

Higher virus production and cytotoxic effects of a Zika virus Brazilian isolate from Bahia compared to a Canadian-imported Thai strain

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Supplementary Materials:

Figure S1: Amino acids sequence comparison between the ZIKV Canadian-imported Thai strain PLCal_ZV and the Brazilian HS-2015-BA-01 strain. The 5' and 3' ends of the nucleotide sequence of PLCal_ZV reported in GenBank are not completely sequenced; therefore the 37aa at the N-terminus and the 6 aa at the C-terminus of the polyproteins could not be aligned.

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PLCal_ZV          -----LLGHGPIRMVLAILAFLRFTAIAK
HS-2015-BA-01    MKNPKKKSGGFRIVNMLKRGVARVSPFGGLKRLPAGLLLGHGPIRMVLAILAFLRFTAIAK
                  *****

PLCal_ZV          PSLGLINRWGSVGKKEAMEI IKKFKKDLAAMLRI INARKEKKRRGTDTSVGIVGLLLTTA
HS-2015-BA-01    PSLGLINRWGSVGKKEAMEI IKKFKKDLAAMLRI INARKEKKRRGADTSVGIVGLLLTTA
                  *****

PLCal_ZV          MAAEVTRRGSAYYMYLDRSDAGEAISFPTTLGMNKCYIQIMDLGHMCDATMSYECPLDE
HS-2015-BA-01    MAAEVTRRGSAYYMYLDRNDAGEAISFPTTLGMNKCYIQIMDLGHMCDATMSYECPLDE
                  *****

PLCal_ZV          GVEPDDVDCWCNTTSTWVVYGTCHHKKGEARRSRRAVTLPSHSTRKLQTRSQTWLESREY
HS-2015-BA-01    GVEPDDVDCWCNTTSTWVVYGTCHHKKGEARRSRRAVTLPSHSTRKLQTRSQTWLESREY
                  *****

PLCal_ZV          TKHLIRVENWIFRNPGFALAAAAIAWLLGSSTSQKVIYLV MILLIAPAYSIRCIGVSNRD
HS-2015-BA-01    TKHLIRVENWIFRNPGFALAAAAIAWLLGSSTRQKVIYLV MILLIAPAYSIRCIGVSNRD
                  *****

PLCal_ZV          FVEGMSGGTWVDV VLEHGGCVTVMAQDKPTVDIELVTTTVSNMAEVRSYCYEASISDMAS
HS-2015-BA-01    FVEGMSGGTWVDV VLEHGGCVTVMAQDKPTVDIELVTTTVSNMAEVRSYCYEASISDMAS
                  *****

PLCal_ZV          DSRCP TQGEAYLDKQSDTQYVCKRTLVD R G W N G C G L F G K G S L V T C A K F A C S K K M T G K S I
HS-2015-BA-01    DSRCP TQGEAYLDKQSDTQYVCKRTLVD R G W N G C G L F G K G S L V T C A K F A C S K K M T G K S I
                  *****

PLCal_ZV          QPENLEYRIMLSVHGSQHSGMIVNDTGHETDENRAKVEITPNSPRAEATLGGFGSLGLDC
HS-2015-BA-01    QPENLEYRIMLSVHGSQHSGMIVNDTGHETDENRAKVEITPNSPRAEATLGGFGSLGLDC
                  *****

PLCal_ZV          EPRTGLDFSDLYYLT MN NK HW LVHKEWFHDIPLPWHAGADTGTPHWNKEALVEFKDAHA
HS-2015-BA-01    EPRTGLDFSDLYYLT MN NK HW LVHKEWFHDIPLPWHAGADTGTPHWNKEALVEFKDAHA
                  *****

