

## Phylogenomic characterization of two novel members of the genus *Megalocytyvirus* from archived ornamental fish samples

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Table S1. GenBank accession nos. for the full genome sequences of 46 iridoviruses used in the 26 core gene phylogenetic analysis.

Species name (Virus abbreviation)	Genus	GenBank Acc. No.
Anopheles mimivirus iridovirus (AMIV)	<i>Chloriridovirus</i>	KF938901
Invertebrate iridovirus 22 (IIV-22)	<i>Chloriridovirus</i>	HF920633
Invertebrate iridovirus 22a (IIV-22a)	<i>Chloriridovirus</i>	HF920634
<i>Invertebrate iridescent virus 3</i> (IIV-3)	<i>Chloriridovirus</i>	DQ643392
Invertebrate iridescent virus 30 (IIV-30)	<i>Chloriridovirus</i>	HF920636
Wiseana iridescent virus (IIV-9)	<i>Chloriridovirus</i>	GQ918152
Invertebrate iridovirus 25 (IIV-25)	<i>Chloriridovirus</i>	HF920635
Armadillidium vulgare iridescent virus (IIV-31)	<i>Iridovirus</i>	HF920637
<i>Invertebrate iridescent virus</i> (IIV-6)	<i>Iridovirus</i>	AF303741
<i>Lymphocystis disease 1</i> (LCDV-1)	<i>Lymphocystivirus</i>	L63545
Lymphocystis disease virus - isolate China (LCDV-C)	<i>Lymphocystivirus</i>	AY380826
Lymphocystis disease virus (LCDV-Sa)	<i>Lymphocystivirus</i>	PRJEB12506
Giant seaperch iridovirus (GSIV-K1)	<i>Megalocytyvirus</i>	KT804738
<i>Infectious spleen and kidney necrosis virus</i> (ISKNV)	<i>Megalocytyvirus</i>	AF371960
Infectious spleen and kidney necrosis virus (RSIV-Ku)	<i>Megalocytyvirus</i>	KT781098
Orange-spotted grouper iridovirus (OSGIV)	<i>Megalocytyvirus</i>	AY894343
Red seabream iridovirus (RSIV)	<i>Megalocytyvirus</i>	AB104413
Red seabream iridovirus (RSIV RIE12-1)	<i>Megalocytyvirus</i>	AP017456
Rock bream iridovirus (RBIV-KOR-TY1)	<i>Megalocytyvirus</i>	AY532606
Rock bream iridovirus (RBIV-C1)	<i>Megalocytyvirus</i>	KC244182
Scale drop disease virus (SDDV)	<i>Megalocytyvirus</i> *	KR139659
South American cichlid iridovirus (SACIV)	<i>Megalocytyvirus</i>	MG570131
Turbot reddish body iridovirus (TRBIV)	<i>Megalocytyvirus</i>	GQ273492
Three spot gourami iridovirus (TSGIV)	<i>Megalocytyvirus</i>	MG570132
<i>Ambystoma tigrinum stebbensi virus</i> (ATV)	<i>Ranavirus</i>	AY150217
Andrias davidianus ranavirus (ADRV)	<i>Ranavirus</i>	KC865735
<i>Bohle iridovirus</i> (BIV)	<i>Ranavirus</i>	KX185156
Cod iridovirus (CoIV)	<i>Ranavirus</i>	KX574342
Common midwife toad ranavirus (CMTV/2008/E-M)	<i>Ranavirus</i>	JQ231222

Table S1. Continued

Species name (Virus abbreviation)	Genus	GenBank Acc. No.
Common midwife toad ranavirus (CMTV/2013/NL-VB)	<i>Ranavirus</i>	KP056312
Epizootic haematopoietic necrosis virus (EHNV)	<i>Ranavirus</i>	FJ433873
<i>European catfish virus</i> (ECV)	<i>Ranavirus</i>	KT989885
European sheatfish virus (ESV)	<i>Ranavirus</i>	JQ724856
<i>Frog virus 3</i> (FV3)	<i>Ranavirus</i>	AY548484
Frog virus 3 isolate SSME (SSME)	<i>Ranavirus</i>	KF175144
German gecko ranavirus (GGRV)	<i>Ranavirus</i>	KP266742
Grouper iridovirus (GIV)	<i>Ranavirus</i>	AY666015
Pike perch iridovirus (PIIV)	<i>Ranavirus</i>	KX574341
<i>Rana grylio</i> iridovirus (RGV)	<i>Ranavirus</i>	JQ654586
<i>Ranavirus maximus</i> (Rmax)	<i>Ranavirus</i>	KX574434
Short-finned eel ranavirus (SERV)	<i>Ranavirus</i>	KX353311
<i>Singapore grouper iridovirus</i> (SGIV)	<i>Ranavirus</i>	AY521625
Soft-shelled turtle iridovirus (STIV)	<i>Ranavirus</i>	EU627010
<i>Testudo hermanni</i> ranavirus (CH8/96)	<i>Ranavirus</i>	KP266741
Tiger frog virus (TFV)	<i>Ranavirus</i>	AF389451
Tortoise ranavirus isolate (ToRV1)	<i>Ranavirus</i>	KP266743

\*SDDV serves as a distantly related outgroup to members of the genus *Megalocytivirus*

Table S2. Summary of 83 megalocytiviruses and selected outgroups used for the major capsid protein phylogenetic analysis.

