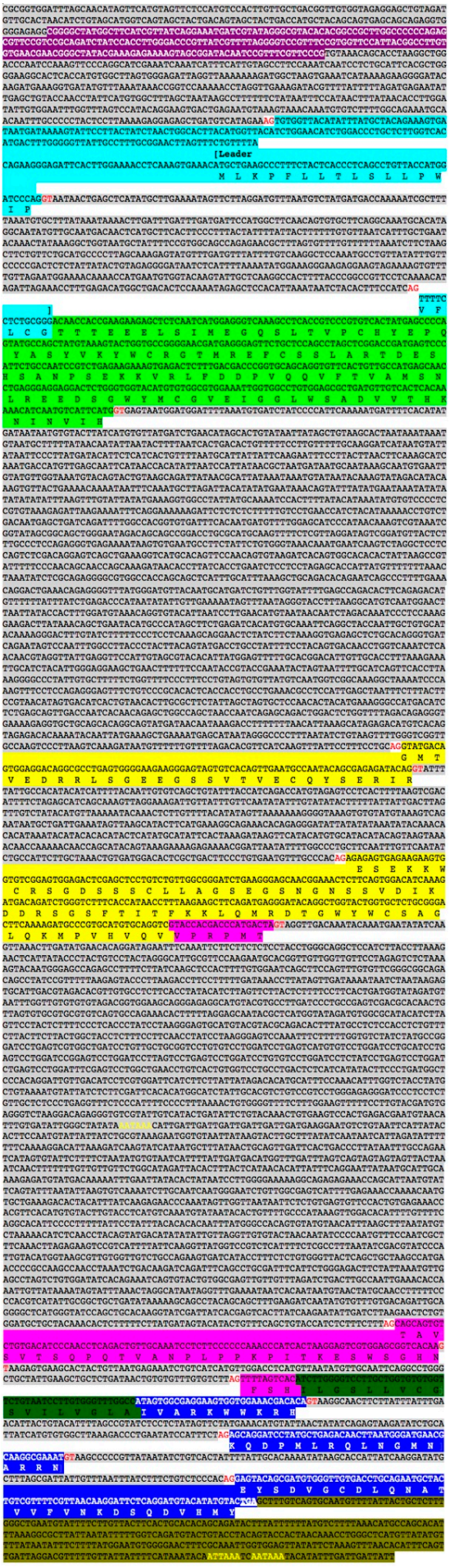


Figure S1. Complete sequence of *Trematomus bernacchii* polymeric Ig receptor (*pIgR)* gene. The deduced amino acid sequence is reported in one-letter code. The sequence comprises a promoter region, including the leader peptide (in cyan), a region encoding the D1 domain (in green), the D2 domain (in yellow), the extracellular membrane proximal domain (EMPD, in magenta), the transmembrane domain (TM, in dark green), the cytoplasmic tail (in blue), and the terminal sequence (in dark yellow). The stop codon is in white and underlined, polyadenylation signals are indicated in yellow. The intron sequences are shaded in grey; the donor and acceptor sites are depicted in red. The region containing the CpG island (CGI), located upstream of the 5′ end of *pIgR* gene, is highlighted in purple.

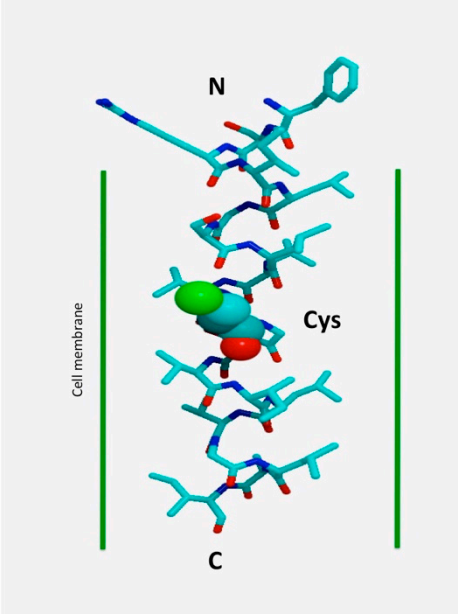


Figure S2. 3D molecular model of the transmembrane helix of *T. bernacchii* pIgR built with the Phyre2 tool (http://www.sbg.bio.ic.ac.uk/phyre/html/). The cysteine residue, located in the middle of the sequence with its side chain pointing out of the transmembrane helix, is shown. The N- and C-termini are indicated at the top and bottom, respectively.