PLCal_ZV          KRQTVVVLGSQEGAVHTALAGALEAEMDGAKGR LSSGHLKCR LKMDKLR LKGVSYSLCTA
HS-2015-BA-01    KRQTVVVLGSQEGAVHTALAGALEAEMDGAKGR LSSGHLKCR LKMDKLR LKGVSYSLCTA
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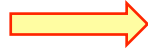
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PLCal_ZV HS-2015-BA-01	NSKMMLELDPPFGDSYIVIGVGEKKITHHWHRS GSTIGKA FEATVRGAKRMAVLGDTAWD NSKMMLELDPPFGDSYIVIGVGEKKITHHWHRS GSTIGKA FEATVRGAKRMAVLGDTAWD *****
PLCal_ZV HS-2015-BA-01	FGSVGGALNSLGKGIHQIFGA AFKSLFGGMSWFSQILIGTLLMWLGLNTKNGSISLMCLA FGSVGGALNSLGKGIHQIFGA AFKSLFGGMSWFSQILIGTLLMWLGLNTKNGSISLMCLA *****
PLCal_ZV HS-2015-BA-01	LGGVLIFLSTAVSADVGCSVDFSKKETRCGTGVFVYNDVEAWDRYKYHPDSPRRLAAAV LGGVLIFLSTAVSADVGCSVDFSKKETRCGTGVFVYNDVEAWDRYKYHPDSPRRLAAAV *****
PLCal_ZV HS-2015-BA-01	KQAWEDGICGISSVSRMENIMWRSVEGELNAILEENG VQLTVVVGSVKNPMPWRGPQRLPV KQAWEDGICGISSVSRMENIMWRSVEGELNAILEENG VQLTVVVGSVKNPMPWRGPQRLPV *****
PLCal_ZV HS-2015-BA-01	PVNELPHGWKAWGKSYFVRAAKTNN SFVVDGDTLKECPLK HRAWNSFLVEDHGFV FHTS PVNELPHGWKAWGKSYFVRAAKTNN SFVVDGDTLKECPLK HRAWNSFLVEDHGFV FHTS *****
PLCal_ZV HS-2015-BA-01	VWLKVREDYSLECDPAVIGTAVK GKEAVHSDLG YWIESEKNDTWRLKRAHLIEMKTCEWP VWLKVREDYSLECDPAVIGTAVK GKEAVHSDLG YWIESEKNDTWRLKRAHLIEMKTCEWP *****
PLCal_ZV HS-2015-BA-01	KSHTLWTDGIEESDLIIPKSLAGPLSHHNTREGYRTQMKG PWHSEELEIRFE ECPGTKVH KSHTLWTDGIEESDLIIPKSLAGPLSHHNTREGYRTQMKG PWHSEELEIRFE ECPGTKVH *****
PLCal_ZV HS-2015-BA-01	VEETCGTRGPSLRSTTASGRVIEEWCCRECTMPPLSFRAK DGCWYGMEIRPRKE PESNLV VEETCGTRGPSLRSTTASGRVIEEWCCRECTMPPLSFRAK DGCWYGMEIRPRKE PESNLV *****
PLCal_ZV HS-2015-BA-01	RSMVTAGSTDHMDHFS LGVLVILLMVQEGLKKRMTTKIIISTMAVLVAMILGGFSMSDL RSMVTAGSTDHMDHFS LGVLVILLMVQEGLKKRMTTKIIISTMAVLVAMILGGFSMSDL *****
PLCal_ZV HS-2015-BA-01	AKLAILMGATFAEMNTGGDVAHLALIAAFKVRPAL LVSFIFRANWTPRESMLLALASCLL AKLAILMGATFAEMNTGGDVAHLALIAAFKVRPAL LVSFIFRANWTPRESMLLALASCLL *****
PLCal_ZV HS-2015-BA-01	QTAISALEGDL MVLINGFALAWLAIRAMVVPRTDNITLAILAALTPLARGTLLVAWRAGL QTVISALEGDL MVLINGFALAWLAIRAMVVPRTDNITLAILAALTPLARGTLLVAWRAGL ** . *****
PLCal_ZV HS-2015-BA-01	ATCGGFMLLSLKKGKSVKKNLPFVMALGLTAVRLVDPIN VVGLLLLTRSGKRSWPPSEVL ATCGGFMLLSLKKGKSVKKNLPFVMALGLTAVRLVDPIN VVGLLLLTRSGKRSWPPSEVL *****
PLCal_ZV HS-2015-BA-01	TAVGLICALAGGFAKADIE MAGPMAAVGLLIVSYVVGKSVD MYIERAGDITWEKDAEVT TAVGLICALAGGFAKADIE MAGPMAAVGLLIVSYVVGKSVD MYIERAGDITWEKDAEVT *****
PLCal_ZV HS-2015-BA-01	GNSPRLDVALDESGDFSLVEDDGPMPREIILKVVLMTICGMNP IAI PFAAGAWYVVKTG GNSPRLDVALDESGDFSLVEDDGPMPREIILKVVLMTICGMNP IAI PFAAGAWYVVKTG *****
PLCal_ZV HS-2015-BA-01	KRSGALWDVPAPKEVKKGETTDGVYRVMTRRL LGSTQVGVGVMQEGVFHTMWHVTKGSAL KRSGALWDVPAPKEVKKGETTDGVYRVMTRRL LGSTQVGVGVMQEGVFHTMWHVTKGSAL *****

