASQQCTAVTDSIPVSTHHLCKLPLVVGF	120
LPMP_111290	ATGSRGITFVSR SASVQL HAVAYVN MASLLV KASQQCIAVTDSIPVSTHHLCKLPLVVGF	120
LbrM.11.1100	ATGSRGITFVSR SASVQL HAVAYVN MASLLV KASRQCAAVTDSIPVSTHHLCKLPLVVGF	120
	*****:*****	
Novel_25	AAWDVTGQ RASNAHG VVGRV LVVN VD FERVRS WSTEFQSSLVYVLCRQVWGDVNSYTQQW	180
LPMP_111290	AAWDVTGQ RASNAHG VVGRV LVVN VD FERVRS WSTEFQSSLVYVLCRQVWGDVNSYTQQW	180
LbrM.11.1100	AAWDVTGQ RASNAHG VVSRV LVVN VD FERVRS WSTEFQSSLVYVLCRQVWGDVHSYTQQW	180
	*****.*****:*****	
Novel_25	GCRHVC FAGSFFF APGSI PYTMLT SHSGGL REVVNS VVVV KLFAC CHFDE VHGGGS A AAK	240
LPMP_111290	GCRHVC FAGSFFF APGSI PYTMLT SHSGGL REVVNS VVVV KPFAC CHFDE VHGGGS A AAK	240
LbrM.11.1100	GCRHVC FAGSFFF APGSI PYTMLT SHSGGL REVVDS VVVV KPFAC CHFDE VHGGGS A AAK	240
	*****:***** *****	
Novel_25	TFNMCV VARVAQRIGEMQ EV LG I HF GGAK SKMPV RELQ AFFRRD TATTYSSLE LIPETE	300
LPMP_111290	TFNMCV VARVAQRIGEMQ EV LG I HF GGAK SKMPV RELQ AFFRRD TATTYSSLE LIPETE	300
LbrM.11.1100	TFNICV VARVAQRIGEMQ EV LG I HF GGAK SKMPV RELQ AFFRRD TAATYSSLE LIPEME	300
	:**:***** *	
Novel_25	EGWWK VAKPLD TSVSQ EVMLR LQWP AEEMDES NTASDLSPDLTPRIHLLVRSGGVLP PQC	360
LPMP_111290	EGWWK VAKPLD TSVSQ EVMLR LQWP AEEMDES NTASDLSPDLTPRIHLLVRSGGVLP PQC	360
LbrM.11.1100	EGWWR VAKPLD TSVSQ EVMLR LQWP AEEMDES DTASDLSPGLTPRIHLLVRSGGVLP PQC	360
	****:*****:*****.*****	
Novel_25	QEMEGLVGVC SPLLSS V MAGTCAGK KA VA ATAE LEAL CL KRGQVLQPTNGISAECGE PVI	420
LPMP_111290	QEMEGLVGVC SPLLSS V MAGTCAGK KA VA ATAE LEAL CL KRGQVLQPTNGISAECGE PVI	420
LbrM.11.1100	QEMEGLVGVC SPLLSS V MAGTCAGK KA VA ATAE LEAL CL KRGQVLQPTNGISAECGE PVI	420

Novel_25	TALYRE NP IP PGCYDY IFVSTFTG ITVES KL AHDAM DFAQEQLTAHLPLFAHLVLP PASI	480
LPMP_111290	TALYRE NP IP PGCYDY IFVSTFTG ITVES KL AHDAM DFAQEQLTAHLPLFAHLVLP PASI	480
LbrM.11.1100	TALYRE NP IP PGCYDY IFVSTFTG ITVES KL AHDAM DFAQEQLTAHLPLFAHLVLP PASI	480

C

No domain found



Supplementary Figure 26

A Novel gene 26: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 14 (Negative strand)

Current Annotation

Gene: LPAL13_140015500

Gene: LPAL13_140015600

DUF202

DYNC2H1

386,859 387,401 391,116 391,928 394,135 406,938

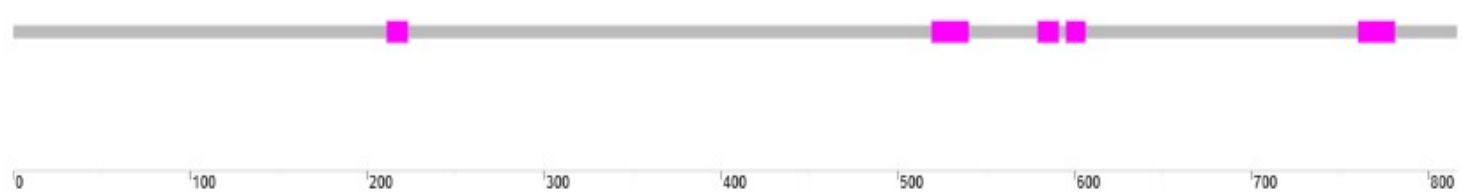
Novel gene ORF

B

Novel_26	MCAALSPTHFELRTK ILSEATKHV RTTGFTNATLAAS LK SIGGEVGDRVLSHIFNR GFPI	60
LPMP_141030	MCAALSPTHFELRTKILSEATKHVRTTGFTNATLAASLKSIGGEVGDRALSHIFNRGFPI	60
LbrM.14.2.001040	MCAALSPAHFELRTKILSEATKHVRTTGFTNATLAASLKSIGGEVSDRALSHIFNRGFPI	60
	*****:*****.***.*****	
Novel_26	ALVEHIVK SSNSCVQHELETA FNKEAIIKSIDSNLDAFVENRLLLPT KNIAERAILSKV	120
LPMP_141030	ALVEHIVKSSNSCVQHELETA FNKEAIIKSIDSNLDAFVENRLLLPTKNIAERAILSKV	120
LbrM.14.2.001040	ALVEHIVKSSNLCVQHELETA FNKEAIIKSIDSNLDAFVENKLLLPTKNIAERAILSKV	120
	***** *****:*****	
Novel_26	EFLLPLAQHWPSA VALEYLPSNLPTYTVINLAEFVDTTVYYM ERTATLGELLEPAR RIQS	180
LPMP_141030	EFLLPLAQHWPSA VALEYLPSNLPTYTVINLAEFVDTTVYYMERTATLGELLEPARRIQS	180
LbrM.14.2.001040	EFLLPLAQHWPSA VALEYLPSNLPTYTVVNLAEFVDTTVYYMERTATLGELLEPARRIQS	180
	*****:*****	
Novel_26	KAMASHLQYGER GMNGASSASSFLR NFLHGIALSSGPYADHSTLNLRWYYKRAQVGLLYG	240
LPMP_141030	KAMASHLQYGERGMNGASSASSFLRNF LHGIALSSGPYADHSTLNLRWYYKRAQVGLLYG	240
LbrM.14.2.001040	KAMASHLQYGERGMNGASSASSFLRNF LHGIALSSGPYADHSTLKL RWYYKRAQVGLLYG	240
	*****:*****	
Novel_26	VATTSL LGD VSRNAADTRSLTKAVVGAF	269
LPMP_141030	VATTSL LGD VSRNAADTRSLTKAVVGAF	269
LbrM.14.2.001040	VATTSL LGD VSRNAADTRSLTKAVVEAF	269
	***** ***	

C

No domain found



Supplementary Figure 27

A

Novel gene 27: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 15 (Negative strand)

Current Annotation

Gene: LPAL13_150020600

Gene: LPAL13_150020700

Hypothetical

Presenilin-like aspartic
peptidase, clan AD

526,969 527,565 528,675 528,845 529,444 530,502

Novel gene ORF

B

Novel 27	MPPKHHDESDTVSPLDKAEQLAMEYEDAHHERPGTKKQNETPSHQSKPKSVR	56
LPMP_151480	MPPKHHDESDTVSPLDKAEQLAMEYEDAHHERPGTKKQNETPSHQSKPKSVR	
LbrM.15.1520	MPPKHHDESDAVSPLDKAEQLAMEYEDAHHERPGTKKQNETPSHQSKPKSVR	53
	*****:*****	

C

No domain found

Supplementary Figure 28

A

Novel gene 28: Thioredoxin

Leishmania panamensis MHOM/COL/81/L13 Chromosome 01 (Negative strand)

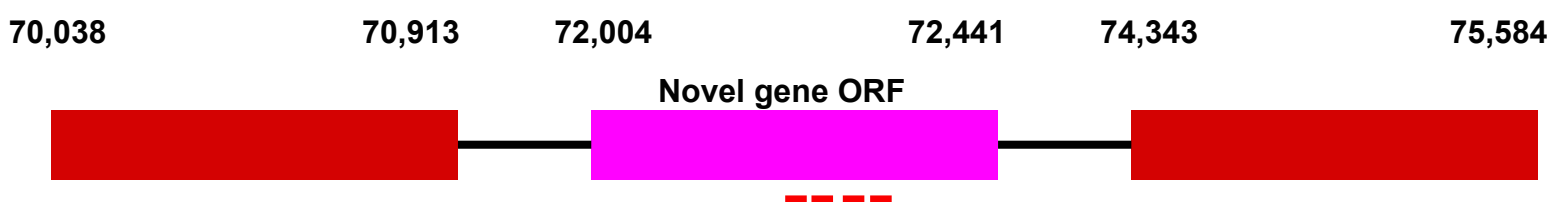
Current Annotation

Gene: LPAL13_010007000

Gene: LPAL13_010007100

Calmodulin

Pseudouridylate synthase



B

LPMP_010270	MPFTEVYGVEQFREIANEPTLTVVCFSAVWCGPCKTIEKDLDRITYEFSNVRFAKVDADN	60
LBRM2903_010007600	MPFTEVYGVEQFREIANEPTLTVVCFSAVWCGPCKTIEKDLDRITYEFSNVRFAKVDADN	60
Novel_28	-----MANEPTLTVVCFSAVWCGPCKTIEK DLDRITYEFSNVRFAKVDADN	46
	:*****	

LPMP_010270	NTEIVTKCRVMQLPTFMLVKAGQMLGYVIGADLAQLKARIREEANKS	107
LBRM2903_010007600	NTEIVTKCRVMQLPTFMLVKAGQMLGYVIGADLAQLKARIREEANKS	107
Novel_28	NTEIVTKCRVMQLPTFMLVKAGQMLGYVIGADLAQLKARIREEANKS	93

C

Domain: Thioredoxin



Supplementary Figure 29

A

Novel gene 29: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 24 (Positive strand)

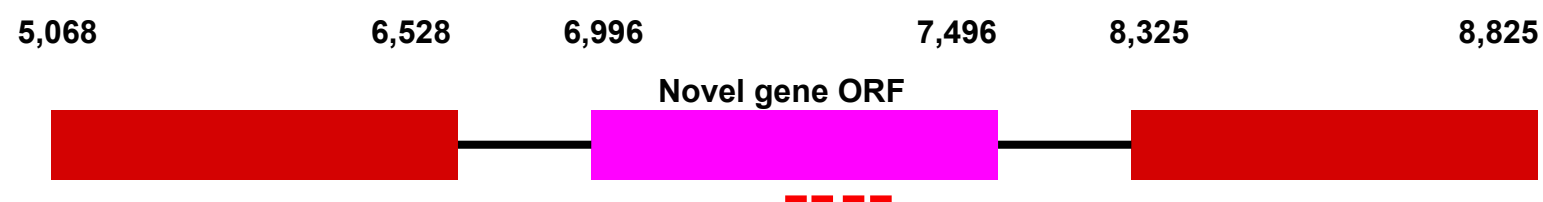
Current Annotation

Gene: LPAL13_240005100

Gene: LPAL13_240005200

Clathrin coat
assembly protein

60S ribosomal protein L17



B

Novel_29	MRALSFRSLAAVPAGLATRCYGGQCGARPPAGGRYSRGGSLPYPDRRNVPT EPQIVARLI 60
LPMP_240030	MRALSFRSLAAVPAGLATRCYGGQCGARPPAGGRYSRGGSLPYPDRRNVPT EPQIVARLI 60
LbrM.24.0030	MRALSFRSLAAVPAGLATRCYGGQCGARPPAGGRYSRGGSLPYPDRRNVPT EPQIVARLI 60

Novel_29	TFFPPNKA AFVPI SRWAAALPDDL RE TLVPYGGLSAFVSAQSNFFMIRK ENG MTVASLSAM 120
LPMP_240030	TFFPPNKA AFVPI SRWAAALPDDL RE TLVPYGGLSAFVSAQSNFFMIRK ENG MTVASLSAM 120
LbrM.24.0030	TFFPPNKA AFVPI SRWAAALPDDL RE TLVPYGGLGAFVSAQSNFFMIRK ENG MTVASLSAM 120
	*****.*****
Novel_29	GTELAREHERKE KQERKRAEKFNQRRGNFAPRGRSFSPFRGDPSRK 148
LPMP_240030	GTELAREHERKE KQERKRAEKFNQRRGNFAPRGRSFSPFRGDPSRK 148
LbrM.24.0030	GTELAREHQRKE KQERKRAEKFNQGRGNFAPRGRSFSPFRGDPSRK 148
	*****:***** *****