Host Species	Host Common Name	Host Family	Country and Year Collected	Strain Name	Accession No.	Reference
ISKNV Clade 1						
<i>Lates calcarifer</i>	Barramundi	Latidae	Taiwan 2005	GSIV/Pt/836/05	JF264350	Huang et al. 2011
<i>Lates calcarifer</i>	Barramundi	Latidae	Taiwan 2005	GSIV/Pt/843/05	JF264354	Huang et al. 2011
<i>Lates calcarifer</i>	Barramundi	Latidae	Taiwan 2006	GSIV/Pt/113/06	JF264353	Huang et al. 2011
<i>Trichogaster lalius</i>	Dwarf gourami	Osphronemidae	Japan 2000	DGIV	AB109369	Sudthongkong et al. 2002a
<i>Trichogaster lalius</i>	Dwarf gourami	Osphronemidae	Singapore 2000	ISKNV-DGA4/6K	AB666344	Nakajima & Kurita 2005
<i>Siniperca chuatsi</i>	Mandarin fish	Percichthyidae	China 1998	ISKNV	AF371960	He et al. 2001
<i>Siniperca chuatsi</i>	Mandarin fish	Percichthyidae	China 2009	ISKNV-QY	HQ317460	Fu et al. 2011
<i>Maccullochella peelii</i>	Murray cod	Percichthyidae	Australia 2003	MCIV	AY936203	Go et al. 2006
<i>Aplocheilichthys centralis</i>	African lampeye	Poeciliidae	Japan 1998	ALIV	AB109368	Sudthongkong et al. 2002a/b
<i>Aplocheilichthys centralis</i>	African lampeye	Poeciliidae	Japan 1998	ALIV	AY285745	Sudthongkong et al. 2002a/b
<i>Epinephelus fuscoguttatus</i>	Brown-marbled grouper	Serranidae	Malaysia 2007	Sabah/RAA/2012 BMGIV46	JQ253373	Razak et al. 2014
<i>Epinephelus fuscoguttatus</i>	Brown-marbled grouper	Serranidae	Malaysia 2007	Sabah/RAA/2012 BMGIV48	JQ253374	Razak et al. 2014
<i>Cromileptes altivelis</i>	Humpback grouper	Serranidae	Malaysia 2006	Sabah/RAA/2012 HGIV65	JQ253367	Razak et al. 2014
<i>Cromileptes altivelis</i>	Humpback grouper	Serranidae	Malaysia 2006	Sabah/RAA/2012 HGIV67	JQ253369	Razak et al. 2014
<i>Cromileptes altivelis</i>	Humpback grouper	Serranidae	Malaysia 2006	Sabah/RAA/2012 HGIV69	JQ253370	Razak et al. 2014
<i>Cromileptes altivelis</i>	Humpback grouper	Serranidae	Malaysia 2006	Sabah/RAA/2012 HGIV73	JQ253371	Razak et al. 2014

Table S2. Continued

Host Species	Host Common Name	Host Family	Country and Year Collected	Strain Name	Accession No.	Reference
<i>Epinephelus lanceolatus</i>	King grouper	Serranidae	Malaysia 2011	Sabah/RAA/2012 GGIV3	JQ253365	Razak et al. 2014
<i>Epinephelus lanceolatus</i>	King grouper	Serranidae	Malaysia 2011	Sabah/RAA/2012 GGIV4	JQ253366	Razak et al. 2014
<i>Rhabdosargus sarba</i>	Silver seabream	Sparidae	Taiwan 2005	SSBIV/Pt/703/05	JF264356	Huang et al. 2011
<i>Pagrus major</i>	Red seabream	Sparidae	Taiwan 2007	RSIV-Ku	KT781098	Wen & Hong unpublished
ISKNV Clade 2						
<i>Pterapogon kauderni</i>	Banggai cardinalfish	Apogonidae	SE Asia 2006	PKIV	AB669096	Kurita & Nakajima 2012
<i>Oxyeleotris marmorata</i>	Marble goby	Eleotridae	China 2009	MSGIV	HM067835	Wang et al. 2011
<i>Platax orbicularis</i>	Orbicular batfish	Ephippidae	Belgium 2010	OBIV	KC424426	Sriwanayos et al. 2013
<i>Lates calcarifer</i>	Barramundi	Latidae	Vietnam 2015	ISKNV SB04	KY440040	Dong et al. 2017
<i>Lates calcarifer</i>	Barramundi	Latidae	Vietnam 2015	ISKNV SB08	KY440041	Dong et al. 2017
RSIV Clade 1						
<i>Morone saxatilis x Morone chrysops</i>	Hybrid striped bass x white bass	Moronidae	China 2004	RSIV 2HSB	AB666318	Nakajima & Kurita 2005
<i>Siniperca chuatsi</i>	Mandarin fish	Percichthyidae	China 2006	ISKNV-XT	HQ317457	Fu et al. 2011
<i>Siniperca chuatsi</i>	Mandarin fish	Percichthyidae	China 2006	ISKNV-XQ	HQ317458	Fu et al. 2011
<i>Pagrus major</i>	Red seabream	Sparidae	Japan 1992	RSIV-Ehime-1/RS92Ehi1	AB080362	Kurita et al. 2002
RSIV Clade 2						
<i>Seriola quinqueradiata</i>	Japanese amberjack	Carangidae	China 2007	ISKNV-HZhj	HQ317463	Fu et al. 2011
<i>Lates calcarifer</i>	Barramundi	Latidae	Taiwan 2007	BPIV-07	EU847417	Wang et al. 2009
<i>Lates calcarifer</i>	Barramundi	Latidae	Taiwan 2008	BPIV-08	EU847418	Wang et al. 2009

