



**Figure S1:** Protein sequences alignment among the Lpls from different strains of *M. hyopneumoniae*

Mhp-232	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-J	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-NCTC10127	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-ES-2	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-F7.2C	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-168	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-7448	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-KM014	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-MP258/94	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-BIO14	MKKIANFLIIEQNEIFTIYLTAEQQDLCTIGFLFTNKRLEKDDVVAIEASKT	57
Mhp-232	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-J	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-NCTC10127	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-ES-2	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-F7.2C	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-168	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-7448	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-KM014	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-MP258/94	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110
Mhp-BIO14	VFSIXTP LXCR I I I ELNQLAEKDPK I LNSHDSKNWLFKAKDIDQSEFDELEDF	110

**Figure S2:** Protein sequences alignment among the GcvHs from different strains of *M. hyopneumoniae*