C

No domain found



Supplementary Figure 30

A

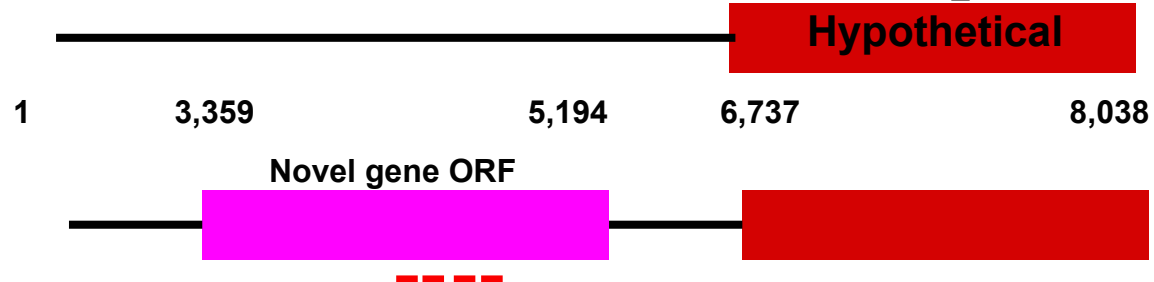
Novel gene 30: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 23 (Positive strand)

Current Annotation

Start of Chromosome 23

Gene: LPAL13_230005000

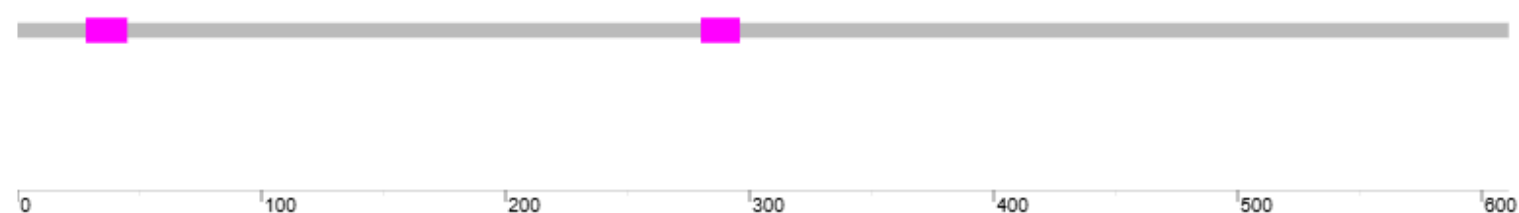


B

Novel_30	MWNPHSYIAQAVGSKRKIINSVTLPsfYEYTRLLLLEREEHRLSKMAVERVVKMSSSF	60
LPMP_230010	MWNPHSYIAQAVGSKRKIINSVTLPsfYEYTRLLLLEREEHRLSKMAGERVVKMSSSF	60
LbrM.23.2.000010	MWNPHSYIAQAIGSKRKVINSVTLPSfYEYTRLLLLEREEHRLSKMARERVVKMSSSF	60
Novel_30	SFCGKDYTAHYSIEQDTEQFVQQLGTTVKDISDAVIRCRSTYADFLEQLETFRKMCKDEE	120
LPMP_230010	SFCGKDYTAHYSIEQDTEQFVQQLGTTVKDISDAVIRCRSTYADFLEQLETFRKMCKDEE	120
LbrM.23.2.000010	SFCGKDYTAHYSIEQDTEQFVQQLGTTVKDISDAVIRCRSTYADFLEQLETFRKMCKDEE	120
Novel_30	ADFMFADNISVDNVYTREAYLCLELSRSLPVPATVSMILLIERESFHFVIKGDLCITPIAA	180
LPMP_230010	ADFMFADNISVDNVYTREAYLCLELSRSLPVPATVSMILLIERESFHFVIKGDLCITPIAA	180
LbrM.23.2.000010	ADFMFADNISVDNVYTREAYLCLELSRSLPVPATVSMILLIERESFHFVIKGDLCITPIAA	180
Novel_30	MIDGDGAPVRYEGVELGSETFSTSNNGFCRQCKDVNGCCFVTVISEKGMGCAAALFSAETV	240
LPMP_230010	MIDGDGAPVRYEGVELGSETFSTSNNGFCRQCKDVNGCCFVTVISEKGMGCAAALFSAETV	240
LbrM.23.2.000010	MIDGDGAPVRYEGVELGSETFSTSNNGFCRQCKDVNGCCFVTVISEKGMGCAAALFSAETV	240
Novel_30	VSDGHVEAVLRRLTDAGAIACFSCVYNDGTVYQYEQQGIDADSAAMAAATRYDAVAHRAR	300
LPMP_230010	VSDGHVEAVLRRLTDAGAIACFSCVYNDGTVYQYEQQGIDADSAAMAAATRYDAVAHRAR	300
LbrM.23.2.000010	VSDGHVEAVLRRLTDAGAIACFSCVYNDGTVYQYEQQGIDADSAAMAAATRYDAVAHRAR	300
Novel_30	VIRYSRNADAMHLLIDDTKKSVPDVTAFDSALNPPTLVATMQAFSGRPYFEVVHRVAPI	360
LPMP_230010	VIRYSRNADAMHLLIDDTKKSVPDVTAFDSALNPPTLVATMQAFSGRPYFEVVHRVAPI	360
LbrM.23.2.000010	VIRYSRNADAMHLLIDDTKKSVPDVTAFDSALNPPTLVATMQAFSGRPYFEVVHRVAPI	360
Novel_30	GLLSGSMLLSVERDSPLYNNVLKCGDKILLFLFADQDVWKKGCPRQWLVPACDAFKTSS	420
LPMP_230010	GLLSGSMLLSVERDSPLYNNVLKCGDKILLFLFADQDVWKKGCPRQWLVPACDAFKTSS	420
LbrM.23.2.000010	GLLSGSMLLSVERDSPLYNNVLKCGDKILLFLFADQDVWKKGCPRQWLVPACDAFKTSS	420
Novel_30	GYFSVPRCSVVSIALLFSTERSFAVGDSAVVFGSVTDATLIEKPFSVPLSLPSILFRYTP	540
LPMP_230010	GYFSVPRCSVVSIALLFSTERSFAVGDSAVVFGSVTDATLIEKPFSVPLSLPSILFRYTP	540
LbrM.23.2.000010	GYFSVPRCSVVSIALLFSTERSFAVGDSAVVFGSVTDATLIEKPFSVPLSLPSILFRYTP	540
Novel_30	FVCKFLHRRYGPVGFVGYSFFFCSTTPLIATAMVSLNVTDIISDADIEPTVELFFFRRD	600
LPMP_230010	FVCKFLHRRYGPVGFVGYSFFFCSTTPLIATAMVSLNVTDIISDADIEPTVELFFFRRD	600
LbrM.23.2.000010	FVCKFLHRRYGPVGFVGYSFFFCSTTPLIATAMVSLNVTDIISSEADIEPTVELFFFRRD	600

C

No domain found



Supplementary Figure 32

A

Novel gene 32: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 16 (Negative strand)

Current Annotation

Gene: LPAL13_160020300

Gene: LPAL13_160020400

Hypothetical

Endoplasmic reticulum
oxidoreductin

565,488 565,829 567,232 570,735 573,505 574,794

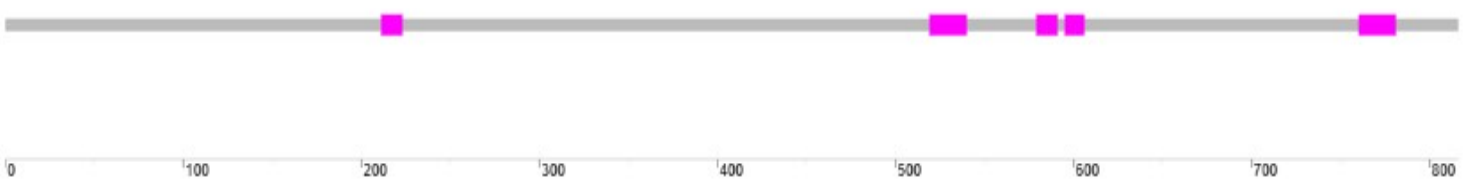
Novel gene ORF

B

Novel_32	LLPQLLKLLAVMLLPPIPR FSTNEILQK DMLQKIKARCGTDEFFALLVQCVAPITEKRTTG	180
LPMP_161490	LLPQLLKLLAVMLLPPIPR FSTNEILQK DMLQKIKARCGTDEFFALLVQCVAPIAEKRTTG	180
LbrM.16.2.001580	LLPQLLKLLAVMLLPPIPR FSTNEILQK DMLQKIKARCGTDEFFALLVQCVAPIAEKRTTG	180
Novel_32	***** KLQREDVVILEIVLTVITYLLDGQPVDT EKIIGAF CRNHGVELLLVVINQNY SRIHGTNV	240
LPMP_161490	KLQREDVVILEIVLTVITYLLDGQPVDT EKIIGAF CRNHGVELLLVVINQNY SRIHGTNV	240
LbrM.16.2.001580	KLQREDVVILEIVLTVITYLLDGQPVDT EKIIGAF CRNHGVELLLVVINQNY SRIHGTNV	240
Novel_32	***** TANND AKGVVLSSSGMEKNENNNEGTSDGNPRVTGVSCDISLEGDDIDIEDDDSLSTSKS	300
LPMP_161490	TANND AKGVVLSSSGMEKNENNNEGTSDGNPRVTGVSCDISLEGDDIDIEDDDSLSTSKS	300
LbrM.16.2.001580	TANND AKGVVLSSSGMEKNENNNEGTSDGNPRVTGVSCDISLEGDDIDIEDDDSLSTSKS	300
Novel_32	***** *****.*****.*****.*****.*****.*****.*****.*****.*****.*****	
Novel_32	***** TEMMHRTLDQEFQKQASSLLESD EQLW KWNCLALTAIASIIWCVPAEELVH LT LVNHSNN	360
LPMP_161490	TEMMHRTLDQEFQKQASSLLESD EQLW KWNCLALTAIASIIWCVPAEELVH LT LVNHSNN	360
LbrM.16.2.001580	TEMMHRTLDQEFQKQASSLLESD EQLW KWNCLALTAIASIIWCVPAEELVH LT LVNHSNN	360
Novel_32	***** *****:***** SAQDRGLSSLLSKQQFRDCKQTS DKWR FVARSRNGAITSNGIIVRASSG STTG CLAIGTV	420
LPMP_161490	SAQDRGLSSLLSKQQFRDCKQTS DKWR FVARSRNGAITSNGIIVRASSG STTG CLAIGTV	420
LbrM.16.2.001580	SAPDRGLSSLLSRQQFRDCKQTS DKWR FVARSRNGAITSNGIIVRASSG STTG CLAIGTV	420
Novel_32	** *****:***** F SLLG SRRKDQLEAMKDIDLRKRGRFIK GM YQSVTPQCN LP PTKIQLSHQ NSTFL SFGF	480
LPMP_161490	F SLLG SRRKDQLEAMKDIDLRKRGRFIK GM YQSVTPQCN LP PTKIQLSHQ NSTFL SFGF	480
LbrM.16.2.001580	F SLLG SRRKDQLEAMKDIDLRKRGRFIK GM YQSVTPQCN LP PTKIQLSHQ NSTFL SFGF	480
Novel_32	***** EPLSVMTF SKLQD AAAAVERAT KEH KEVVVGFKGSGERLEITSPLD TTMYQ SLGNVLHYM	540
LPMP_161490	EPLSVMTF SKLQD AAAAVERAT KEH KEVVVGFKGSGERLEITSPLD TTMYQ SLGNVLHYM	540
LbrM.16.2.001580	EPLSVMTF SKLQD AAAAVERAT KEH KEVVVGFKGSGERLEITSPLD TTMYQ SLGNVLHYM	540
Novel_32	***** *****.*****.*****.*****.*****.*****.*****.*****.*****.*****	
Novel_32	***** TVCRCILRYVRIIAEQFKLEQQS F LMF PQ QWQSVSSII SLD HLEFG FSV LRSFLDCKDI	600
LPMP_161490	TVCRCILRYVRIIAEQFKLEQQS F LMF PQ QWQSVSSII SLD HLEFG FSV LRSFLDCKDI	600
LbrM.16.2.001580	TVCRCILRYVRIIAEQFKLEQQS F LMF PQ QWQSVSSII SLD HLEFG FSV LRSFLDCKDI	600
Novel_32	***** *****:***** RQREDVTIVVGYLAEI LLALH LLLEGEISADPAVQVA AHALAS FALYKEENIKAVF G LLS	660
LPMP_161490	RQREDVTIVVGYLAEI LLALH LLLEGEISADPAVQVA AHALAS FALYKEENIKAVF G LLS	660
LbrM.16.2.001580	RQREDVTIVVGYLAEI LLALH LLLEGEISADPAVQVA AHALAS FALYKEENIKAVF G LLS	660
Novel_32	***** *****.***** AYSSRVIAIRKAQVFT LF TF SVF QLMEKCSYK GS LLLSKRSKKQKT VP AEESAD TG GVEN	720
LPMP_161490	AYSSRVIAIRKAQVFT LF TF SVF QLMEKCSYK GS LLLSKRSKKQKT VP AEESAD TG GVEN	720
LbrM.16.2.001580	AYSSRVIAIRKAQVFT LF TF SVF QLMEKCSYK GS LLLSKRSKKQKT VP AEESAD TG GVEN	720
Novel_32	***** *****:***** QDDSESVNSAALENLSEEMPGAMPYMIENEKS DE DARRPEIKANVQNGSVAG ERK VPPAA	780
LPMP_161490	QDDSESVNSAALENLSEEMPGAMPYMIENEKS DE DARRPEIKANVQNGSVAG ERK VPPAA	780
LbrM.16.2.001580	QDDSESVNSAALENLSEEMPGAMPYMIENEKS DE DARRPEIKANVQNGSVAG ERK VPSAA	780
Novel_32	***** *****.***** AGL PEPLLESVGRST S MSD S DR L RS S ERTT SE GR P PSI A SSD R TT L STM S SERE V AV S G F F	840
LPMP_161490	AGL PEPLLESVGRST S MSD S DR L RS S ERTT SE GR P PSI A SSD R TT L STM S SERE V AV S G F F	840
LbrM.16.2.001580	AGL PEPLLESVGRST S MSD S DR L RS S ERTT SE GR P PSI A SSD R TT L STM S SERE V AV S G F F	840