Table S2. Continued

Host Species	Host Common Name	Host Family	Country and Year Collected	Strain Name	Accession No.	Reference
<i>Lates calcarifer</i>	Barramundi	Latidae	Taiwan <2008	GSIV-K1	EU315313	Wen et al. 2008
<i>Lates calcarifer</i>	Barramundi	Latidae	Taiwan 2008	GSIV/Pt/327/08	JF264346	Huang et al. 2011
<i>Leiognathus equulus</i>	Common ponyfish	Leiognathidae	Taiwan 2005	CPIV-05	EU847420	Wang et al. 2009
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Korea 2000	RBIV-KOR-TY1	AY532606	Do et al. 2004
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Korea <2002	RBIV-KOR-GJ	AY532609	Do et al. 2005b
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Korea <2002	RBIV-KOR-TY2	AY533035	Do et al. 2005b
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Korea <2002	RBIV-KOR-TY3	AY532607	Do et al. 2005b
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Korea <2002	RBIV-KOR-TY4	AY532608	Do et al. 2005b
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Korea <2002	RBIV-KOR-YS	AY532610	Do et al. 2005b
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	South Korea <2004	RBIV-CNU-1	AY849393	Kim et al. 2007
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Korea <2004	RBIV-CNU-2	AY849394	Kim et al. 2007
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	China 2009	RBIV-C1	KC244182	Zhang et al. 2013
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea <2005	OFIV	DQ198145	Kim & Lee unpublished
<i>Siniperca chuatsi</i>	Mandarin fish	Percichthyidae	China 2006	ISKNV-HT	HQ317464	Fu et al. 2011
<i>Siniperca chuatsi</i>	Mandarin fish	Percichthyidae	China 2012	ISKNV-LJ2012	KC775381	Dong et al. 2013
<i>Kareius bicoloratus</i>	Stone flounder	Pleuronectidae	China 2010	SFIV 724/China	HQ263620	Zhao et al. unpublished
<i>Sebastes schlegeli</i>	Korean rockfish	Sebastidae	Korea <2002	RFIV-KOR-TY	AY532614	Do et al. 2005b

Table S2. Continued

Host Species	Host Common Name	Host Family	Country and Year Collected	Strain Name	Accession No.	Reference
<i>Epinephelus tauvina</i>	Greasy grouper	Serranidae	Thailand 1993	GSDIV	AY285746	Sudthongkong et al. 2002b
<i>Lateolabrax japonicus</i>	Japanese seaperch	Serranidae	Korea 2001	SBIV-KOR-TY	AY532613	Do et al. 2005a
<i>Epinephelus lanceolatus</i>	King grouper	Serranidae	Taiwan 2005	KGIV-05	EU847414	Wang et al. 2009
<i>Epinephelus lanceolatus</i>	King grouper	Serranidae	Taiwan 2006	GGIV/Pt/36/06	JF264347	Huang et al. 2011
<i>Epinephelus lanceolatus</i>	King grouper	Serranidae	Taiwan 2006	KGIV/Pt/96/06	JF264355	Huang et al. 2011
<i>Epinephelus coioides</i>	Orange-spotted grouper	Serranidae	China 2002	OSGIV	AY894343	Lu et al. 2005
<i>Lateolabrax spp.</i>	Seabass	Serranidae	Japan 1993	SBIV	AY310917	Sudthongkong et al. 2002b
<i>Pagrus major</i>	Red seabream	Sparidae	Japan 1994	RSIV	AB109371	Sudthongkong et al. 2002b
<i>Pagrus major</i>	Red seabream	Sparidae	Japan 2005	RSIV U-6	AB461856	Shinmoto et al. 2009
<i>Pagrus major</i>	Red seabream	Sparidae	Korea <2005	RSIV-KOR-TY	AY532612	Do et al. 2005b
TRBIV Clade 1						
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Korea <2002	RBIV-KOR-CS	AY532611	Do et al. 2005b
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-DS1	AY633980	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-DS2	AY633981	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-EJ	AY633987	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-JHJ	AY633991	Do et al. 2005a