PLCal_ZV HS-2015-BA-01	RSGEGRLDPYWGDVKQDLVSYCGPWKLDAAWDGHSEVQLLAVPPGERARNIQTLPGIFKT RSGEGRLDPYWGDVKQDLVSYCGPWKLDAAWDGHSEVQLLAVPPGERARNIQTLPGIFKT *****
PLCal_ZV HS-2015-BA-01	KDGDIGAVALDYPAGTSGSPILDKCGRVIGLYGNGVVIKNGSYVSAITQGRREEETPVEC KGGDIGAVALDYPAGTSGSPILDKCGRVIGLYGNGVVIKNGSYVSAITQGRREEETPVEC * . *****
PLCal_ZV HS-2015-BA-01	FEPSMLKKKQLTVLDLHPGAGKTRRVLPEIVREAIKTRLRTVILAPTRVVAEMEEALRG FEPSMLKKKQLTVLDLHPGAGKTRRVLPEIVREAIKTRLRTVILAPTRVVAEMEEALRG *****
PLCal_ZV HS-2015-BA-01	LPVRYMTTAVNVTHSGTEIVDLMCHATFTSRLLQPIRVPNYNLYIMDEAHFTDPSSIAAR LPVRYMTTAVNVTHSGTEIVDLMCHATFTSRLLQPIRVPNYNLYIMDEAHFTDPSSIAAR *****
PLCal_ZV HS-2015-BA-01	GYISTRVEMGEAAAI FMTATPPGTRDAFPDSNSPIMDTEVEVPERAWSSGFDWVTDHSGK GYISTRVEMGEAAAI FMTATPPGTRDAFPDSNSPIMDTEVEVPERAWSSGFDWVTDHSGK *****
PLCal_ZV HS-2015-BA-01	TVWFPVSVRNGNEIAACLTAKGKRVIQLSRKTFETEFQKTKHQEWDVVTDDISEMGANF TVWFPVSVRNGNEIAACLTAKGKRVIQLSRKTFETEFQKTKHQEWDVVTDDISEMGANF *****
PLCal_ZV HS-2015-BA-01	KADRVIDSRRLKPVILDGERVILAGPMPVTHASAAQRRGRIGRNPKNPGDEYLYGGGCA KADRVIDSRRLKPVILDGERVILAGPMPVTHASAAQRRGRIGRNPKNPGDEYLYGGGCA *****
PLCal_ZV HS-2015-BA-01	ETDEDHAHWLEARMLLDNIYLQDGLIASLYRPEADKVAAIEGEFKLRTQKTFVELMKR ETDEDHAHWLEARMLLDNIYLQDGLIASLYRPEADKVAAIEGEFKLRTQKTFVELMKR *****