C

No domain found



Supplementary Figure 32

A

Novel gene 32: Kinetoplast-associated protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 27 (Negative strand)

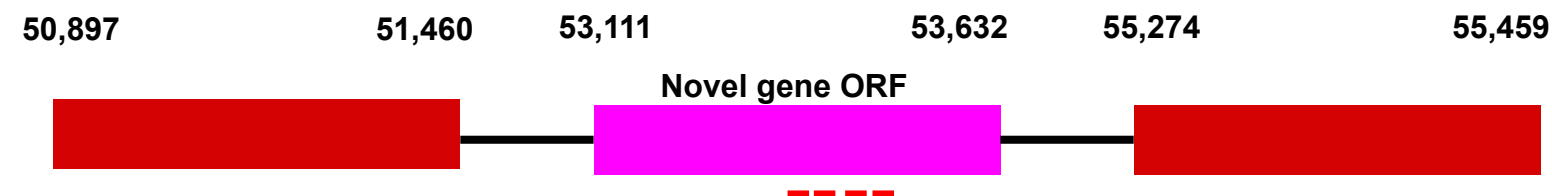
Current Annotation

Gene: LPAL13_270007800

Gene: LPAL13_270007900

Hypothetical

Hypothetical



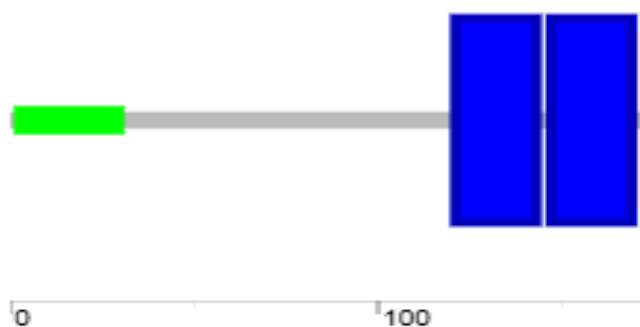
B

LPMP_270240	MQHHENINKPLYKIEEAEEAARIQAEAEAAARSQAEAEAAARSQAEAEAAARIQAEAEAA	60
LBRM2903_270007700	MQHHENINKPLYKIEEAEEAARIQAEAEAAARIQAEAEAAARIQAEAEAAARIQAEAEAA	60
Novel_32	-----MQAEAEAAARI QAEAEAAARIQAEAEAAARIQAEAEAAARIQAEAEAA	48

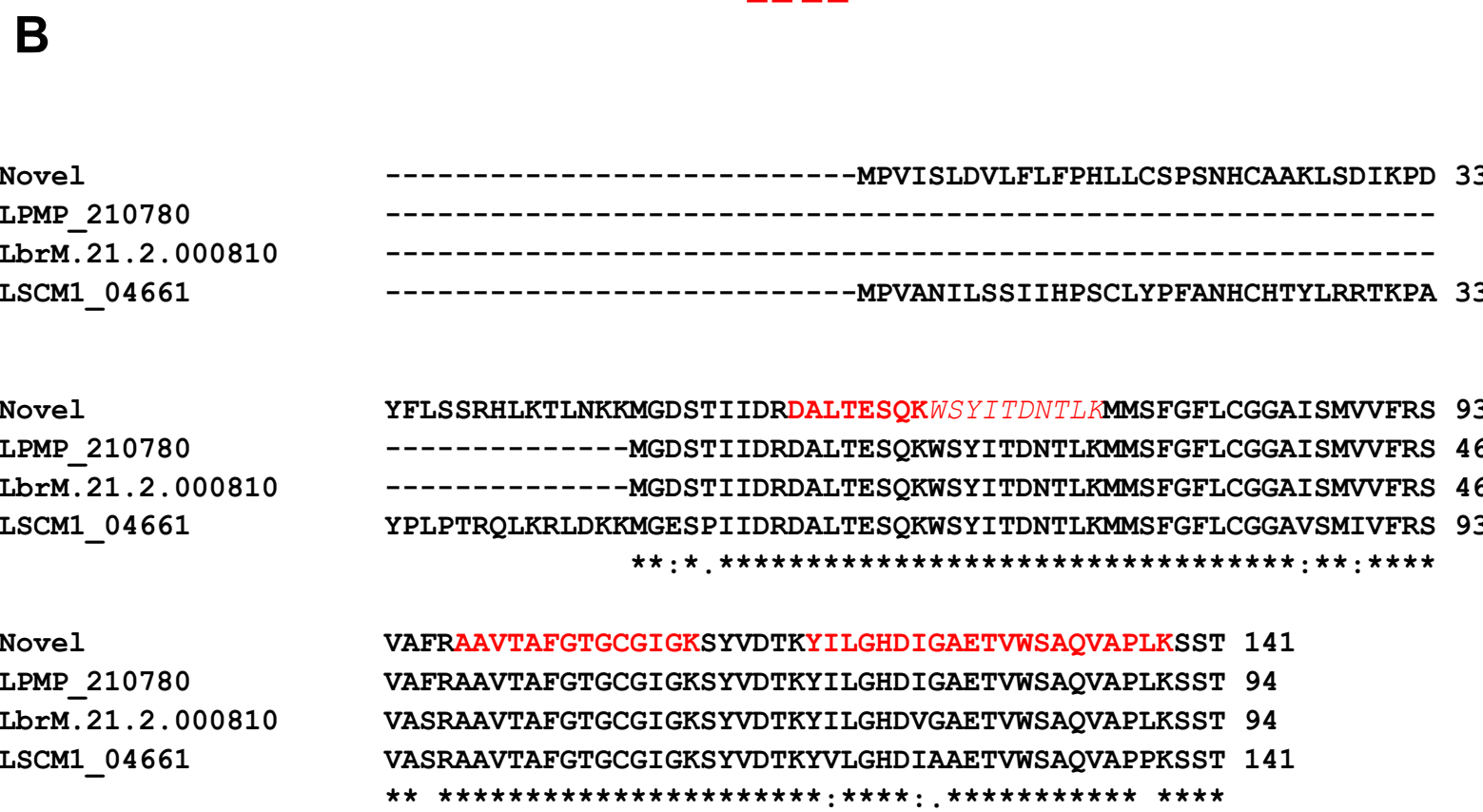
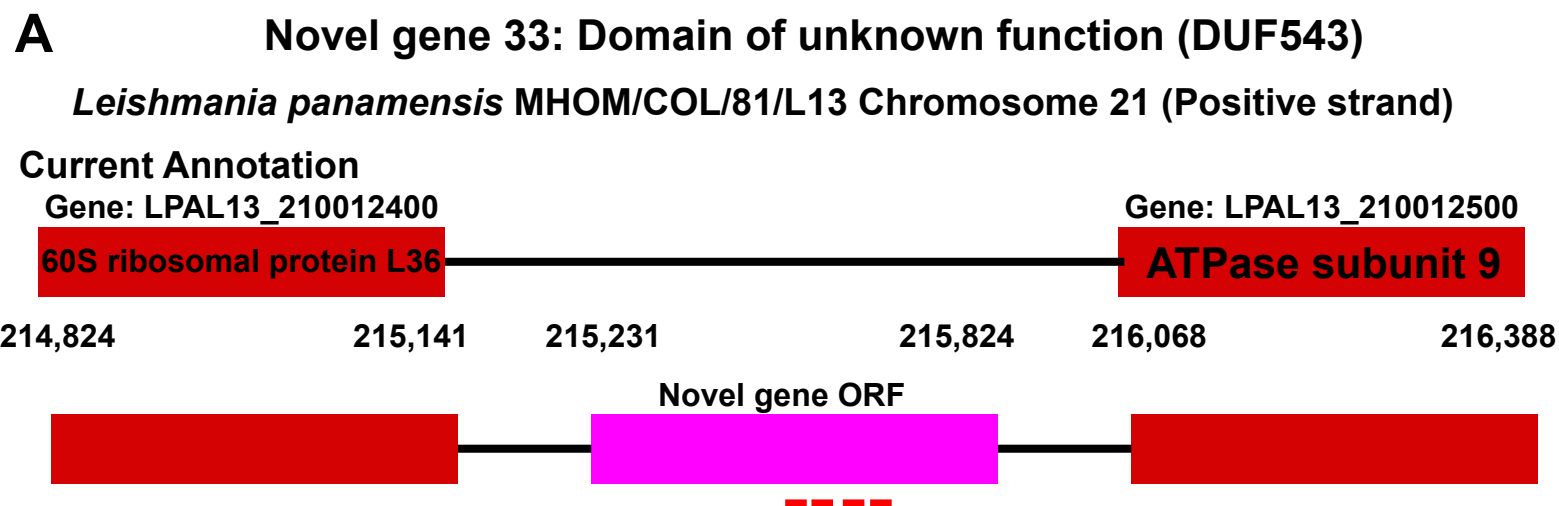
LPMP_270240	AR-----IHAEAEAAARIQAEAEAAVRIQAEAEAAARIQAEAEAAVRIQAEAEAAARIQ-	114
LBRM2903_270007700	AR-----IQAEAEAAARIQAEAEAAARIQAEAEAAARIQAEAEAAARIQAEAEAAARIQ-	115
Novel_32	GVR GDISVNAAMLEATDIEHCGGYSRTVQRRMSTHRRASFAAHFVDKPLSGGAPR SVAPM	108
	. ::* **: *: . : :* . . * . : . : .	
LPMP_270240	-----	
LBRM2903_270007700	VSVNAAELKAANIERCGGYSRAVQRRVAKHRRASFAAHFVEKPLFDRAPRSVAPVAQVVT	175
Novel_32	ALVVTESNQK GQFVAGFFFAILAVFAVCGVMLRWRGRIFVSALFSLVLVCLSEPLHVRVM	168
LPMP_270240	-----	
LBRM2903_270007700	ESNQKGQFVAGFFFAILAVFAVCGVMLR	203
Novel_32	VTWR-----	173

C

Transmembrane domain



Supplementary Figure 33



C Domain of unknown function (DUF543)



Supplementary Figure 34

A

Novel gene 34: Cation transporter

Leishmania panamensis MHOM/COL/81/L13 Chromosome 27 (Negative strand)

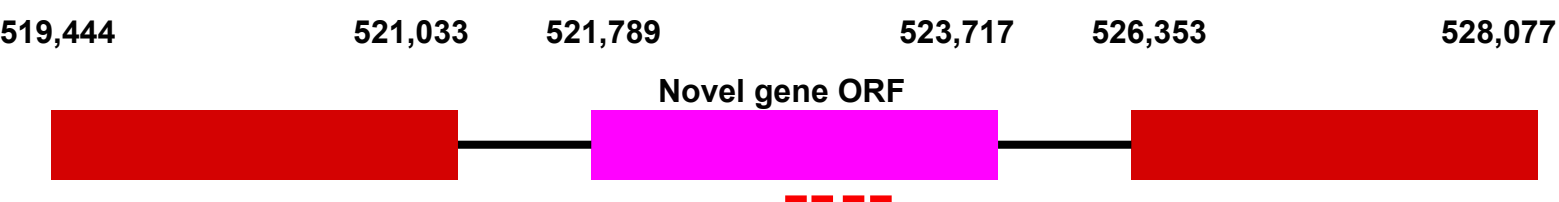
Current Annotation

Gene: LPAL13_270019900

T-complex protein 1, beta subunit

Gene: LPAL13_270020000

Ubiquitin hydrolase



B

Novel	QRKPIVENEMLLLLLAF	CISGIVLAGCFTAGLRLQGSVTTTFVAAIAGMSAASVVCGEKVFP	279		
LbrM.27.1380	QRKPIVENEMLLLLLAF	CISGIVLAGCFTAGLRLQGSVTTTFVAAIAGMSAASVVCGEKVFP	300		
LbrM.27.2.001380	QRKPIVENEMLLLLLAF	CISGIVLAGCFTAGLRLQGSVTTTFVAAIAGMSAASVVCGEKVFP	300		