Signal peptide

Trematomus bernacchii	MLKPFLLTLSLLPWIPV
Trematomus loennbergii	V
Dissostichus eleginoides	PWIPA
Dissostichus mawsoni	
Notothenia coriiceps	LPWIPV
Harpagifer antarticus	V
Gymnodraco acuticeps	MLKPFLLTLSLLPWIPV
Pseudochaennichthys georgianus	MLKPFLLTLSLLPWIPV
Chionodraco myersi	V
Chaenocephalus aceratus	V
Chionodraco hamatus	SLLPWIPV
Cottoperca gobio	MLQPFILALSLLPWIPA
Sander lucioperca	MLQPFIITLSLLPWFPA
Perca fluviatilis	MLQPFLIVLSLLPWFPA
Perca flavescens	MLQPFIITLSLLPWFPA
Etheostoma spectabile	MLPPFIIALSLFPFFPA
Etheostoma cragini	MLQPFTITLSLLPFFPA
Epinephelus coioides	MRRLFILTLSLLPWIPA
Epinephelus lanceolatus	MRRLFILTLSLLPWIPA
Plectropomus leopardus	
Sebastes umbrosus	MLQPFILALILLPWIPA

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Pungitius pungitius                                                  MRKLFTLALTLFPWISG
Anarrhichthys ocellatus                                              MQQPFILALSLLSWIPA
Cyclopterus lumpus                                                   MLRPFLLALSLLPWIPA
Liparis tanakae
Gasterosteus aculeatus                                               MRKLFTLALTLLSWIPG

                                      /D1              L            S       S
Trematomus bernacchii                FLCGT-TTEEELSIMEGQSLTVPCHYEPQYASYVKYWCRGTMREFCSSLA
Trematomus loennbergii               FLCGT-TTEEELSIMEGQSLTVPCHYEPQYASYVKYWCRGTMREFCSSLA
Dissostichus eleginoides             FLCGT-PTEGELSVMEGQSLTVPCHYEPQYASYVKYWCRGKMREFCSSLA
Dissostichus mawsoni                 FLCGT-TTEEELSVMEGESLTVPCHYEPQYASYIKYWCRGKMREFCSSLG
Notothenia coriiceps                 FLCGT-TTEEELSVMEGQSLTVPCHYEPQYASYVKYWCRGTMREFCSSLA
Harpagifer antarcticus               FLCGT-TTEEELSVMEGQSLTIPCHYEPQYASYIKYWCRGKMREFCSSLA
Gymnodraco acuticeps                 FLCGT-TTEEELSVMEGQSLTVPCHYEPQYASYIKYWCRGKMREFCSSLA
Pseudochaennichthys georgianus       FLCGT-TTEEELSVMEGESLTVPCHYEPQYASYIKYWCRGKMREFCSSLA
Chionodraco myersi                   FLCGT-TTEEELSVMEGESLTVPCHYEPQYASYIKYWCRGKMREFCSSLA
Chaenocephalus aceratus              FLCGT-TTEEELSVMEGESLTVPCHYEPQYASYIKYWCRGKTREFCSSLA
Chionodraco hamatus                  FLCGT-TTEEELSVMEGESLTVPCHYEPQYASYIKYWCRGKMREFCSSLA
Cottoperca gobio                     LLCST---EGELSVLEGQSLTVPCHYEPQYASYVKYWCRGKTKEFCSSLA
Sander lucioperca                    FLCRV-TTEGEHAVMEGQPLTVPCHYGPQYAGYVKYWCRGKMREFCTSLA
Perca fluviatilis                    FLCRV-TTEGEHAVMEGQPLTVPCHYGPQYAGYVKYWCQGKMREFCTSLA
Perca flavescens                     FLCRV-TTEGEHAVMEGQPLTVPCHYGPQYAGYVKYGCRGKMREFCTSLA
Etheostoma spectabile                FHCGV-TTEGEHTVMEGQHLTVPCHYGPQYAGYVKYWCRGKMREFCSSLA
Etheostoma cragini                   FLCGV-TTEGEHAVMEGQHLTVPCHYGPQYAGYVKYWCRGKMREFCTSLA
Epinephelus coioides                 VLCKV-TTEGELSIMEGQSLTIPCHYEPQYASYVKYWCQGKTREFCTSLA
Epinephelus lanceolatus              VICKV-TTEGELSIMEGQSLTIPCHYEPQYASYVKYWCQGKTREFCTSLA
Plectropomus leopardus               FLCGT-TTEEELSIMEGQSLTVPCHYEPQYASYVKYWCRGKMKEFCTSLA
Sebastes umbrosus                    FHCRV-TTEGDIAVMEGQSLTVPCIYEPQHASYVKYWCRGKMKAFCTTLA
Pungitius pungitius                  FLCQPAFTGGELSVMEGQSLTVPCHYESQYAGHVKYWCRGKVRGFCTSLA
Anarrhichthys ocellatus              FLCRV-TTEGELTVMEGQSLIVPCHYDPQYAGYVKYWCRGNTREFCTSLA
Cyclopterus lumpus                   FLCRV-TTEGELAVMEGQSLTVPCHYDPQYAGYVKYWCRGKMREFCTSLA
Liparis tanakae                      MDPRV-TTDAELAVMEGRSLTVPCHYDPQYAGYLKYWCRGKMREFCTSLA
Gasterosteus aculeatus               FL-----SEAELSVMEGQSLTVPCHYEPQYAGYVKYWCRGKMRGFCTSLA