PLCal_ZV HS-2015-BA-01	GDLPVWLAYQVASAGITYTDRRWCDFGTTNNTIMEDSVPAEVWTRYGEKRVLKPRWMDAR GDLPVWLAYQVASAGITYTDRRWCDFGTTNNTIMEDSVPAEVWTRHGEKRVLKPRWMDAR ***** . *****
PLCal_ZV HS-2015-BA-01	VCSHAAALKSFKEFAAGKRGAAFGVMEALGTLPGHMTERFQEAIDNLAVLMRAETGSRPY VCSHAAALKSFKEFAAGKRGAAFGVMEALGTLPGHMTERFQEAIDNLAVLMRAETGSRPY ***** : *****
PLCal_ZV HS-2015-BA-01	KAAAAQLPETLETIMLLGLLGTVSLGIFVFLMRNKGIGKMGFGMVTLGASAWLMWLSEIE KAAAAQMPETLETIMLLGLLGTVSLGIFVFLMRNKGIGKMGFGMVTLGASAWLMWLSEIE ***** : *****
PLCal_ZV HS-2015-BA-01	PARIACVLIVVFLLLVVLPIPEPEKQSPQDNQMAIIIMVAVGLLGLITANELGWLERTKS PARIACVLIVVFLLLVVLPIPEPEKQSPQDNQMAIIIMVAVGLLGLITANELGWLERTKS *****
PLCal_ZV HS-2015-BA-01	DLSHLMGRREEGATIGFSMDIDL RPASAWAIYAALTTFITPAVQHAVTTSYNNYSLMAMA DLSHLMGRREEGATIGFSMDIDL RPASAWAIYAALTTFITPAVQHAVTTSYNNYSLMAMA *****
PLCal_ZV HS-2015-BA-01	TQAGVLFMGKGMPFYAWDFGVPLLMIGCYSQLTPLTLIVAIILLVAHYMYLIPGLQAAA TQAGVLFMGKGMPFYAWDFGVPLLMIGCYSQLTPLTLIVAIILLVAHYMYLIPGLQAAA *****
PLCal_ZV HS-2015-BA-01	ARAAQKRRTAAGIMKNPVVDGIVVTDIDTMTIDPQVEKKMGQVLLIAVAVSSAILSRTAWG ARAAQKRRTAAGIMKNPVVDGIVVTDIDTMTIDPQVEKKMGQVLLIAVAVSSAILSRTAWG *****
PLCal_ZV HS-2015-BA-01	WGEAGALITAATSTLWEGSPNKYWNSSSTATSLCNIFRGSYLAGASLIYTVTRNAGLVKRR WGEAGALITAATSTLWEGSPNKYWNSSSTATSLCNIFRGSYLAGASLIYTVTRNAGLVKRR *****