Novel	AVSDWESLALLTSAGLIFVAHKGLTFADASVVS	SLNVAPLNSAQMLKKTQHC	GNNSVIVT	339	
LbrM.27.1380	AVSDWESLALLTSAGLIFVAHKGLTFADASVVS	SLNVAPLNSAQMLKKTQHC	GNNSVIVT	360	
LbrM.27.2.001380	AVSDWESLALLTSAGLIFVAHKGLTFADASVVS	SLNVAPLNSAQMLKKTQHC	GNNSVIVT	360	

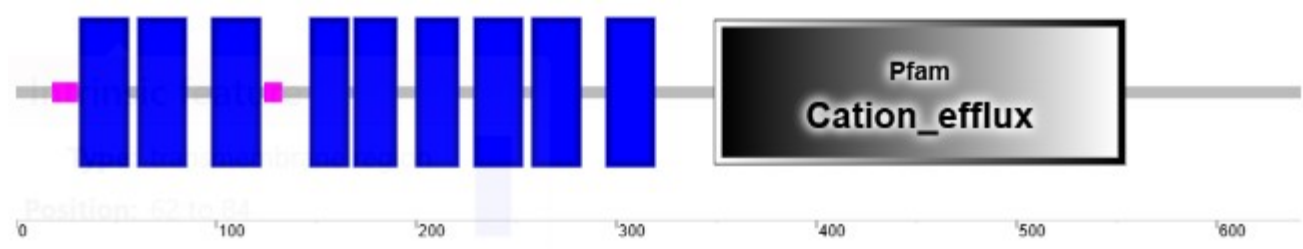
Novel	LLSNPREYKLFVFL	LLTVVIMLLEFFYGLAVNSLGLVSDSFHMLDGT	SIMIGLYAAHAA	399	
LbrM.27.1380	LLSNPREYKLFVFL	LLTVVIMLLEFFYGLAVNSLGLVSDSFHMLDGT	SIMIGLYAAHAA	420	
LbrM.27.2.001380	LLSNPREYKLFVFL	LLTVVIMLLEFFYGLAVNSLGLVSDSFHMLDGT	SIMIGLYAAHAA	420	
	***** ; *****				
Novel	SWLPDEKTHPFGYARYEVFGGFVNGILLFIALYVMVESVQRFLDPPEIEG	PYLLLVS	SVT	459	
LbrM.27.1380	SWLPDEKTHPFGYARYEVFGGFVNGILLFIALYVMVESVQRFLDPPEIEG	PYLLLVS	SVT	480	
LbrM.27.2.001380	SWLPDEKTHPFGYARYEVFGGFVNGILLFIALYVMVESVQRFLDPPEIEG	PYLLLVS	SVT	480	

Novel	GLAVNVVGVLFFHDAHGHSHS	SALHEDGGGHVDHNM	RGVYLHILADLLGS	SVSVIIS	519
LbrM.27.1380	GLAVNVVGVLFFHDAHGHSHS	SALHEDGGGHVDHNM	RGVYLHILADLLGS	SVSVIIS	540
LbrM.27.2.001380	GLAVNVVGVLFFHDAHGHSHS	SALHEDGGGHVDHNM	RGVYLHILADLLGS	SVSVIIS	540
	***** ***				
Novel	MFGLWIADPICS	SAISAILVLLSAFPLLEETGRV	LLLSAPSYERNYSNELRK	VLLETALLQ	579
LbrM.27.1380	MFGLWIADPICS	SAISAILVLLSAFPLLEETGRV	LLLSAPSYERNYSDEL	RKVLLETALLQ	600
LbrM.27.2.001380	MFGLWIADPICS	SAISAILVLLSAFPLLEETGRV	LLLSAPSYERNYSDEL	RKVLLETALLQ	600
	***** ; *****				
Novel	DVESPKLWMHSTAPRELTICTVAGKLRNNTDYTSAREKITETVTAHMLRHL	DVHNV	SIVL	639	
LbrM.27.1380	DVESPKLWMHSTAPRELTICTVAGKLRNNTDYTSAREKITETVTAHMLRHL	DVHNV	SIVL	660	
LbrM.27.2.001380	DVESPKLWMHSTAPRELTICTVAGKLRNNTDYTSAREKITETVTAHMLRHL	DVHNV	SIVL	660	

Novel	HLE	642			
LbrM.27.1380	HLE	663			
LbrM.27.2.001380	HLE	663			

C

Cation transporter



Supplementary Figure 35

A

Novel gene 35: Kinesin K39

Leishmania panamensis MHOM/COL/81/L13 Chromosome 14 (Positive strand)

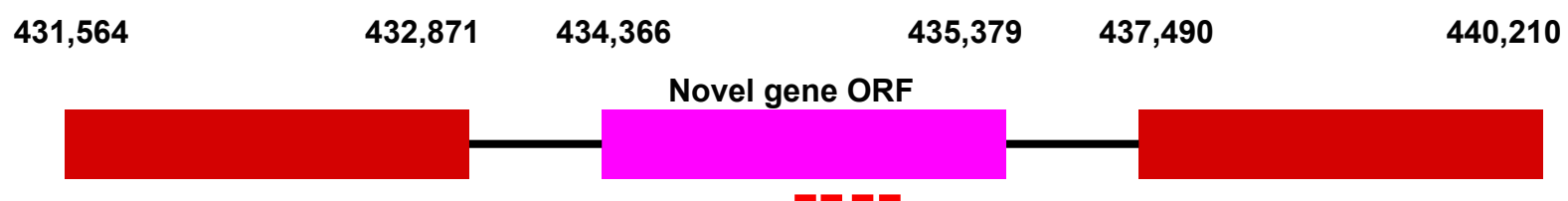
Current Annotation

Gene: LPAL13_140016400

Gene: LPAL13_140016500

kinesin K39

WD40



B

Novel_35	-----	
LBRM2903_140017100	GSLQATFNVQHPITISKHQIQQLDTPFRAMQEMYESRNNPPSGLDALRGQLEEAHQQL	540
Novel_35	-----MEEKTSEADAAKEDNEALRSQLEEANQQLEEEAGAEKERLQGELEEKT	47
LBRM2903_140017100	EEAGAEKERLQGELEEKTSEADAAKEDNEALRGQLEEAHQLEEEAGAEKERLQGELEEKT	600
	:*****.*****:*****	
Novel_35	SEADAAKEDNEALRSQLEEANQQLEEEAGAEKERLQGELEEKTSEADAAKEDNEALRSQLE	107
LBRM2903_140017100	SEADAAKEDNEALRGQLEEAHQLEEEAGAEKERLQGELEEKTSEADAAKEDNEALRGQLE	660
	*****.*****:*****.***	
Novel_35	EANQQLEEEAGAEKERLQGELEEKTSEADAAKEDNEALRSQLEEANQQLEEEAGAEKERLQY	167
LBRM2903_140017100	EAHQLEEEAGAEKERLQGELEEKTSEADAAKEDNEALRGQLEEAHQLEEEAGAEKERLQN	720
	** :*****.*****:*****	
Novel_35	SLLGVDALSALRDVNEALQNEMGAI A AERDGLALIVAQA AEDKADFAERFSKAEEMTAM	227
LBRM2903_140017100	SLLGVEGALSALRDVNEALQNEIGAIAAERDGLALIVAQA AEDKADFAERFSKAEEMTAM	780
	*****.*****:*****	
Novel_35	LTAGINEFRQSLCECKSALCAADEERNRLSEELACAVWAQRKLEKDKAKLQEGYVHSEGE	287
LBRM2903_140017100	LTSGINEFRQSLCECKSALCAADEERNRLSEELACAVWAQRKLEKDKAKLQEGYVHSEGE	840
	** :*****	
Novel_35	RRRLDARFEARRENLGSVVVTGPGVTSKQSV EECFKATRTALKALQKNAA	337
LBRM2903_140017100	RRKLDARFEARRENLGSI VVTVPGVTSKQSV EECFKATRTALKALQKNAA	890
	** :*****:*** *****	

C

Kinesin K39



Supplementary Figure 36

A

Novel gene 36: Nitroreductase

Leishmania panamensis MHOM/COL/81/L13 Chromosome 35 (Negative strand)

Current Annotation

Gene: LPAL13_350068100

Gene: LPAL13_350068200

mkiaa0324 protein

Hypothetical



B

LbrM.35.2.006110	-----	
LBRM2903_350072500	-----	
Novel_36	MRFPSFFCPFTDFIRLPHPLPLHPFPSRLAFECAALSLSAVVCI IHFFIPALCVLLRLAQ	60
LbrM.35.2.006110	-----MHCFSKSSVAPKEDSHDNAGGGASGSG	27
LBRM2903_350072500	-----MHCFSKSSVAPKEDSHDNAGGGASGSG	27
Novel_36	HLSLFVFEPLRWTCTFPSSYPPEAGNSCRKQSC TAFRRVPWP PKEDSHDNAGGRASGSG	120
	. * : . .***** *****	
LbrM.35.2.006110	PIKPSAQYIDALSKRRSIYSLDSTLPQSDKEVIKTIEDTIRQCPSSFNVKSSRAVILFGA	87
LBRM2903_350072500	PIKPSAQYIDALSKRRSIYSLDSTLPQSDKEVIKTIEDTIRQCPSSFNVKSSRAVILFGA	87
Novel_36	PIKPSAQYIDALS KRRSIYSLDSTLPQSDKEVIKTIEDTIRQCPSSFNVKSSRAVILFGA	180

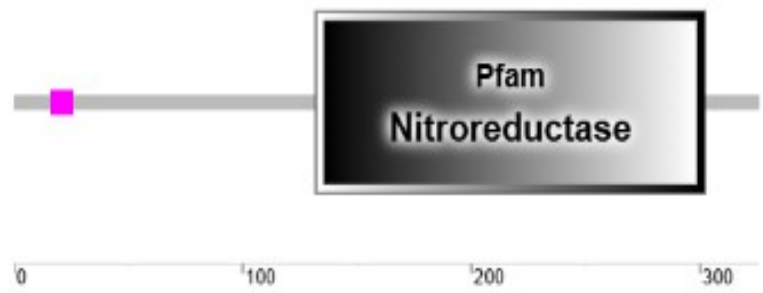
LbrM.35.2.006110	DHQKQVWTIVKAALKKVTTEEQYTESEMKVNNCFAAGAGTILFYEDSAAIKIQQTYPYA	147
LBRM2903_350072500	DHQKQVWTIVKAALKKVTTEEQYTESEMKVNNCFAAGAGTILFYEDSAAIKIQQTYPYA	147
Novel_36	DHQK VWTIVKAALKKVTTEEQYTESEMKVNNCFAAGAGTILFYEDSAAIKIQQTYPYA	240

LbrM.35.2.006110	ASMLTFSQHASAMAQFAVWSALAQDGIGASLQHYNELIEAELRTAFDIPEDWQLIAQMPF	207
LBRM2903_350072500	ASMLTFSQHASAMAQFAVWSALAQDGIGASLQHYNELIEAELRTAFDIPEDWQLIAQMPF	207
Novel_36	ASMLTFSQHASAMAQFAVWSALAQDGIGASLQHYNELIEAELRTAFDIPEDWQLIAQMPF	300

LbrM.35.2.006110	GSIKKPADAKPSNPDENCVVVRGASV	233
LBRM2903_350072500	GSIKKPADAKPSNPDENCVVVRGASV	233
Novel_36	GSIKKPADV KPSNPDENCVVVRGASV	326
	***** . *****	

C

Nitroreductase



Supplementary Figure 37

A Novel gene 37: Calcineurin-like phosphoesterase superfamily domain

Leishmania panamensis MHOM/COL/81/L13 Chromosome 35 (Negative strand)

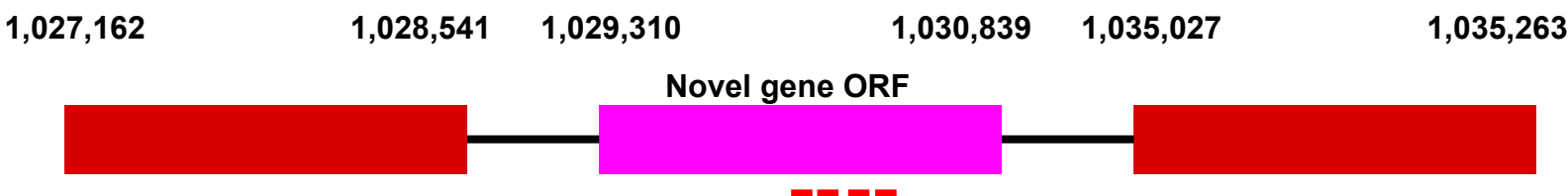
Current Annotation

Gene: LPAL13_350034500

Dihydrolipoamide
acetyltransferase

Gene: LPAL13_350034600

Hypothetical



B

Novel_37	MPVAAAALCEYYGYLPRLVRRRTARLPPTTRISAASPIAPTPLHSSLYDANPPPTMQSGEVE	60
LPMP_352730	MPVAAAALCEYYGYLPRLVRRRTARLPPTTRISAASPIAPTPLHSSLYDANPPPTMQSGEVE	60
LBRM2903_350036700	MPVAAAALCEYYGYLPRLVRRRTARLPPTTRISAASPIAPTPLHSSLYDAN-PPTMQNGEVE	60