                                                                        L
Trematomus bernacchii                RTDESHSTNPSE-KKVRLFDDPVQQVFTVAMSNLREEDSGWYMCGVEIGG
Trematomus loennbergii               RTDESHSANLSE-KKVRLFDDPVQQVFTVAMSNLREEDSGWYMCGVEIGG
Dissostichus eleginoides             RTDESHSANLSE-KKVRLFDDPVQQVFTVAMSNLREEDSGWYMCGVEIGG
Dissostichus mawsoni                 RTDESHSANLSE-KKVRLFDDPVQQVFTVAMSNLREEDSGWYMCGVEIGG
Notothenia coriiceps                 QTDESHSANPSE-KKVRLFDDPVQQVFTVAMSNLGEEDSGWYMCGVEIGG
Harpagifer antarcticus               RTDESHSANPSE-KKVRLFDDPVQQLFTVAMSNLREEDSGWYMCGVEIGG
Gymnodraco acuticeps                 RTDESHSANPSE-KKVRLFDDPVQQVFTVAISNLMEEDSGWYMCGVEIGG
Pseudochaennichthys georgianus       RTDESHSVNPSE-KKVRLFDDPVQQVFTVAMSNLREEDSGWYICGVEIGG
Chionodraco myersi                   RTDESHSVNPSE-KKVRLFDDPVQHVFTVAMSNLREEDSGWYMCGVEIGG
Chaenocephalus aceratus              RTDESHSVNPSE-KKVRLFDDPVQQVFTVAMNNLREEDSGWYMCGVEIGG
Chionodraco hamatus                  RTDESHSVNPSE-KKVRLFDDPVQQVFTVAMSNLREEDSGWYMCGVEIGG
Cottoperca gobio                     RTDVTRSANTAE-EKVGIFDDPVQLVFTVTMSNLREEDSGWYMCGVEIGG
Sander lucioperca                    RTDEPRSANQAE-EKVSIFDDPVQLVFAVTMSNLKEGDSGWYMCGVEIGG
Perca fluviatilis                    RTDEPRSANPAE-EKVSIFDDPVQLVFTVTMSNLKEGDSGWYMCGVEIGG
Perca flavescens                     RTDEPRSANPAE-EKVSIFDDPVQLVFTVTMSNLKEGDSGWYMCGVEIGG
Etheostoma spectabile                RTDEPRSANPAE-EEVSIFDDPVQLVFTVTMSNLKEGDSGWYMCGVEIGG
Etheostoma cragini                   RTDEPHSANSAE-EKVSIFDDPVQLVFTVTMSNLKEGDSGWYMCAVEIGG
Epinephelus coioides                 RTDEPRSADPAE-KKVSIFDDQVQLVFTVTMNNLKEGDSGWYMCGVEIGG
Epinephelus lanceolatus              RTDEPRSADPAE-KKVSVFDDQVQLVFTVTMNNLKEGDSGWYMCGVEIGG
Plectropomus leopardus               RTDEPPSADSAK-KKVSIFDDQVQLVFTVTMNDLKEGDSGWYMCGVEIGG
Sebastes umbrosus                    RTDETRSADPAEEKKVSIFDDPVQLVFTVTMNNLKEDDSGWYMCGVEIEG
Pungitius pungitius                  RTDP----AIAAAGKVSISDDRVQLVFTVTMSDLKEGDSGWYLCGVEIGG
Anarrhichthys ocellatus              RTDS----ANPAAGKVSIFDDPVQQVFTLTMSDLKEGDSGWYMCGVEIGG
Cyclopterus lumpus                   RTDP----AHPAARKVSIFDDPVQQVFTVTMGDLKETDSGWYMCGVEVGG
Liparis tanakae                      RTDP----ATPAVKTVSLLDDPVQQVFTVTMDDLKEADSGWYICGVEVGG
Gasterosteus aculeatus               RTDT----ANPAAGKVSMSDDPVQLVSTVTMSDLKEGDSGWYICGVELGG