PLCal_ZV HS-2015-BA-01	GGGTGETLGEKWKARLNQMSALEFYSYKKS GITEVCREEARRALKDGVATGGHAVSRGSA GGGTGETLGEKWKARLNQMSALEFYSYKKS GITEVCREEARRALKDGVATGGHAVSRGSA *****
PLCal_ZV HS-2015-BA-01	KLRWLVERGYLQPYGKVIDLGCGRGWSYAA TIRKVQEVKGYTKGGPGHEEPMLVQSYG KLRWLVERGYLQPHGKVIDLGCGRGWSYAA TIRKVQEVKGYTKGGPGHEEPVLVQSYG *****:*****:*****
PLCal_ZV HS-2015-BA-01	WNIVRLKSGVDVFMMAAEPCDTLLCDIGESS SSPEVEEARTLRVLSMVGDWLEKRPGAFC WNIVRLKSGVDVFMMAAEPCDTLLCDIGESS SSPEVEEARTLRVLSMVGDWLEKRPGAFC *****
PLCal_ZV HS-2015-BA-01	IKVLCPYTSTMMETLERLQRRYGGGLVRVPLSRNSTHEMYWVSGAKSNTIKSVSTTSQLL IKVLCPYTSTMMETLERLQRRYGGGLVRVPLSRNSTHEMYWVSGAKSNTIKSVSTTSQLL *****
PLCal_ZV HS-2015-BA-01	LGRMDGPRRPVKYEEDVNLGSGTRAVVSCAEAPNMKIIGNRIERIRSEHAETWFFDENHP LGRMDGPRRPVKYEEDVNLGSGTRAVVSCAEAPNMKIIGNRIERIRSEHAETWFFDENHP *****
PLCal_ZV HS-2015-BA-01	YRTWAYHGSYEAPTQGSASSLINGVVRLLSKPWDVVTGVTGIAMTDTPYGQQRVFKEKV YRTWAYHGSYEAPTQGSASSLVNGVVRLLSKPWDVVTGVTGIAMTDTPYGQQRVFKEKV *****:*****
PLCal_ZV HS-2015-BA-01	DTRVPDPQEGTRQIMSMVSSWLWKELGKHKRPRVCTKEEFINKVRSNAALGAIFEEKEKW DTRVPDPQEGTRQVMSMVSSWLWKELGKHKRPRVCTKEEFINKVRSNAALGAIFEEKEKW *****:*****
PLCal_ZV HS-2015-BA-01	KTAVEAVNDPRFWALVDKEREHHLRGECQSCVYNMMGKREKKQGEFGKAKGSRAIWMWL KTAVEAVNDPRFWALVDKEREHHLRGECQSCVYNMMGKREKKQGEFGKAKGSRAIWMWL *****
PLCal_ZV HS-2015-BA-01	GARFLEFEALGFLNEDHWMGRENSGGGVEGLGLQRLGYVLEEMSRI PGGRMYADDTAGWD GARFLEFEALGFLNEDHWMGRENSGGGVEGLGLQRLGYVLEEMSRI PGGRMYADDTAGWD *****
PLCal_ZV HS-2015-BA-01	TRISRFDLENEALITNQMEKGHRALALAI IKYTYQNKVVKVLRPAEKGKTVMDIISRQDQ TRISRFDLENEALITNQMEKGHRALALAI IKYTYQNKVVKVLRPAEKGKTVMDIISRQDQ *****
PLCal_ZV HS-2015-BA-01	RGSGQVVITYALNTFTNLVVQLIRNMEAEEVLEMQDLWLLRRSEKVTNWLQSNWDRLKRM RGSGQVVITYALNTFTNLVVQLIRNMEAEEVLEMQDLWLLRRPEKVTNWLQSNWDRLKRM *****.
PLCal_ZV HS-2015-BA-01	AVSGDDCVVKPIDDRFAHALRFLNDMGKVRKDTQEWKPSTGWDNWEEVPFCSHHFNKLHL AVSGDDCVVKPIDDRFAHALRFLNDMGKVRKDTQEWKPSTGWDNWEEVPFCSHHFNKLHL *****
PLCal_ZV HS-2015-BA-01	KDGRSIVVPCRHQDELIGRARVSPGAGWSIRETACLAKSYAQMWQLLYFHRRDLRLMANA KDGRSIVVPCRHQDELIGRARVSPGAGWSIRETACLAKSYAQMWQLLYFHRRDLRLMANA *****
PLCal_ZV HS-2015-BA-01	ICSSVPVDWVPTGRTTWSIHGKGEMMTEDMLVVWNRVWIEENDHMDKTPVTKWTDIPY ICSSVPVDWVPTGRTTWSIHGKGEMMTEDMLVVWNRVWIEENDHMDKTPVTKWTDIPY *****
PLCal_ZV HS-2015-BA-01	LGKREDLWCGSLIGHRPRTTWAENIKNTVNMVRRIGDEEKYMDYLS TQVRYLGEEG--- LGKREDLWCGSLIGHRPRTTWAENIKNTVNMVRRIGDEEKYMDYLS TQVRYLGEEGSTP *****
PLCal_ZV HS-2015-BA-01	--- GVL