Novel_37	HPSTYSLRNALVYNIAELPPKPVSSRLVVIISD THER HREMNVPNGDVLVHCGDIOEGLN	120
LPMP_352730	HPSTYSLRNALVYNIAELPPKPVSSRLVVIISD THER HREMNVPNGDVLVHCGDIOEGLN	120
LBRM2903_350036700	HPSTYSLRNALVYNIAELPPKPVSSRLVVIISD THER HREMNVPNGDVLVHCGDIOEGLN	120

Novel_37	FVRDVKAMLADFAAWFTDSTLHHPVKLI IAGNHDKAIAAMSTEEVRRLFAPAVYLCDDSD	180
LPMP_352730	FVRDVKAMLADFAAWFTDSTLHHPVKLI IAGNHDKAIAAMSTEEVRRLFAPAVYLCDDSD	180
LBRM2903_350036700	FVRDVKAMLADFAAWFTDSTLHHPVKLI IAGNHDKAIAAMSTEEVRRLFAPAVYLCDDSD	180

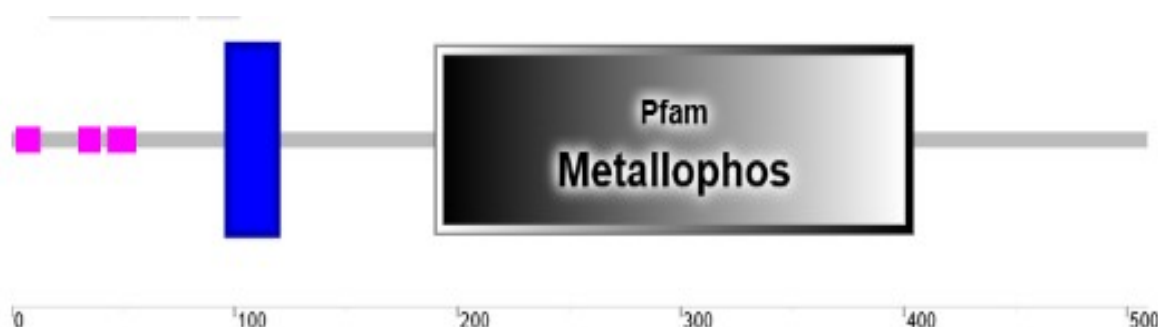
Novel_37	VVVEPSGVRFYGSPRSISNSCWS PNTAYQDKKAWKPFMFASVRENDDPPGLSTAPRCSS	240
LPMP_352730	VVVEPSGVRFYGSPRSISNSCWS PNTAYQDKKAWKPFMFASVRENDDPPGLSTAPRCSS	240
LBRM2903_350036700	VVVEPSGVRFYGSPRSISNSCWS PNTAYQDKKAWKPFMFASVRENDDPTGLSTAPRCSS	240

Novel_37	QHL CARLEGATPGGSVDVLIVHQSPDI IPRG CHSVEEQPIC TYAQQVAPRRV LCGHLHGA	300
LPMP_352730	QHL CARLEGATPGGSVDVLIVHQSPDI IPRG CHSVEEQPIC TYAQQVAPRRV LCGHLHGA	300
LBRM2903_350036700	QHL CARLEGATPGGSVDVLIVHQSPDI IPRG CHSVEEQPIC TYAQQVAPRRV LCGHLHGA	300

Novel_37	HGMHWLPVPEVVRELFCVETQDGGSQPEGVARSEEIPFLPCINAAMMMGRFGQNVLLPSS	360
LPMP_352730	HGMHWLPVPEVVRELFCVETQDGGSQPEGVARSEEIPFLPCINAAMMMGRFGQNVLLPSS	360
LBRM2903_350036700	HGMHWLPVPEIVRKLFCEVETRDGGSQPEGVARSEEIPFLPCINAAMMMGRFGQNVLLPSS	360
	*****: **: *****: *****	
Novel_37	VVDLEV	366
LPMP_352730	VVDLEV	366
LBRM2903_350036700	VVDLEV	366

C

Calcineurin-like phosphoesterase superfamily domain

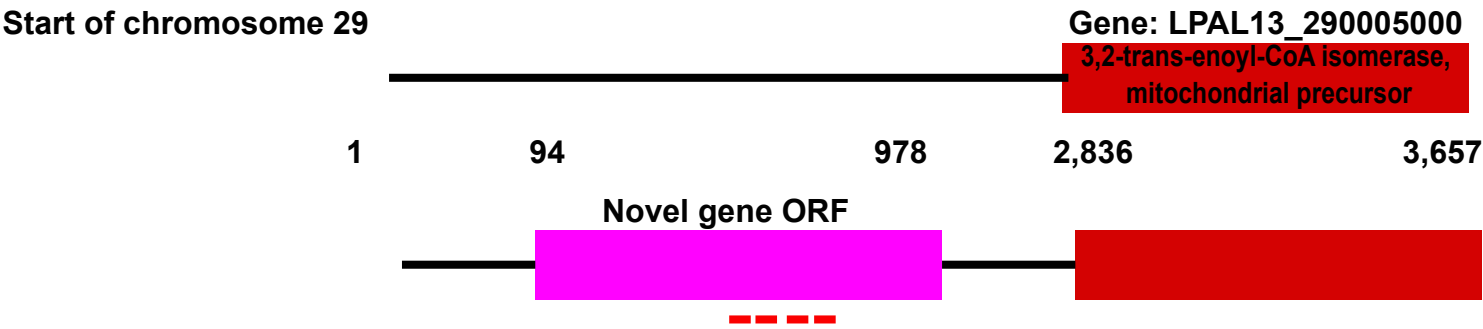


Supplementary Figure 38

A Novel gene 38: TATE-associated hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 29 (Negative strand)

Current Annotation

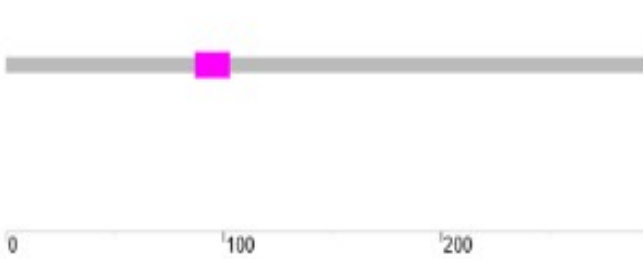


B

LPMP_070010	MRPATRKRLHSHVSRSSRHILESLRHKRTFSLSSHSLTSQMSDKQERLTEAELDRALKVYL	60
LbrM.12.0010	MRPATKKRLHNVKRSSRHILESLRHKRTFSLSSHSHTSQMSDKQERLTEAELDRTLKVYL	60
Novel_38	MRPATKKRVHILKRSSRHILESLRQKRTLSLSSDSPTSEMSDNHERLTKEQLDKKLEMFL	60
	*****:*:* :*****:***:***** * *:***:*****: ***: *:::	
LPMP_070010	AHKATHSMAEIAKKQYMEGKTNTSEFLEMTAAMAESLWEKAGEKGVPSIDIKKEMMEAHN	120
LbrM.12.0010	AHKATRSMAEIAKKQYMEGKTNTSEFLEMTAAMADSLWEKAGEKGAPSIDVKKEMMEAHN	120
Novel_38	ENKATHHTAECTRKNYLAGKIDRNDLAEACIAMATTAMEIATINRTQPTDIKKEMMEAHN	120
	:***: ** :*:*: ** : :*: * ** : * * : . . *:*****	
LPMP_070010	IFADKELQEVMEDKRKEVRAKIKATKDPLEGYKTKVESAILAHQMSPMAAATATILLG	180
LbrM.12.0010	IFADKELQEVMEDKRKEARAKIKATKDPLEGYKTKVESAILANQMSPMAAATATILLG	180
Novel_38	IFADKEIQEVMDEKDKRKETRVNIKAADPLEGYKNQGLNRRSWRTRCPQLSR-----	173
	*****:***** *****.*.:***:*****.: . . . * :	
LPMP_070010	LSGPESQEMSVEERVAEWLSIFVDETCSSRLLAYNVQVAESVAGGMQRQWRKVLKRLDAPL	240
LbrM.12.0010	LSGPEAQEMSADERIAEWLSIFVDETCSSRLAFNVQVAESVAGGMQRQWRKVLKRLDAPL	240
Novel_38	-----QRRQFYSVYPDQRHKKRTAMRELPNQFPFLSMRRARRDCLRTTCRSP	220
	: :*: *: ..* : : . . . * *. *: .	
LPMP_070010	VPETERLAHLNRLITLEAALNEKQRSTTQRIEGGGTHTTRPRDIFRTPSRDGSDDLLEGGAP	300
LbrM.12.0010	VPETERLAHLNRLITLEAAENKQRSTTQRIEGGGTHTTRPRDIFRTPPRDGSDDLLEGGAP	300
Novel_38	DPSQEGCDNG-----VKCWHWGTHLSFRKRNDLHLLTVSHLRRHRTRSI	264
	*. * : :. *. : * *: :*: . . . :	
LPMP_070010	YAPIIGADGSQVAALDMSSFGALTEESQLRMQDTITHLMREQKTAPRVANHTQGPRNSQN	360
LbrM.12.0010	YAPIIGADGSQVAALDMSSFGALTEESQ-----	328
Novel_38	VSHKVLKEEARTQHDHVIYFGHRQETAAP-----	294
	: : : :. : ** * :	
LPMP_070010	SGRGVGYRGNYRGNGGGNRHGNRYRGGEAQEDFPSSDSKN	398
LbrM.12.0010	-----	
Novel_38	-----	

C

No domain found



Supplementary Figure 39

A Novel gene 39: Replication termination factor

Leishmania panamensis MHOM/COL/81/L13 Chromosome 32 (Positive strand)

Current Annotation

Gene: LPAL13_320010600

Gene: LPAL13_320010700

Hypothetical

Leucine Rich repeat

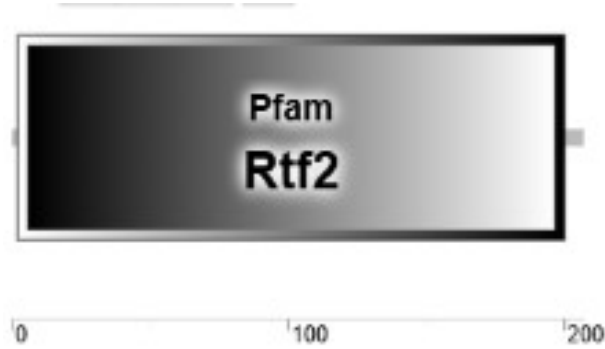


B

Novel_39	MGGDGQALANKRSL LQKSRVYVTTTDL	ESGQAKEKTSHKSRTVERWSHCAFSLQPLEAPA	60
LPMP_320590	MGGDGQALANKRSL LQKSRVYVTTTDL	ESGQAKEKTSHKSRTVERWSHCAFSLQPLEAPA	60
LbrM.32.2.000620	MGGDGQALANKRSL LQKSRVYVTTTDL	ESGQAKEKTSHKSRTVERWTHCAFSLQPLEAPA	60
	*****:*****		
Novel_39	VFDAAGNVFSKQSVIN	YLLDRKERSDAAVRDKEETFSIKKLADVKEISNKGERDGSFCCP	120
LPMP_320590	VFDAAGNVFSKQSVIN	YLLDRKERSDAAVREKEETFSIKKLADVKEISNKGERDGSFCCP	120
LbrM.32.2.000620	VFDAAGNVFSKQSVIN	YLLDRKERSDAAVRDKEDTFSIKKLADVKEISNKGERDGSFCCP	120
	*****:**:*****		
Novel_39	ITGYSTLSGVHSFVGFWGCGHVVSASTCSKSDDLKSQVDVECPFCGLQSFYVRLVCNDTE		180
LPMP_320590	ITGYSTLSGVHSFVGFWGCGHVVSASTCSKSDDLKSQVDVECPFCGLQSFYVRLVCNDTE		180
LbrM.32.2.000620	ITGYSTLSGVHSFVGFWGCGHVVSASTCSKSDDLKSQVDVECPFCGLQSFYVRLVCNDTE		180

Novel_39	VAEGQQKFLRH	YLRKRLKRLRDADAE	206
LPMP_320590	VAEGQQKFLRH	YLRKRLKRLRDADAE	206
LbrM.32.2.000620	VAEGQQKFLRH	YLRKRLKRVRDADVE	206
	*****:****.*		

C Replication termination factor



Supplementary Figure 40

A Novel gene 40: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 24 (Negative strand)