Table S2. Continued

Host Species	Host Common Name	Host Family	Country and Year Collected	Strain Name	Accession No.	Reference
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-JJ	AY633988	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-JSY	AY633989	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-MI	AY633982	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-PH	AY633992	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-SS	AY633983	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-WD1	AY633986	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-WD2	AY633985	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea 2003	FLIV-YG	AY633984	Do et al. 2005a
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea <2004	OFIV	AY661546	Kim et al. Unpublished
<i>Paralichthys olivaceus</i>	Olive flounder	Paralichthyidae	Korea <2007	OFLIV-1	EU276417	Jeong et al. Unpublished
<i>Scophthalmus maximus</i>	Turbot	Scophthalmidae	China 2002	TRBIV I	AY590687	Shi et al. 2004
<i>Scophthalmus maximus</i>	Turbot	Scophthalmidae	China 2005	TRBIV I	GQ273492	Shi et al. 2010
<i>Scophthalmus maximus</i>	Turbot	Scophthalmidae	China 2009	TIV R-603	HM596017	Zhao et al. Unpublished
<i>Lateolabrax spp.</i>	Seaperch	Serranidae	Korea 2000	SPIV CH-1	HM067603	Jeong & Jeong unpublished
			TRBIV Clade 2			
<i>Trichogaster lalius</i>	Dwarf gourami	Cichlidae	Australia 1988	TLMV*	KX354222	Go et al. 2016

Table S2. Continued

Host Species	Host Common Name	Host Family	Country and Year Collected	Strain Name	Accession No.	Reference
<i>Pterophyllum scalare</i>	Freshwater angelfish	Cichlidae	Canada 1986	PSMV*	KX354223	Go et al. 2016
<i>Cleithracara maronii</i>	Keyhole cichlid	Cichlidae	USA 1991	SACIV*	MG570131	This study
<i>Oplegnathus fasciatus</i>	Rock bream	Oplegnathidae	Taiwan 2008	RBIV/Tp/45/08	JF264352	Huang et al. 2011
<i>Trichopodus trichopterus</i>	Three spot gourami	Osphronemidae	USA <1992	TSGIV	MG570132	This study
TSIV**						
<i>Gasterosteus aculeatus</i>	Three-spined stickleback	Gasterosteidae	Canada 2008	TSIV	HQ857785	Waltzek et al. 2012
SDDV**						
<i>Lates calcarifer</i>	Barramundi	Latidae	Singapore 2010	C4575	NC027778	de Groof et al. 2015

\*TLMV, PSMV, and SACIV have 100% nucleotide sequence identity to TSGIV and were not included in the MCP phylogenetic analysis.

\*\*TSIV and SDDV serve as a distantly related outgroups to members of the genus *Megalocytivirus*.

Abbreviations: ISKNV= *Infectious spleen and kidney necrosis virus*; RSIV= Red seabream iridovirus; SDDV= Scale drop disease virus; TRBIV= Turbot reddish body iridovirus; TSIV=Threespine stickleback iridovirus.



Table S3. Genome annotation of the South American cichlid iridovirus (SACIV).

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
1L	1–1137	379	Transmembrane amino acid transporter protein	transmembrane amino acid transporter protein [Three spot gourami iridovirus]	100	AVR29776
2L	1107–1562	152	DNA dependent RNA polymerase subunit H	DNA dependent RNA polymerase subunit H [Three spot gourami iridovirus]	97.4	AVR29777
3L	1688–1945	86	Caspase recruitment domain containing protein	caspase recruitment domain- containing protein [Three spot gourami iridovirus]	100	AVR29886
4L	2012–2491	160	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29778
5L*	2838–3584	249	NLI interacting factor-like phosphatase	NLI interacting factor-like phosphatase [Three spot gourami iridovirus]	100	AVR29779
6L	3732–4043	104	Major capsid protein	major capsid protein [Three spot gourami iridovirus]	100	AVR29887
7L	4223–5584	454	Major capsid protein	major capsid protein [Three spot gourami iridovirus]	100	AVR29780
8L*	5601–7058	486	Myristylated membrane protein	myristylated membrane protein [Three spot gourami iridovirus]	100**	AVR29781
9R*	7131–8681	517	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.4	AVR29782
10R	8635–9003	123	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29783
11L	9097–9489	131	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100**	AVR29784

Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
12L	9489–9842	118	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.1	AVR29785
13R	9765– 10097	111	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [Three spot gourami iridovirus]	99.1	AVR29786
14R*	10104– 11501	466	Serine/threonine protein kinase	serine/threonine protein kinase [Three spot gourami iridovirus]	99.8	AVR29787
15R	11756– 12727	324	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.4	AVR29788
16R	12733– 13518	262	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	98.1	AVR29789
17L	13576– 14163	196	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.0	AVR29790
18L	14178– 14507	110	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	96.3	AVR29791
19L	14767– 14958	64	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	95.9	AVR29888
20R*	15024– 17870	949	DNA polymerase	DNA polymerase [Three spot gourami iridovirus]	99.5	AVR29792
21R	17917– 18450	178	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29793
22L	18434– 20008	525	Macro domain containing protein	macro domain-containing protein [Three spot gourami iridovirus]	100**	AVR29794

Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
23R	20080– 22920	947	Laminin-type epidermal growth factor	laminin-type epidermal growth factor-like protein, partial [Starry flounder iridovirus]	94.2	AHB72710
24R*	23029– 23967	313	Ribonucleotide reductase beta subunit	ribonucleotide reductase beta subunit [Three spot gourami iridovirus]	100**	AVR29796
25L	24384– 24698	105	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	55.8	AVR29797
26L	24727– 25050	108	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	98.7	AVR29798
27L*	25075– 25971	299	Flap endonuclease-1	flap endonuclease-1 [Three spot gourami iridovirus]	99.7	AVR29799
28L*	25988– 29494	1169	DNA dependent RNA polymerase alpha subunit	DNA dependent RNA polymerase alpha subunit [Three spot gourami iridovirus]	99.7	AVR29800
29L*	29501– 29764	88	Transcription factor S-II	transcription factor S-II [Three spot gourami iridovirus]	100	AVR29801
30L	29790– 30326	179	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29802
31R*	30380– 30946	189	Deoxyribonucleoside kinase	deoxyribonucleoside kinase [Three spot gourami iridovirus]	100	AVR29803
32L	30952– 31854	301	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29804

Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
33R*	31955– 35080	1042	DNA dependent RNA polymerase beta subunit	DNA dependent RNA polymerase beta subunit [Three spot gourami iridovirus]	100**	AVR29805
34L	35173– 36285	371	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29806
35R	36394– 37419	342	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29807
36L	37471– 38820	450	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.8	AVR29808
37L	38829– 40262	478	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29809
38R	40239– 41174	312	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.7	AVR29810
39L	41167– 42315	383	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29811
40L	42317– 43651	445	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29812
41R	43666– 44247	194	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29813
42L*	44331– 44693	121	Erv1/Alr family protein	Erv1/Alr family protein [Three spot gourami iridovirus]	100	AVR29814
43L	44696– 45496	267	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29815
44L	45502– 46416	305	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.3	AVR29816

Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
45L	46410– 47093	228	Cytosine DNA methyltransferase	cytosine DNA methyltransferase [Three spot gourami iridovirus]	99.6	AVR29817
46R	47253– 47516	88	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29818
47R	47513– 47860	116	Vascular endothelial growth factor	vascular endothelial growth factor [Three spot gourami iridovirus]	100	AVR29819
48R	47876– 48046	57	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29889
49L	48106– 48534	143	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29820
50L	48765– 49265	167	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29821
51R	49267– 49482	72	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29822
52L	49495– 50424	310	2-cysteine adaptor domain containing protein	2-cysteine adaptor domain- containing protein [Three spot gourami iridovirus]	100	AVR29823
53L*	50447– 51382	312	2-cysteine adaptor domain containing protein	2-cysteine adaptor domain- containing protein [Three spot gourami iridovirus]	100	AVR29824
54L*	51393– 52040	216	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29825
55L	52047– 52307	87	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29826
56L	52675– 53190	172	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29890

Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
57L*	53261– 54064	268	Replication factor	hypothetical protein [Three spot gourami iridovirus]	100	AVR29827
58L	54061– 57666	1202	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	96.5	AVR29828
59L	57727– 58095	123	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29829
60L*	58102– 60750	883	SNF2 family helicase	SNF2 family helicase [Three spot gourami iridovirus]	100	AVR29830
61L	60793– 62265	491	mRNA capping enzyme	mRNA capping enzyme [Three spot gourami iridovirus]	99.8	AVR29831
62L	62307– 62762	152	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [Three spot gourami iridovirus]	99.3	AVR29832
63L	62827– 63870	348	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [Three spot gourami iridovirus]	100	AVR29833
64L	64075– 64713	213	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29834
65L	64685– 66127	481	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29835
66L	66183– 66839	219	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29836
67L	66954– 68564	537	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.8	AVR29837
68R	68605– 69036	144	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100**	AVR29838

Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
69R	69085– 70107	341	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29839
70L	70116– 70388	91	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29891
71L*	70390– 73560	1057	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29840
72R	73222– 74718	499	Ankyrin repeat containing protein	ankyrin repeat containing protein [Three spot gourami iridovirus]	100	AVR29841
73R	74715– 75179	155	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29842
74R	75334– 75975	214	US22 protein	US22 protein [Three spot gourami iridovirus]	100	AVR29843
75R	75962– 76465	168	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29844
76L	76506– 77612	369	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29845
77R	77484– 78020	179	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29846
78L	78058– 79413	452	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29847
79R	79440– 79967	176	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100**	AVR29848
80R*	79964– 80428	155	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29849
81R*	80394– 81191	266	Ribonuclease III	ribonuclease III [Three spot gourami iridovirus]	99.6	AVR29850

Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
82L	81188– 81679	164	SAP domain containing protein	SAP domain-containing protein [Three spot gourami iridovirus]	100	AVR29851
83R	81652– 83223	524	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29852
84L*	83204– 84223	340	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29853
85R	84224– 84403	60	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29854
86L	84400– 85329	310	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29855
87L	85339– 85809	157	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100**	AVR29856
88L	85860– 87020	387	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.5	AVR29857
89L*	87028– 87765	246	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29858
90L	87771– 88256	162	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29859
91L	88304– 88627	108	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [Three spot gourami iridovirus]	100	AVR29860
92L	88680– 89264	195	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29861
93L	89311– 89826	172	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100**	AVR29862



Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
94R	89890– 91320	477	Ankyrin repeat containing protein	ankyrin repeat containing protein [Three spot gourami iridovirus]	100	AVR29863
95R	91323– 91700	126	Suppressor of cytokine signaling protein	suppressor of cytokine signaling protein [Three spot gourami iridovirus]	100	AVR29864
96R	91735– 92511	259	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29865
97R	92513– 92884	124	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29866
98L	93020– 93958	313	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29867
99L	94103– 94705	201	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29868
100L*	94796– 97558	921	D5 family NTPase	D5 family NTPase [Three spot gourami iridovirus]	100**	AVR29869
101R	97567– 97761	65	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.4	AVR29870
102L	97758– 98654	299	Tumor necrosis factor receptor- associated factor	tumor necrosis factor receptor- associated factor [Three spot gourami iridovirus]	99.7	AVR29871
103R*	98677– 99420	248	Proliferating cell nuclear antigen	proliferating cell nuclear antigen [Three spot gourami iridovirus]	100**	AVR29872
104L	99410– 99916	169	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29873

Table S3. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
105L*	99955– 102534	860	Tyrosine kinase	tyrosine kinase [Three spot gourami iridovirus]	100	AVR29874
106R	102643– 102945	101	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29875
107R*	102984– 104096	371	Immediate early protein ICP-46	immediate early protein ICP- 46 [Three spot gourami iridovirus]	99.7	AVR29876
108R	104125– 105534	470	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	99.8	AVR29877
109L	105590– 106264	225	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29878
110L	106598– 107908	437	Ankyrin repeat containing protein	ankyrin repeat containing protein [Three spot gourami iridovirus]	100	AVR29879
111R	107954– 108259	102	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [Three spot gourami iridovirus]	100	AVR29880
112R	108213– 108794	194	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29881
113L	108795– 109433	213	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29882
114R*	109443– 110162	240	ATPase	ATPase [Three spot gourami iridovirus]	100	AVR29883
115L	110134– 110514	127	Hypothetical protein	hypothetical protein [Three spot gourami iridovirus]	100	AVR29884
116L	110523– 111341	273	Ankyrin repeat containing protein	ankyrin repeat containing protein [Three spot gourami iridovirus]	100	AVR29885

<sup>a</sup>Significant hits based on NCBI BLASTp

\*26 iridovirus core gene

\*\*ORF with synonymous change(s)

Abbreviations: nt, nucleotides; AA, amino acid; ID, identity, GSIV= Giant seabass iridovirus; ISKNV= *Infectious spleen and kidney necrosis virus*; OFIV= Olive flounder iridovirus; OSGIV= Orange-spotted grouper iridovirus; RBIV= Rock bream iridovirus; RSIV= Red seabream iridovirus; SDDV= Scale drop disease virus; TRBIV= Turbot reddish body iridovirus.

Table S4. Genome annotation of the three spot gourami iridovirus (TSGIV).

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
1L	1–1137	379	Transmembrane amino acid transporter protein	transmembrane amino acid transporter protein [South American cichlid iridovirus]	100	AVR29660
2L	1107–1562	152	DNA dependent RNA polymerase subunit H	DNA dependent RNA polymerase subunit H [South American cichlid iridovirus]	97.4	AVR29661
3L	1688–1945	86	Caspase recruitment domain- containing protein	caspase recruitment domain- containing protein [South American cichlid iridovirus]	100	AVR29770
4L	2012–2491	160	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29662
5L*	2838–3584	249	NLI interacting factor-like phosphatase	NLI interacting factor-like phosphatase [South American cichlid iridovirus]	100	AVR29663
6L	3732–4043	104	Major capsid protein	major capsid protein [South American cichlid iridovirus]	100	AVR29771
7L*	4223–5584	454	Major capsid protein	major capsid protein [South American cichlid iridovirus]	100	AVR29664
8L*	5601–7058	486	Myristylated membrane protein	myristylated membrane protein [South American cichlid iridovirus]	100**	AVR29665
9R	7131–8681	517	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.4	AVR29666
10L	8635–9003	123	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29667
11L	9097–9489	131	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100**	AVR29668

Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
12L	9489–9842	118	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	98.1	AVR29669
13R	9765–10097	111	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [South American cichlid iridovirus]	99.1	AVR29670
14R*	10104–11501	466	Serine/threonine protein kinase	serine/threonine protein kinase [South American cichlid iridovirus]	99.8	AVR29671
15R	11756–12727	324	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.4	AVR29672
16R	12733–13518	262	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	98.1	AVR29673
17L	13756–14163	196	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.0	AVR29674
18L	14178–14504	109	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	96.3	AVR29675
19L	14765–14956	64	Hypothetical protein	ORF018L [Infectious spleen and kidney necrosis virus]	95.9	NP_612240
20R*	15022–17868	949	DNA polymerase	DNA polymerase [South American cichlid iridovirus]	99.5	AVR29676
21R	17915–18448	178	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29677
22L	18432–20006	525	Macro domain containing protein	macro domain-containing protein [South American cichlid iridovirus]	100**	AVR29678
23R	20079–22166	696	Laminin-type epidermal growth factor	laminin-type epidermal growth factor-like protein [Starry flounder iridovirus]	94.2	AHB72710

Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
24R*	23501– 24439	313	Ribonucleotide reductase beta subunit	ribonucleotide reductase beta subunit [South American cichlid iridovirus]	100**	AVR29680
25L	24689– 24823	45	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	43.4	AVR29681
26L	24852– 25175	108	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	98.7	AVR29682
27L*	25200– 26096	299	Flap endonuclease-1	flap endonuclease-1 [South American cichlid iridovirus]	99.7	AVR29683
28L*	26113– 29619	1169	DNA dependent RNA polymerase alpha subunit	DNA dependent RNA polymerase alpha subunit [South American cichlid iridovirus]	99.7	AVR29684
29L*	29626– 29829	68	Transcription factor S-II	transcription factor S-II [South American cichlid iridovirus]	100	AVR29685
30L	29914– 30450	179	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29686
31R*	30504– 31070	189	Deoxyribonucleoside kinase	deoxyribonucleoside kinase [South American cichlid iridovirus]	100	AVR29687
32L	31076– 31978	301	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29688
33R*	32079– 35204	1042	DNA dependent RNA polymerase beta subunit	DNA dependent RNA polymerase beta subunit [South American cichlid iridovirus]	100**	AVR29689
34L	35297– 36409	371	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29690
35R	36518– 37543	342	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29691

Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
36L	37595– 38944	450	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.8	AVR29692
37L	38953– 40386	478	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29693
38R	40363– 41298	312	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.7	AVR29694
39L	41291– 42439	383	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29695
40L	42441– 43775	445	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29696
41R	43790– 44371	194	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29697
42L*	44455– 44817	121	Erv1/Alr family protein	Erv1/Alr family protein [South American cichlid iridovirus]	100	AVR29698
43L	44820– 45620	267	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29699
44L	45626– 46540	305	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.3	AVR29700
45L	46534– 47217	228	Cytosine DNA methyltransferase	cytosine DNA methyltransferase [South American cichlid iridovirus]	99.6	AVR29701
46R	47377– 47640	88	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29702
47R	47637– 47984	116	Vascular endothelial growth factor	vascular endothelial growth factor [South American cichlid iridovirus]	100	AVR29703
48R	48000– 48170	57	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29773

Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
49L	48230– 48658	143	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29704
50L	48889– 49389	167	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29705
51R	49391– 49606	72	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29706
52L	49619– 50548	310	2-cysteine adaptor domain containing protein	2-cysteine adaptor domain- containing protein [South American cichlid iridovirus]	100	AVR29707
53L*	50571– 51506	312	2-cysteine adaptor domain containing protein	2-cysteine adaptor domain- containing protein [South American cichlid iridovirus]	100	AVR29708
54L*	51517– 52164	216	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29709
55L	52171– 52431	87	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29710
56L	52799– 53314	172	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29774
57L*	53385– 54188	268	Hypothetical protein	replication factor [South American cichlid iridovirus]	100	AVR29711
58L	54185– 57910	1242	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	96.5	AVR29712
59L	57971– 58339	123	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29713
60L*	58346– 60994	883	SNF2 family helicase	SNF2 family helicase [South American cichlid iridovirus]	100	AVR29714
61L	61037– 62509	491	mRNA capping enzyme	mRNA capping enzyme [South American cichlid iridovirus]	99.8	AVR29715



Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
62L	62551– 63006	152	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [South American cichlid iridovirus]	99.3	AVR29716
63L	63071– 64114	348	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [South American cichlid iridovirus]	100	AVR29717
64L	64319– 64957	213	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29718
65L	64929– 66371	481	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29719
66L	66427– 67083	219	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29720
67L	67198– 68808	537	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.8	AVR29721
68R	69849– 69280	144	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100**	AVR29722
69R	69329– 70351	341	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29723
70L	70360– 70632	91	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29775
71L*	70634– 73804	1057	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29724
72R	73466– 74962	498	Ankyrin repeat containing protein	ankyrin repeat containing protein [South American cichlid iridovirus]	100	AVR29725
73R	74959– 75423	155	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29726

Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
74R	75578– 76219	214	US22 protein	US22 protein [South American cichlid iridovirus]	100	AVR29727
75R	76206– 76709	168	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29728
76L	76750– 77856	369	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29729
77R	77728– 78264	179	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29730
78L	78302– 79657	452	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29731
79R	79684– 80211	176	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100**	AVR29732
80R*	80208– 80672	155	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29733
81R*	80638– 81435	266	Ribonuclease III	ribonuclease III [South American cichlid iridovirus]	99.6	AVR29734
82L	81432– 81923	164	SAP domain containing protein	SAP domain-containing protein [South American cichlid iridovirus]	100	AVR29735
83R	81896– 83467	524	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29736
84L*	83448– 84467	340	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29737
85R	84468– 84647	60	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29738
86L	84644– 85573	310	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29739

Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
87L	85583– 86053	157	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100**	AVR29740
88L	86104– 87264	387	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.5	AVR29741
89L*	87272– 88009	246	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29742
90L	88015– 88500	162	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29743
91L	88548– 88871	108	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [South American cichlid iridovirus]	100	AVR29744
92L	88924– 89508	195	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29745
93L	89555– 90070	172	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100**	AVR29746
94R	90134– 91564	477	Ankyrin repeat containing protein	ankyrin repeat containing protein [South American cichlid iridovirus]	100	AVR29747
95R	91567– 91944	126	Suppressor of cytokine signaling protein	suppressor of cytokine signaling protein [South American cichlid iridovirus]	100	AVR29748
96R	91979– 92755	259	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29749
97R	92757– 93128	124	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29750
98L	93264– 94202	313	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29751

Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
99L	94347– 94949	201	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29752
100L*	95040– 97802	921	D5 family NTPase	D5 family NTPase [South American cichlid iridovirus]	100**	AVR29753
101R	97811– 98005	65	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	98.4	AVR29754
102L	98002– 98898	299	Tumor necrosis factor receptor-associated factor	tumor necrosis factor receptor- associated factor [South American cichlid iridovirus]	99.7	AVR29755
103R*	98921– 99664	248	Proliferating cell nuclear antigen	proliferating cell nuclear antigen [South American cichlid iridovirus]	100**	AVR29756
104L	99654– 100160	169	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29757
105L*	100199– 102778	860	Tyrosine kinase	tyrosine kinase [South American cichlid iridovirus]	100	AVR29758
106R	102887– 103189	101	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29759
107R*	103228– 104340	371	Immediate early protein ICP- 46	immediate early protein ICP-46 [South American cichlid iridovirus]	99.7	AVR29760
108R	104369– 105778	470	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	99.8	AVR29761
109L	105834– 106508	225	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29762
110L	106842– 108152	437	Ankyrin repeat containing protein	ankyrin repeat containing protein [South American cichlid iridovirus]	100	AVR29763

Table S4. Continued

ORF	Position (nt range)	Product size (AA)	Predicted function and conserved domain or signature	Best BLAST hit <sup>a</sup>		
				Description	AA Identity (%)	Accession no.
111R	108198– 108503	102	RING-finger-containing E3 ubiquitin ligase	RING-finger-containing E3 ubiquitin ligase [South American cichlid iridovirus]	100	AVR29764
112R	108457– 109038	194	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29765
113L	109039– 109677	213	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29766
114R*	109687– 110406	240	ATPase	ATPase [South American cichlid iridovirus]	100	AVR29767
115L	110378– 110758	127	Hypothetical protein	hypothetical protein [South American cichlid iridovirus]	100	AVR29768
116L	110767– 111585	273	Ankyrin repeat containing protein	ankyrin repeat containing protein [South American cichlid iridovirus]	100	AVR29769

<sup>a</sup>Significant hits based on NCBI BLASTp

\*26 iridovirus core gene

\*\*ORF with synonymous change(s)

Abbreviations: nt, nucleotides; AA, amino acid; ID, identity, GSIV= Giant seabass iridovirus; ISKNV= *Infectious spleen and kidney necrosis virus*; OFIV= Olive flounder iridovirus; OSGIV= Orange-spotted grouper iridovirus; RBIV= Rock bream iridovirus; RSIV= Red seabream iridovirus; SDDV= Scale drop disease virus; TRBIV= Turbot reddish body iridovirus

Table S5. Summary of the sequence identity matrix analysis based on the major capsid protein (1362 nucleotides) sequences for 83 megalocytiviruses including members from all 3 genotypes (ISKNV, RSIV, TRBIV) and clades. See Table S2 for clade information and abbreviations.

		ISKNV		RSIV		TRBIV	
		Clade 1	Clade 2	Clade 1	Clade 2	Clade 1	Clade 2
ISKNV	Clade 1	99.1-100	97.9-98.8	93.7-94.4	93.8-95.3	92.8-94.1	92.4-93.0
	Clade 2		99.6-100	94.0-94.2	94.2-95.2	93.1-93.8	92.8-93.0
RSIV	Clade 1			99.4-100	96.7-98.2	93.2-94.3	92.8-93.1
	Clade 2				98.4-100	93.0-94.6	92.7-93.6
TRBIV	Clade 1					98.4-100	95.9-96.7
	Clade 2						99.9-100

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