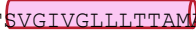
Figure S2: Protein secondary structure comparison between the ZIKV Canadian-imported Thai strain PLCal_ZV and the Brazilian HS-2015-BA-01 strain. Only proteins where aa differences were found are represented. Alpha (α) helix, beta (β) strand and coil are represented as follows:

Alpha Helix 

Beta Strand 

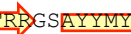
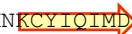
Coil regular sequence

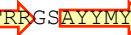
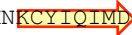
ER anchor for protein C (105-122)

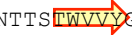
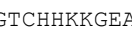
PLCal_ZV GTDT  SVGIVGLLLTTAMA

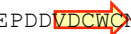
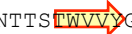
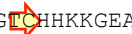
HS-2015-BA-01 GADT  SVGIVGLLLTTAMA
*:*****

Protein prM (123-290)

PLCal_ZV AEVTR  GSAYMY  DRSDAGEAIS  SFPT  LGMN  KCYIQ  IMDLGHMCDATMSYEC  PMLDEGV

HS-2015-BA-01 AEVTR  GSAYMY  DRNDAGEAIS  SFPT  LGMN  KCYIQ  IMDLGHMCDATMSYEC  PMLDEGV

PLCal_ZV EPDDVD  CWCNTTS  TWVY  GTCHHKKGEARRSRAVTLPSHSTRKLQTRSQTWLES  REYTK

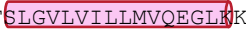
HS-2015-BA-01 EPDD  VDCWCNTTS  TWVY  GTCHHKKGEARRSRAVTLPSHSTRKLQTRSQTWLES  REYTK

PLCal_ZV  HLIRVENWIF  RNP  GFALAAAAIAWLI  GSSTS  QKVIYLV  MILLI  APAYS

HS-2015-BA-01  HLIRVENWIF  RNP  GFALAAAAIAWLI  GSST  QKVIYLV  MILLI  APAYS

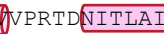
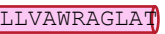
NS2A (1143-1368)

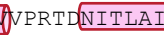
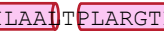
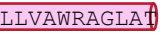
PLCal_ZV MVTAGSTDHMDHFS  LGVLVILLMVQEG  LKRRMTTKIIISTSM  AVL  VAMI  IGGFS MSDLAK

HS-2015-BA-01 MVTAGSTDHMDHFS  LGVLVILLMVQEG  LKRRMTTKIIISTSM  AVL  VAMI  IGGFS MSDLAK

PLCal_ZV  LAILMGATFAE  MNTG  GDVAHLALIAAFKVR  PALLVSFIFRANWT  PRESMLLALASCLLQ

HS-2015-BA-01  LAILMGATFAE  MNTG  GDVAHLALIAAFKVR  PALLVSFIFRANWT  PRESMLLALASCLLQ

PLCal_ZV  AIS  LEGD  LMVLINGFALAWLAIRAM  VPRTD  NITLAILAAIT  PLARGTLLVAWRAGLAT

HS-2015-BA-01  VIS  LEGD  LMVLINGFALAWLAIRAM  VPRTD  NITLAILAAIT  PLARGTLLVAWRAGLAT

PLCal_ZV CCGFMLLSIKKGKGSVKKNLPFVMA LGLTAVRLVDPINVVGLLLITR
 HS-2015-BA-01 CCGFMLLSIKKGKGSVKKNLPFVMA LGLTAVRLVDPINVVGLLLITR

NS3 (1499-2115)

PLCal_ZV TGKRSGALWDVPAPKEVKKEGETTDGVYRVMTRRDLGSTQVGVGVMEGVFHTMWHVTKGS
 HS-2015-BA-01 TGKRSGALWDVPAPKEVKKEGETTDGVYRVMTRRDLGSTQVGVGVMEGVFHTMWHVTKGS

PLCal_ZV ALRSGEGRLDPPYWGDKQDLVSYCGPWKLDAAWDGHSEVOLLAPPGERARNIOTLPGLF
 HS-2015-BA-01 ALRSGEGRLDPPYWGDKQDLVSYCGPWKLDAAWDGHSEVOLLAPPGERARNIOTLPGLF

PLCal_ZV KTKDGDIGAVALDYPAGTSGSPILDKCGRVIGLYGNGVVIKNGSYVSALTQGRREEETPV
 HS-2015-BA-01 KTKDGDIGAVALDYPAGTSGSPILDKCGRVIGLYGNGVVIKNGSYVSALTQGRREEETPV
 .**

PLCal_ZV ECFEPSMLKKKQLTVLDLHPGAGKTRRVLP EIVREAIKTRLRTVLAFTRVVAAEMEEL
 HS-2015-BA-01 ECFEPSMLKKKQLTVLDLHPGAGKTRRVLP EIVREAIKTRLRTVLAFTRVVAAEMEEL