Current Annotation

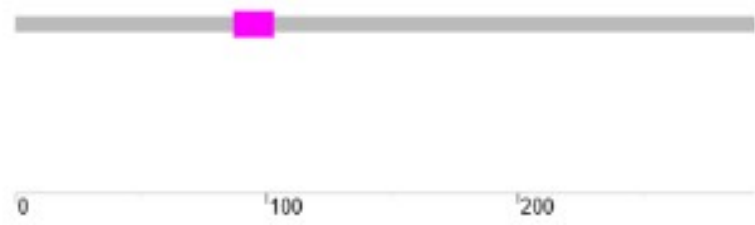


B

Novel_40	MEIGNADEQTLRVPSVTRADIARREAAEDYYALLVEEWANYASRKGYSKNEVRTKWTET	60
LPMP_242300	MEIGNADEQTLRVPSVTRADIARREAAEDYYALLVEEWANYASRKGYSKNEVRTKWTET	60
LBRM2903_240031700	METGNADERTLGLPSVTRADIARREAAEDYYALLVEEWNYASRKGYSKNEVRTKWTET	60
	** *****: ** :*****:*****:*****	
Novel_40	WDAFEARKHAQKLFLKRHELRSQKKAQQLSETQKWSEQKSAAVVEKIMAFEAEQRGTTLLQ	120
LPMP_242300	WDAFEARKHAQKLFLKRHELRSQKKAQQLSETQKWSEQKSAAVVEKIMAFEAEQRGTTLLQ	120
LBRM2903_240031700	WDAFETRKDAQKLFLKRHELRSQKKAQQLSESQKWSEQKSAAVVEKIMAFEAEQRGTTILQ	120
	*****: ** .*****:*****:*****: **	
Novel_40	PRHFLFVDYDYDQQLFRNGRSFIENEENLLRCKLSEAEDDIMCLLVTQWHWSNSLQSAR	180
LPMP_242300	PRHFLFVDYDYDQQLFRNGRSFIENEENLLRCKLSEAEDDIMCLLVTQWHWSNSLQSAR	180
LBRM2903_240031700	PRHFLFVDYDYDQQLFRNGRSFIENEESLLRCKLSEAEDDIMCLLVTQWHWSNSLQLAR	180
	*****:*****.*****:***** **	
Novel_40	ENERIEEEAAERLKEQYQQKLEERLLEAQRQAQEREAAQAEKEQAEVEKRLERKRRD	240
LPMP_242300	ENERIEEEAAERLKEQYQQKLEERLLEAQRQAQEREAAQAEKEQAEVEKRLERKRRD	240
LBRM2903_240031700	ENERIEQEAERLKEQYQQKLEERLLEAQRQAQEREAAQAEKEQAEVEKRLERKRRD	240
	*****:*****:*****:*****	
Novel_40	EERRAKARSEREQRRAKE	258
LPMP_242300	EERRAKARSEREQRRAKE	258
LBRM2903_240031700	EERRAKARSEREQRRAKE	258

C

No domain found



Supplementary Figure 41

A

Novel gene 41: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 19 (Positive strand)

Current Annotation

Gene: LPAL13_190012500

Gene: LPAL13_190012600

tRNA

Hypothetical

253,102 253,175 252,835 254,238 254,293 254,577

Novel gene ORF

B

Novel_41	-----	
LPMP_190430	KTTPD TDVAAS PITGGD TSSFATAAPTEGQRRRQGS GAAAGNHPPGLPQMQLPPYSASSD	480
LbrM.19.2.000770	KTTPD TDVAAS PITGGD TSSFATAAPTEGQRRRQGS GAAAGNHPPGLPEMQLPPYSASSD	480
Novel_41	---MEDVCQGGDSARGQMVRTGSGYL RASGLNSETTSL SQFPQSPRFGRGLAPKAKPKGA	57
LPMP_190430	VYEVEDVCQGGDSARGQMVRTGSGYL RASGLNSETTSL SQFPQSPRFGRGLAPKAKPKGA	540
LbrM.19.2.000770	VYEVEDVCQGGDSARGQMVRTGSEYLRASGLNSETTSL SQFPQSPRFGRGLAPKAKPKGA	540
	: *****	
Novel_41	VESSSVPFEAVRQESYRLSRSSSVVHNPDSSNWDAGA QNTYTATSPARPRPRSSSALTPP	117
LPMP_190430	VESSSVPFEAVRQESYRLSRSSSVVHNPDSSNWDAGA QNTYTATSPARPRPRSSSALTPP	600
LbrM.19.2.000770	VESASVPFEAVRQESYHLRSSSVVHNPDSSNWDAGA QNTYTATSPARPRPRSSSALTPP	600
	: **: *****	
Novel_41	TTSGFGSSRGLRSPKPYTVTVKTM AVDNVGGSTEYSRPSDASPLTAGRAAASPMWHSSLY	177
LPMP_190430	TTSGFGSSRGLRSPKPYTVTVKTM AVDNVGGSTEYSRPSDASPLTAGRAAASPMWHSSLY	660
LbrM.19.2.000770	TTSGFSSSRGLRSPKPYTVTVKTM AVDNVGGSTEYSRPSDASPLTAGRAAASPLWHSSLY	660

Novel_41	DDAAAVATPVGSQLSATAKKS FVELSAAIDHMLLDHQQLLRQVYKETLAPGLGAAGQAAG	237
LPMP_190430	DDAAAVATPVGSQLSATAKKS FVELSAAIDHMLLDHQQLLRQVYKETLAPGLGAAGQAAG	720
LbrM.19.2.000770	DDAAAVATPVGSQLSATAKKS FVELSAAIDHMLLDHQQLLRQVYKETLAPGLGAAGQEAG	720

Novel_41	SAVASRSLVKASRVPASDAADS QDSSLEVHSHKGRGVAIVQAARYTGGEDATIEVDLDSNA	297
LPMP_190430	SAVASRSLVKASRVPASDAADS QDSSLEVHSHKGRGVAIVQAARYTGGEDATIEVDLDSNA	780
LbrM.19.2.000770	SAVASRSLVKASRVPASDAADSHDSSLEVHSHKGHGVAIVQAARYTGGEDATIEVDLDSNG	780

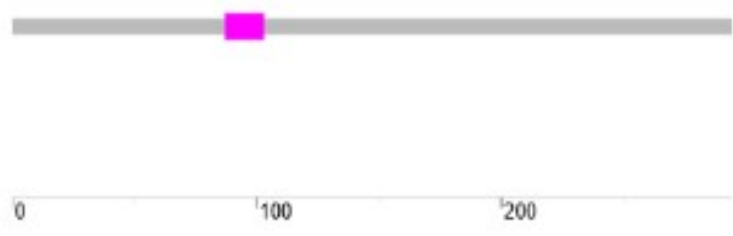
Novel_41	NTSEVDAMLHPARGELEDEM LLYTQLQHQLTQLDADIVRLGLESANDESAQGGDGERGDD	357
LPMP_190430	NTSEVDAMLHPARGELEDEM LLYTQLQHQLTQLDADIVRLGLESANDESAQGGDGERGDD	840
LbrM.19.2.000770	NTSEVDALLHPARGELEDEM LLYTQLQHQLTQLDADIVRLGLESANDESAQGGDGERGAD	840

Novel_41	AGGASALRQSSFMPHSSSLNKA AVAQPAPCQSRSGMPEAIVQRLCAYRMDNFQYIAYNE	417
LPMP_190430	AGGASALRQSSFMPHSSSLNKA AVAQPAPCQSRSGMPEAIVQRLCAYRMDNFQYIAYNE	900
LbrM.19.2.000770	AGGASALRQSSFMPHSSSLNKA AVAQPTPCQSRSGMPEAIVQRLCAYRMDNFQYIAYNE	900

Novel_41	RLWNTSCTS QFVFAQRLTAAITEECWGEVMAEVC SIMDDYVDGLADHELQ	467
LPMP_190430	RLWNTSCTS QFVFAQRLTAAITEECWGEVMAEVC SIMDDYVDGLADHELQ	950
LbrM.19.2.000770	RLWNTSCTS QFVFAQRLTAAITEECWDEVMAEVC SIMDDYVDGLADHELQ	950

C

No domain found



Supplementary Figure 42

A

Novel gene 42: Aminoacyltransferase ATEL1

Leishmania panamensis MHOM/COL/81/L13 Chromosome 21 (Positive strand)

Current Annotation

Gene: LPAL13_210012300

Gene: LPAL13_210012400

Hypothetical

60S ribosomal protein L36

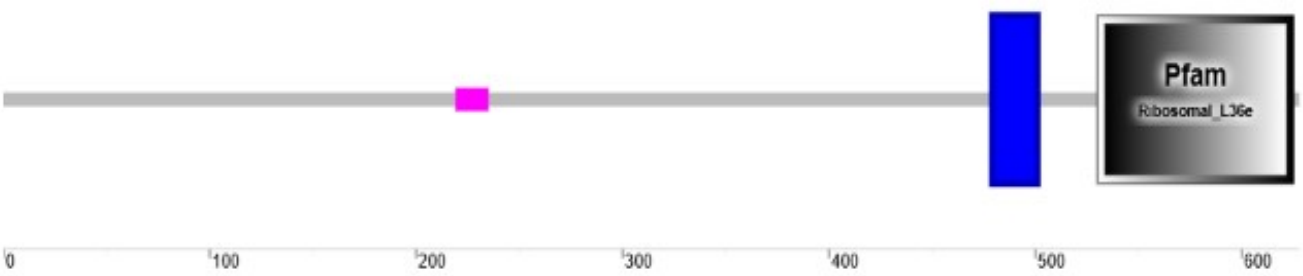


B

Novel_42	MHATYLQRV	TQHFREDKGKEFNIEAEVSYASQATDVRHLVPLTK	VDIQHFSNFFPPVKSK	60
LPMP_210760	MHATYLQRV	TQHFREDKGKEFNIEAEVSYASQATDVRHLVPLTK	VDIQHFSNFFPPVKSK	60
LbrM_21.2.000790	MHATYLQRV	TQHFREDKGKEFNIEAEVSYASQATDVRHLVPLTK	ADVQHFSNFFPPVKSK	60
	*****		.*:****.*****	
Novel_42	DDLETLP	PAKLKGNEELGFSPLFDPSLIDACCQRGIFPLAVAI	SENIFLFAPKLHMER	120
LPMP_210760	DDLETLP	PAKLKGNEELGFSPLFDPSLIDACCQRGIFPLAVAI	SENIFLFAPKLHMER	120
LbrM_21.2.000790	DDLETLP	PAKLKGNEELGFSPLFDPSLIDACCQRGIFPLAVEI	SENIFLFAPKLHMER	120
	*****		*****	
Novel_42	ALVDGAA	QRNTISGFPPCEGDEGIFNKDSLGVSRKLT	TKTPNESTHRPSFEI	180
LPMP_210760	ALVDGAA	QRNTISGFPPCEGDEGIFNKDSLGVSRKLT	TKTPNESTHRPSFEI	180
LbrM_21.2.000790	ALVDGAA	QRNTISGFPPCEGDEGIFNKDCLGVSRKLT	TKTPNESTHRPSFEI	180
	*****		*****	
Novel_42	DVFTLIR	RQHGENWLCAPLRVCLLHMFFNPTKYATKIIIT	AIYRKYNEMPIESS	240
LPMP_210760	DVFTLIR	RQHGENWLCAPLRVCLLHMFFNPTKYATKIIIT	AIYRKYNEMPIESS	240
LbrM_21.2.000790	DVFTLIR	RQHGENWLCAPLRVCLLHMFFNPTKYATKIIIT	AIYRKYNEMPIESS	240
	*****		*****	
Novel_42	EGELVAC	EIGYLVGDIYASATGAYCISGGGALQLSLTG	VCMKSAGCRLWDLG	300
LPMP_210760	EGELVAC	EIGYLVGDIYASATGAYCISGGGALQLSLTG	VCMKSAGCRLWDLG	300
LbrM_21.2.000790	EGELVAC	EIGYLVGDIYASATGAYCISGGGALQLSLTG	VCMKSAGCRLWDLG	300
	*****		*****	
Novel_42	LQCVSL	PRKKWQSMVSVRRTNPNEHILRYLHDLEK	GLPVSDFFKTAVPP	360
LPMP_210760	LQCVSL	PRKKWQSMVSVRRTNPNEHILRYLHDLEK	GLPVSDFFKTAVPP	360
LbrM_21.2.000790	LQCVSL	PRKKWQSMVSVRRTNPNEHILRYLHDLEK	GLPVSDFFKTAVPP	360
	*****		*****	
Novel_42	KKRLKKE	AAIQRKAERMRE		379
LPMP_210760	KKRLKKE	AAIQRKAERMRE		379
LbrM_21.2.000790	KKRLKKE	AAIQRKAERMRE		379

C

Aminoacyltransferase ATEL1



Supplementary Figure 43

A

Novel gene 43: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 22 (Negative strand)