PLCal_ZV RGLPVRVMTTAVNVTHSGTEIVDLMCHATFTSRLLQPIRVPNYNLYIMDEAHFTDPSSIA
 HS-2015-BA-01 RGLPVRVMTTAVNVTHSGTEIVDLMCHATFTSRLLQPIRVPNYNLYIMDEAHFTDPSSIA

PLCal_ZV ARGYISTRVEMGEAAAFMTATPPGTRDAFPDSNSPIMDTEVEVPERAWSSGFDWVTDHS
 HS-2015-BA-01 ARGYISTRVEMGEAAAFMTATPPGTRDAFPDSNSPIMDTEVEVPERAWSSGFDWVTDHS

PLCal_ZV GKTVMFVPSVRNGNEIAACLTRAGKRV IQLSRKTFETEFQKTKHQEWDFVVTTDISEMGA
 HS-2015-BA-01 GKTVMFVPSVRNGNEIAACLTRAGKRV IQLSRKTFETEFQKTKHQEWDFVVTTDISEMGA

PLCal_ZV NFKADRVIDSRRCLKPVIIDGERVILAGPMPVT HASAAQRRGRIGRNPKNKPGDEYLYGGG
 HS-2015-BA-01 NFKADRVIDSRRCLKPVIIDGERVILAGPMPVT HASAAQRRGRIGRNPKNKPGDEYLYGGG

PLCal_ZV CAETDEDHAHWLEARMLLDNIYLQDGLIASLYRPEADKVAAIEGEFKDRTEQRKTFVELM
 HS-2015-BA-01 CAETDEDHAHWLEARMLLDNIYLQDGLIASLYRPEADKVAAIEGEFKDRTEQRKTFVELM

PLCal_ZV KRGDLPVWLAYQVASAGITYTDRWCDFDGTNNNTMEDSVPAEIVTRYGEKRVLPKPRWMD
 HS-2015-BA-01 KRGDLPVWLAYQVASAGITYTDRWCDFDGTNNNTMEDSVPAEIVTRYGEKRVLPKPRWMD

PLCal_ZV ARVCSDHAALKSFKEHA
 HS-2015-BA-01 ARVCSDHAALKSFKEHA

NS4A (2116-2242)

PLCal_ZV AGKRGAAFGVMEALGTLPGHMTERFQEAIDNLAVLMRAETGSRPYKAAAAQLPETLETIM
 HS-2015-BA-01 AGKRGAAFGVMEALGTLPGHMTERFQEAIDNLAVLMRAETGSRPYKAAAAQLPETLETIM
 *****:*****:*****
 PLCal_ZV LLGLLGTVSLGIFFVLMRNKGIGKMGFGMVTLGASAWLMWISEIEPARIACVLIVVFLLI
 HS-2015-BA-01 LLGLLGTVSLGIFFVLMRNKGIGKMGFGMVTLGASAWLMWISEIEPARIACVLIVVFLLI

 PLCal_ZV VVILPEP
 HS-2015-BA-01 VVILPEP

NS5 (2517-3417)

PLCal_ZV VKRRGGGTGETLGEKWKARLNQMSALEFYSYKSGITEVCREEARALKDGVATGGHAVS
 HS-2015-BA-01 VKRRGGGTGETLGEKWKARLNQMSALEFYSYKSGITEVCREEARALKDGVATGGHAVS

 PLCal_ZV RGSAKLRWLVEBRYLQPYGKVIDLGCGRGGWSYYAATIRKVQEVKGYTKGGPGHEEPMPLV
 HS-2015-BA-01 RGSAKLRWLVEBRYLQPHGKVLDLGCGRGGWSYYAATIRKVQEVKGYTKGGPGHEEPVLV
 *****:*****:
 PLCal_ZV QSYGWNIVRLKSGVDVFHMAAEPCDTLLCDIGESSSSPEVEEARTLRVLSMVGDWLEKRP
 HS-2015-BA-01 QSYGWNIVRLKSGVDVFHMAAEPCDTLLCDIGESSSSPEVEEARTLRVLSMVGDWLEKRP