Current Annotation

Gene: LPAL13_220011800

Gene: LPAL13_220011900

Hypothetical

Kinesin

271,415 272,671 288,580 292,218 299,307 303,593

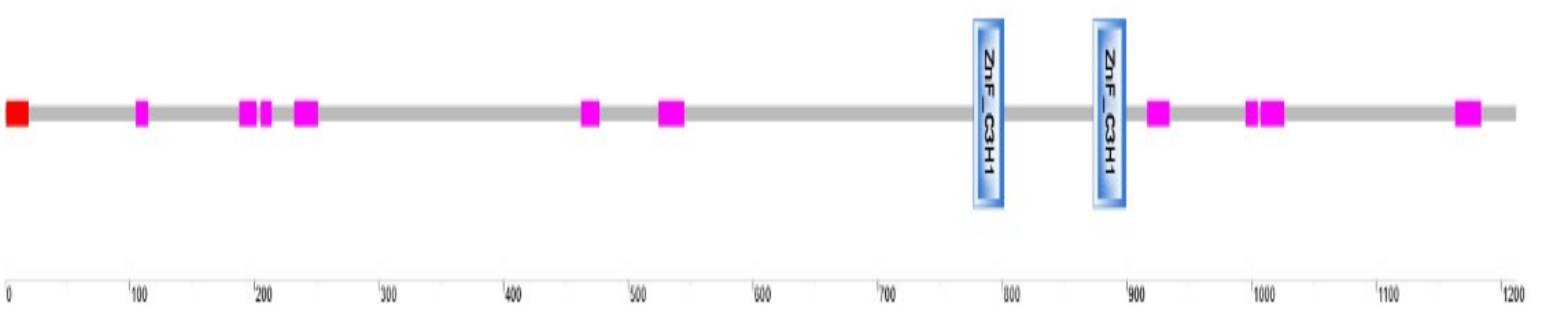
Novel gene ORF

B

Novel_43	TQADTGRNVDITVNSAASMQLKVGLTTMSSSSGAVFQDPSASFPLIASLNTTQSSSWRH	360
LPMP_220660	TQADTGRNVDITVNSAASMQLKVGLTTMSSSSGAVFQDPSASFPLIASLNTTQSSSWRH	360
LbrM.22.2.000690	TQADTGRNVDITVNSAASMQLKVGLTTMSSSSGAVFQDPSASFPLIASLNTTQSSSWRH	360
Novel_43	SSNVYNDSTSGSAVGHNASCSSGLYEASLGEAPSGTVTSASGRAGSGASPRHHGSEMVP	420
LPMP_220660	SSNVYNDSTSGSAVGHNASCSSGLYEASLGEAPSGTVTSASGRAGSGASPRHHGSEMVP	420
LbrM.22.2.000690	SSNVYNDSTSGSAVGHNASCSSGLYEASLGEAPSGTVASASGRAGSGASPRHHGSEMVP	420
Novel_43	RLTPSVLHNVLASFQSALVERSSDVKLPSSIGDLFSTSGWGTSSQNGSSSSGAAGGSRPY	480
LPMP_220660	RLTPSVLHNVLASFQSALVERSSDVKLPSSIGDLFSTSGWGTSSQNGSSSSGAAGGSRPY	480
LbrM.22.2.000690	RLTPSVLHNVLASFQSALVERSSDVKLPSSIGDLFSTSGWGTSSQNGSSSSGAAGGSRPY	480
Novel_43	RYDSPTTQEEWGSQASTSPATAGVSAATACGNKGDVLAVLDAPAMTRNGSPMMRGRVNS	540
LPMP_220660	RYDSPTTQEEWGSQASTSPATAGVSAATACGNKGDVLAVLDAPAMTRNGSPMMRGRVNS	540
LbrM.22.2.000690	RYDSPTTQEEWGSQASTSPATAGVSAATACGNKGDVLAVLDAPAMTRNGSPMMRGRVNS	540
Novel_43	VVAHKLNLDAARRAQLQDLRGSGCIPPAANIDCTCTSDIHTPTLSAHGRLCVPQHVHT	600
LPMP_220660	VVAHKLNLDAARRAQLQDLRGSGCIPPAANIDCTCTSDIHTPTLSAHGRLCVPQHVHT	600
LbrM.22.2.000690	VVAHKLNLDAARRAQLQDLRGSGCIPPAANIDCTCTSDIHTPTLSAHGRLCVPQHVHT	600
Novel_43	QELAASSDSSVDHVFAHTVSSVPGMLLGRHERGSGLATAEGFATLHHHTRTTSEVSLPAA	660
LPMP_220660	QELAASSDSSVDHVFAHTVSSVPGMLLGRHERGSGLATAEGFATLHHHTRTTSEVSLPAA	660
LbrM.22.2.000690	QELAASSDSSVDHVFAHTVSSVPGMLLGRHERGSGLATAEGFATLHHHTRTTSEVSLPAA	660
Novel_43	AATYHGGGALQQRIDDRGCIADVDPQRRKLHVPLSAIQTTKALNGRLKTPSLCLLYQSGR	720
LPMP_220660	AATYHGGGALQQRIDDRGCIADVDPQRRKLHVPLSAIQTTKALNGRLKTPSLCLLYQSGR	720
LbrM.22.2.000690	AATYHGGGALQQRIDDRGCIADVDPQRRKLHVPLSAIQTTKALNGRLKTPSLCLLYQSGR	720

C

Hypothetical protein; Zinc finger



Supplementary Figure 44

A

Novel gene 44: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 20 (Positive strand)

Current Annotation

Gene: LPAL13_200040800

Gene: LPAL13_200040900

DUF501

Serine palmitoyltransferase



B

Novel_44	MRQRNAPFATQGSSSSSPRENSRLAWCSESFLRQHMRARTSSRD	TLLADLQLIRAAANTV	60
LPMP_203450	MRQRNAPFATQGSSSSSPRENSRLAWCSESFLRQHMRARTSSRD	TLLADLQLIRAAANTV	60
LbrM.20.2.003320	MRQRNGPFATQGSSSSSPRESSRIAWCSESLRQHMRARTSSRD	TLLADLQLIRAAANTV	60
	*****	*****	
Novel_44	VVWRCFLRWGLYAVRRVALRRVQHRAQIVLWRRVGARCF	AWWRLVTERRLCREVL	120
LPMP_203450	VVWRCFLRWGLYAVRRVALRRVQHRAQIVLWRRVGARCF	AWWRLVTERRLCREVL	120
LbrM.20.2.003320	VVWRCFLRWGLYAVRRAALRRVQHRAQIVLWRRVGARCF	AWWRLVTERRLCREVL	120
	*****	*****	
Novel_44	AREGVLLLDGVCRTAWDKWCQWARAHVRQ	RGRAVHLGLVSRQRHAC	180
LPMP_203450	AREGVLLLDGVCRTAWDKWCQWARAHVRQ	RGRAVHLGLVSRQRHAC	180
LbrM.20.2.003320	AREGVLLNGVCRTAWDKWRQWARAHVRQ	RGRAVHLGLVSRQRHAYL	180
	*****	*****	
Novel_44	QLRAVEQIRFAAERSLARFTLIRWRLHTLEGYLTF	PLQVRTAQRVAAAF	240
LPMP_203450	QLRAVEQIRFAAERSLARFTLIRWRLHTLEGYLTF	PLQVRTAQRVAAAF	240
LbrM.20.2.003320	QLRAVEQIRFAAERSLARFTLIRWRLHTLEGYLTF	PLQVRTAQRVAAAF	240
	*****	*****	
Novel_44	AGARFICHEALFRVAQSFFDRWKRWLRRRLQS	SILLQEANEARLLLHIF	300
LPMP_203450	AGARFICHEALFRVAQSFFDRWKRWLRRRLQS	SILLQEANEARLLLHIF	300
LbrM.20.2.003320	AGTRFICHEALFRVAQSFFDRWKRWLRRRLQS	SILLQEANEARLLLHIF	300
	**	*****	
Novel_44	DYEQQVAERDL	PRLFS	316
LPMP_203450	DYEQQVAERDL	PRLFS	316
LbrM.20.2.003320	DYEQQVAERDL	PRLFS	316

C

No domain found



Supplementary Figure 45

A

Novel gene 45: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 11 (Positive strand)

Current Annotation

Gene: LPAL13_110009800

Transcription modulator

Gene: LPAL13_110009900

(MCCC2)

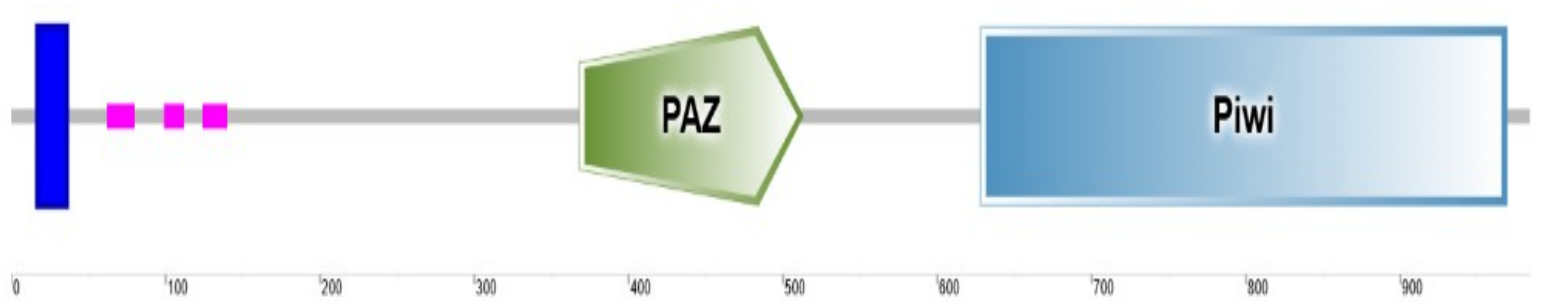


B

Novel_45	RDNTEERHYRVIRIYDGEVSLKLPEHAQWVNKIIAFGLADTYSEHIGSDYVDMKSTVERG	239
LPMP_110590	RDNTEERHYRVIRIYDGEVSLKLPEHAQWVNKIIAFGLADTYSEHIGSDYVDMKSTVERG	239
LbrM.11.2.000360	RNNTTEERHYRVIRIYDGEVSLKLPEHAQWVNKIIAFGLADTYSEHIGSDYVDMKSTVERG	240
Novel_45	*:*****	
Novel_45	GDLVTMDAISLNALRIVKQSGSTTAMMDVLQLDVSTKASTKTKCSDEIRRLRQONPQSF	299
LPMP_110590	GDLVTMDAISLNALRIVKQSGSTTAMMDVLQLDVSTKASTKTKCSDEIRRLRQONPQGF	299
LbrM.11.2.000360	GDLVTMDAISLNALRIVKQSGSTTAMMDVLQLDVSTKASTKTKCSDEMRRRLRQONPQGF	300
Novel_45	*****:*****	
Novel_45	RAVNEALVGISVTTVFGEPTFLKVKAIIDFNILASSPTMFKTNPETTFVEYFKRKYDAIID	359
LPMP_110590	RAVNEALVGISVTTVFGEPTFLKVKAIIDFNILASSPTMFKTNPETTFVEYFKRKYDAIID	359
LbrM.11.2.000360	RAVNEALVGISVTTVFGEPTFLKVKAIIDFNILASSPTMFKTNPETTFVEYFKRKYDAIID	360
Novel_45	*****	
Novel_45	PTLPMLYCVFADRTKMSRRMPYPADSLLLNKLNEAQLSKLPILCSIYPNERIKRIKAALE	419
LPMP_110590	PTLPMLYCVFADRTKMSRRMPYPADSLLLNKLNEAQLSKLPILCSIYPNERIKRIKAALE	419
LbrM.11.2.000360	PTLPMLYCIFADRTKMSRRMPYPADSLLLNKLNEAQLSKLPILCSIYPNERMKRIKAALE	420
Novel_45	*****:*****:*****	
Novel_45	RVLASPLMITVLQOYGVRIQPFVKVSGRVLPAPTIYVPSGPNMFNRINTAEYTGQAGFA	479
LPMP_110590	RVLASPLMITVLQOYGVRIQPFVKVSGRVLPAPTIYVPSGPNMFNRINTAEYTGQAGFA	479
LbrM.11.2.000360	RVLASPLMITVLQOYGVRIQPFVKVSGRVLPAPTIYVPSGPNMFNRINTAEYTGQAGFA	480
Novel_45	*****	
Novel_45	LGLKDLQHPSQPCEFKTLLMDEYFMHGNITHWLQKYNVALPSPRKTSFDSAAQRITEGSG	539
LPMP_110590	LGLKDLQHPSQPCEFKTLLMDEYFMHGNITHWLQKYNVALPSPRKTSFDSAAQRITEGSG	539
LbrM.11.2.000360	LGLKDLQHPSQPCEFKTLLMDEYFMNGNITHWLQKYNVALPSPRKTSFDSAAQRITEGPG	540
Novel_45	*****:*****	
Novel_45	TFAMVKLRTKEAGAYNNFKERFARSSIVSQMAVVDLTRNVPQMITQQVAAKIGQLCFVAD	599
LPMP_110590	TFAMVKLRTKEAGAYNNFKERFARSSIVSQMAVVDLTRNVPQMITQQVAAKIGQLCFVAD	599
LbrM.11.2.000360	TFAMVKLRTKEAGAYNNFKERFARSSIVSQMAVVDLTRNVPQMITQQVAAKIGQLCFVAD	600
Novel_45	*****	
Novel_45	VDEAGKSFACRPLLIVGAVVGTAMNTMLEKYKSINVRLYTITFVAFLANGKSWKPYCMHH	659
LPMP_110590	VDEAGKSFACRPLLIVGAVVGTAMNTMLEKYKSINVRLYTITFVAFLANGKSWKPYCMHH	659
LbrM.11.2.000360	VDEAGKSFACRPLLIVGAVVGTAMNTMLEKYKSINVRLYTITFVAFLANGKSWKPYCMHH	660
Novel_45	*****	
Novel_45	QVKGEEHVLIEDSDAASSHMSSTTLTVRRQNANEVLNNRFPDFLKEVTAHFKLDGKGSGK	719
LPMP_110590	QVKGEEHVLIEDSDAASSHMSSTTLTVRRQNANEVLNNRFPDFLKEVTAHFKLDGKGSGK	719
LbrM.11.2.000360	QVKGEEHVLIEDSDAASSHMSSTTLTVRRQNANEVLNNRFPDFLKEVTAHFKLNGKGSGK	720
Novel_45	*****:*****	

C

PAZ and PIWI (PAZ after the proteins Piwi Argonaut and Zwillie).