 PLCal_ZV GAECTKVLCPYTSMTMETLERLQRRYGGGLVRVPLSRNSTHEMYWVSGAKSNTIKSVSTT
 HS-2015-BA-01 GAECTKVLCPYTSMTMETLERLQRRYGGGLVRVPLSRNSTHEMYWVSGAKSNTIKSVSTT

 PLCal_ZV SQLLLGRMDGPRRPVKYEDVNLGSGTRAVVSCAEAPNMKIIGNRIERIRSEHAETWFFD
 HS-2015-BA-01 SQLLLGRMDGPRRPVKYEDVNLGSGTRAVVSCAEAPNMKIIGNRIERIRSEHAETWFFD

 PLCal_ZV ENHPYRTWAYHGSYBAPTQGSASSLINGVVRLLSKPWDVVTGVTGLAMTDTPYGOQRVF
 HS-2015-BA-01 ENHPYRTWAYHGSYBAPTQGSASSLVNGVVRLLSKPWDVVTGVTGLAMTDTPYGOQRVF
 *****:
 PLCal_ZV KKQVDTRVPDPQEGTRQIMSMVSSWLWKELGKHKRPRVCTKEEFINKVRSNAALGAIFEE
 HS-2015-BA-01 KKQVDTRVPDPQEGTRQVMSMVSSWLWKELGKHKRPRVCTKEEFINKVRSNAALGAIFEE
 *****:

PLCal_ZV	EKEWKTAVEAVNDPREFWALVDKEREHHLRGECQSCVYMMGKREKKQGEFGKAKGSRATW
HS-2015-BA-01	EKEWKTAVEAVNDPREFWALVDKEREHHLRGECQSCVYMMGKREKKQGEFGKAKGSRATW *****
PLCal_ZV	YMWLGARFLEFEALGFLNEDHWMGRENSGGGVEGLGLQRLGYVLEEMSRIPGGRMYADDT
HS-2015-BA-01	YMWLGARFLEFEALGFLNEDHWMGRENSGGGVEGLGLQRLGYVLEEMSRIPGGRMYADDT *****
PLCal_ZV	AGWDTRISRFDFLENEALITNQMEKGHRAALALAIKITYQNKVVKVLRPAEKGKTVMDDIS
HS-2015-BA-01	AGWDTRISRFDFLENEALITNQMEKGHRAALALAIKITYQNKVVKVLRPAEKGKTVMDDIS *****
PLCal_ZV	RQDQRGSGQVVTYALNTFTNLVVQLIRNMEAEVLEMQDLWLLRRSEKVTNWLSNGWDR
HS-2015-BA-01	RQDQRGSGQVVTYALNTFTNLVVQLIRNMEAEVLEMQDLWLLRRPEKVTNWLSNGWDR *****
PLCal_ZV	IKRMAYSGDDCVVKPIDDRFAHALRFLNDMGKVRKDTQEWKPSTGWDNWEEVPFCSHHFN
HS-2015-BA-01	IKRMAYSGDDCVVKPIDDRFAHALRFLNDMGKVRKDTQEWKPSTGWDNWEEVPFCSHHFN *****
PLCal_ZV	KLHLKDGSRIVVPCRHQDELLIGRARVSPGAGWSIRETACLAKSYAQMWQLLYFHRDLRI
HS-2015-BA-01	KLHLKDGSRIVVPCRHQDELLIGRARVSPGAGWSIRETACLAKSYAQMWQLLYFHRDLRI *****
PLCal_ZV	MANAICSSVPVDWVPTGRTTWSIHGKGEWMTTEMDLVVWNRVWLEENDHMEDKTPVTKWT
HS-2015-BA-01	MANAICSSVPVDWVPTGRTTWSIHGKGEWMTTEMDLVVWNRVWLEENDHMEDKTPVTKWT *****
PLCal_ZV	DIPYLGKREDLWCGSLIGHRPRTTWAENIKNTVNMVRRIGDEEKYMDYLSTQVRYLGEE
HS-2015-BA-01	DIPYLGKREDLWCGSLIGHRPRTTWAENIKNTVNMVRRIGDEEKYMDYLSTQVRYLGEE *****
PLCal_ZV	G
HS-2015-BA-01	G *