Supplementary Figure 46

A

Novel gene 46: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 13 (Positive strand)

Current Annotation

Gene: LPAL13_130007700

Gene: LPAL13_130007800

ALBA

Hypothetical

83,805 84,170 87,615 89,201 92,894 95,173

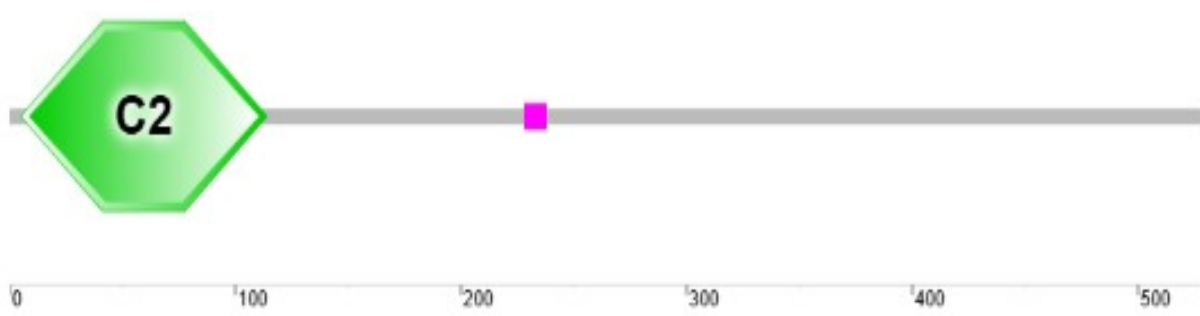
Novel gene ORF

B

Novel_46	MVSGLVFEFEILRGKNYPQTEDDDPNPCTTQVTVAVVGALSGAILS	60
LPMP_130350	MVSGLVFEFEILRGKNYPQTEDDDPNPCTTQVTVAVVGALSGAILS	60
LbrM.13.2.000280	MVSGLVFEFEILRGKNYPQTEDDDPNPCTTQVTVAVVDALSGAILS	60
Novel_46	NDKLNFKLEEASENVCFISITVSEHSRRKMPFVLIFYGKQLIELSKLKSQR	120
LPMP_130350	NDKLNFKLEEASENVCFISITVSEHSRRKMPFVLIFYGKQLIELSKLKSQR	120
LbrM.13.2.000280	NDKLNFKLEEASENVCFISITVSEHSRRKMPFVLIFYGKQLIELSKLKSQR	120
Novel_46	NNRQIEIGAEPLVLEKSRTTEPLLVSISIQFTKDKILDITVDPYSDVDIS	180
LPMP_130350	NNRQIEIGAEPLVLEKSRTTEPLLVSISIQFTKDKILDITVDPYSDVDIS	180
LbrM.13.2.000280	NNRQIEIGAEPLVLEKSGTAPLLVSISIQFTKDKILDITVDPYSDVDIS	180
Novel_46	PEGNQYVWLRLKSDKKWNTSYQCELLVVWRSRAPLEAEPQGNTKPRKGT	240
LPMP_130350	PEGNQYVWLRLKSDKKWNTSYQCELLVVWRSRAPLEAEPQGNTKPRKGT	240
LbrM.13.2.000280	PEGNQYVWLRLKSDKKWNTSYQCELLVVWRSRAPLEAEPQGNTKPRKGT	240
Novel_46	DSARTLGDIIITKKWCCHRTHQVLTRICLTAEKYGKKITDLTFTPREEIE	300
LPMP_130350	DSARTLGDIIITKKWCCHRTHQVLTRICLTAEKYGKKITDLTFTPREEIE	300
LbrM.13.2.000280	DSARTLGDIIITKKWCCHRTHQVLTRICLTAEKYGKKITDLTFTPKKEIE	300
Novel_46	LERICEEKLKYAGSNRLQDWLNRIWILFVTGVDNDPAGPRALSIEVRKA	360
LPMP_130350	LERICEEKLKYAGSNRLQDWLNRIWILFVTGVDNDPAGPRTLSEVRKA	360
LbrM.13.2.000280	LERICEEKLKYAGSNRLQDWLNRIWILFVTGVDNDPAGPRALSIEVRKA	360
Novel_46	IILQACLLFSFIPSLKYEVCQALSESDYQVSPSEKRELTGFEASQCMVTP	420
LPMP_130350	IILQACLLFSFIPSLKYEVCQALSESDYQVSPSEKRELTGFEASQCMVTP	420
LbrM.13.2.000280	IILQACLLFSFIPSLKYEVCQALSESDYQVSPSEKRELTGFEASQCMVTP	420
Novel_46	IEFVGPLLDTLTEAEIVKAAAEFKPAIWDAQQRIAEAGAKSTIGHHRRN	480
LPMP_130350	IEFVGPLLDTLTEAEIVKAAAEFKPAIWDAQQRIAEAGAKSTIGHHRRN	480
LbrM.13.2.000280	IEFVGPLLDTLTEAEIVKAAAEFKPAIWDAQQRIAEAGAKSTIGHHRRN	480
Novel_46	IDHLDKLGHRKQTPREVF	497
LPMP_130350	IDHLDKLGHRKQTPREVF	497
LbrM.13.2.000280	IDHLDKLGHRKQTPREVF	497

C

Protein kinase C conserved region 2 (CaIB)



Supplementary Figure 47

A

Novel gene 47: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 15 (Negative strand)

Current Annotation

Gene: LPAL13_150020600

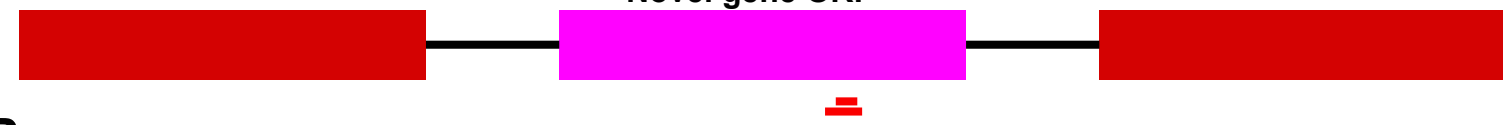
Gene: LPAL13_150020700

Hypothetical

Presenilin-like
aspartic peptidase

526,969 527,565 528,675 528,845 529,444 530,502

Novel gene ORF



B

Novel_47	MPPKHHDEDSDTVSPDKAEQLAMEYEDAHHERPGTK KQNETPSHQSK PKSVR	53
LPMP_151480	MPPKHHDEDSDTVSPDKAEQLAMEYEDAHHERPGTKKQNETPSHQSKPKSVR	53
LbrM.15.1520	MPPKHHDEDSDAVSPLDKAEQLAMEYEDAHHERPGTKKQNETPSHQSKPKSVR	53
LmjF.15.1520	MPSKNYDEQSDSVPPHDRAEALAMEYENSHHERPGTKKHNETPSHQGKPKSVR	53
	.*:::*:*.* *:** *****::*****:*****.*****	

C

No domain found



Supplementary Figure 48

A Novel gene 48: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 24 (Negative strand)

Current Annotation

Gene: LPAL13_240030200

Gene: LPAL13_240030300

MAPK

Hypothetical

819,548 820,600 821,238 822,446 826,540 826,893

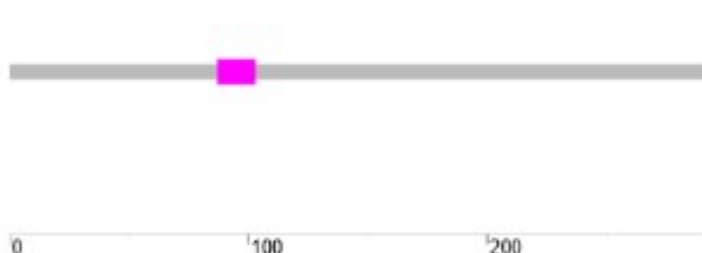
Novel gene ORF

B

Novel_48	MEIGNADEQTLRVPSVTRADIARREAAEDYYALLVEEWANYASRKGYSKNEVRTKWTET	60
LPMP_242300	MEIGNADEQTLRVPSVTRADIARREAAEDYYALLVEEWANYASRKGYSKNEVRTKWTET	60
LBRM2903_240031700	METGNADERTLGLPSVTRADIARREAAEDYYALLVEEWTNYASRKGYSKNEVRTKWTET	60
	** *****: ** :*****:*****:*****	
Novel_48	WDAFEARKHAQKFLFKRHELR SQKK AAQLSETQKWSEQKSAAVVEKIMAFEAEQRGTLQ	120
LPMP_242300	WDAFEARKHAQKFLFKRHELR SQKK AAQLSETQKWSEQKSAAVVEKIMAFEAEQRGTLQ	120
LBRM2903_240031700	WDAFETRKAQKFLFKRHELR SQKK AAQLSESQKWSEQKSAAVVEKIMAFEAEQRTILQ	120
	*****: ** .*****:*****:*****:*****:*****	
Novel_48	PRHFLFVDYYDYQQFLFRNGRSFIENEENLLRCKLSEAEDDIMCLLV	180
LPMP_242300	PRHFLFVDYYDYQQFLFRNGRSFIENEENLLRCKLSEAEDDIMCLLV	180
LBRM2903_240031700	PRHFLFVDYYDYQQFLFRNGRSFIENEESLLRCKLSEAEDDLMCLLV	180
	*****:***** .*****:*****:***** **	
Novel_48	ENERIEEEAAAERLKEQYQQ KLEEEERLLEAQRTAQEREAQA EAQAEKEQAEVEKRLERK RRD	240
LPMP_242300	ENERIEEEAAAERLKEQYQQ KLEEEERLLEAQRTAQEREAQA EAQAEKEQAEVEKRLERK RRD	240
LBRM2903_240031700	ENERIEQEAERLKEQYQQ KLEEEERLLEAQRTAQEREAQA EAQAEKEQAEVEKRLERK RRD	240
	*****:*****:*****:*****:*****:*****	
Novel_48	EERRAK ARSEEREQRRAKE	258
LPMP_242300	EERRAK ARSEEREQRRAKE	258
LBRM2903_240031700	EERRAK ARSEEREQRRAKE	258

C

No domain found



Supplementary Figure 50

A Novel gene 50: Hypothetical protein

Leishmania panamensis MHOM/COL/81/L13 Chromosome 32 (Negative strand)

Current Annotation

Gene: LPAL13_320037700

ATP binding protein

Gene: LPAL13_320037800

Hypothetical



B

Novel_50	MNLFRTLVAICAIILVNHPDEDSVEPLHDLLLGYQKEALKSHYGDARLFNHTETRQI	60
LPMP_323150	MNLFRTLVAICAIILVNHPDEDSVEPLHDLLLGYQKEALKSHYGDARLFNHTETRQI	60
LbrM.32.2.003250	MNLFRTLVAICAIILVNHPDEDSVEPLHDLLLGYQKEALRSHYGDARLFNHTETRQI	60
	*****:*****	
Novel_50	YNLVLSEAQNAILNSHEDADRKAYTCSKIRSQVRQYARSRDGTYPWTEIVLQLRDGYV	120
LPMP_323150	YNLVLSEAQNAILNSHEDADRKAYTCSKIRSQVRQYARSRDGTYPWTEIVLQLRDGYV	120
LbrM.32.2.003250	YNLVLSEAQNAILNSHEDADRKAYTCSKIRSQVRQYARSRDGTYPWTEIVLQLRDGYV	120

Novel_50	HGIKYLPIALRKDVSDSLALQKPTLLNTATVLRQAYYCLAPTLGGECPSYTFRLRVIRGK	180
LPMP_323150	HGIKYLPIALRKDVSDSLALQKPTLLNTATVLRQAYYCLAPTLGGECPSYTFRLRVIRGK	180
LbrM.32.2.003250	HGIKYLPTALRKDVSDSLALQKPTLLNTATVLRQTYYCLAPTLRGECPSYTFRLRVIRGK	180
	***** *****:***** *****	
Novel_50	GDTAILESCLRSNKGFGNGI	199
LPMP_323150	GDTAILESCLRSNKGFGNGI	199
LbrM.32.2.003250	GDTAILESCLRSNKGFGNGI	199

C

No domain found