                                           /   /D2              L
Trematomus bernacchii                LWSADVVTHKNINVIHGMTVEDRRLSGEEGSSVTVECQYSERYRESEKKW
Trematomus loennbergii               LWSADVVTHKNINVIHG                                 KKW
Dissostichus eleginoides             VWSADVVTYKNINVIHGMTVENSRLSGEEGSSITVECQYSERYRESEKKW
Dissostichus mawsoni                 LWSADVVTHKNINVIHGMTVENSRLSGEEGSSVTVECQYSERYRESEKKW
Notothenia coriiceps                 LWSADVVTHKNIKVIHGMTVENSRLSGEEGSSVTVECQYSERYRESEKKW
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Harpagifer antarcticus              LWSADVVIYKHIKVIHG                                  KKW
Gymnodraco acuticeps                LWSADVVTHKNIKVIHGMTVENSRLNEEEGSSVTVECQYSERYRESEKKW
Pseudochaennichthys georgianus      LWSADVVTYKNIKVIHGMTVENSRLSGEEGGSVTVECQYSERYRESEKKW
Chionodraco myersi                  LWSADVVTYKNIKVIHG                                  KKW
Chaenocephalus aceratus             LWSADVVTYKNIKVIHG                                  KKW
Chionodraco hamatus                 LWSADVVTYKNIKVIHGMTVENSRLSGEEGSSVTVECQYSERYRESEKKW
Cottoperca gobio                    VWSADVVTYTNIRVIHGLTVVNSRLSGGEGSSVTVECHYSERFRESEKKW
Sander lucioperca                   AWSADDVAYTNIKVIHGMSVVNSRLIGEEGSSITVECHYSERYRESEKKW
Perca fluviatilis                   AWSADDVAYTNIKVIHGMSVVNSRLIGEEGSSITVECHYSERYRESEKKW
Perca flavescens                    AWSADDVAYTNIKVIHGMSVVNSRLIGEEGSSITVECQYSERYRESEKKW
Etheostoma spectabile               MWTADDVAYTNIKVIHGMSVVNSFLIGEEGSSITVECHYSERCRESEKRW
Etheostoma cragini                  IWSADDVAYTYIKVIHGMSVVNSFLIGEEGSSLTVECHYSERCRESEKRW
Epinephelus coioides                VWSADDVAFTNIKVIHGMSVVNSRVSGEEGSSLTVECHYSERYRESEKKW
Epinephelus lanceolatus             VWSADDVAFTNIKVIHGMSVVNSRVSGEEGSSLTVECHYSERYRESEKKW
Plectropomus leopardus              VWHSDDVAFTNIKVIHG                                  KKW
Sebastes umbrosus                   VWHSDDVAFTYISVIHGMSVVNSRLSGEEGSSVTVECNYSERYRESEKKW
Pungitius pungitius                 AWTADVVTQTYINVIHGMSVVNSRLSGEEGSSVTVECHYSEKYRDSEKKW
Anarrhichthys ocellatus             VWTRDVVASTYIKVIHGMSVVNSRLSGEEGSSVTVECRYSERYRDSEKKW
Cyclopterus lumpus                  VWTADVVAYTYIKVVHGMSVVNSRLSGEEGSSVTVECHYSERYRDSEKKW
Liparis tanakae                     GWTPDVVAHTYIKVVH
Gasterosteus aculeatus              AWTADAVTETYIQVIHGMSVVNSRLSGEEGSSVTVECHYSERYRDSQKKW

                                    S       S                                        L
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Dissostichus eleginoides            CRSGDWSSCLLAGSEGSNEDSSVDIKDDRSGSFTITFKKLQMRDTGWYWC
Dissostichus mawsoni                CRSGDWSSCLLAGSEESNEDSSVDIEDDRSGSFTITFKKLQMRDTGWYWC
Notothenia coriiceps                CRSGNWSSCLLAGSEGSN-DSSVDIKDDRSGSFTITFKKLQMRDTGWYWC
Harpagifer antarcticus              CRSGDWSSCLLAGSEGSN-DSSVYIKDDRSGSFTITLKKLQMRDTGWYWC
Gymnodraco acuticeps                CRSGDWSSCLLAGSEGSN-DSSVYIKDDRSGSFTITFKKLQMRDTGWYWC
Pseudochaennichthys georgianus      CRSGDWSSCLLAGSEGSN-DSSVYIKDDRSGSFTITFKKLQMRDTGWYWC
Chionodraco myersi                  CRSGDWSSCLLAGSEGSN-DSSVYIKDDRSGSFTITFKKLQMRDTGWYWC
Chaenocephalus aceratus             CRSGDSSSCLLAGSEGSNGNSSVDIKDDRSGSFTITFKKLQMRDTGWYWC
Chionodraco hamatus                 CRSGDWSSCLLAGSEGSN-DSSVYIKDDRSGSFTITFKKLQMRDTGWYWC
Cottoperca gobio                    CRSGDWSSCLSTGSEGSYDDTSVAISDDRTRTFTVTLKKLQMRNTGWYWC
Sander lucioperca                   CRSGDWSSCLLTGSDGSYEDTSVAISDDRTRTLTITLKKLQMRDTGWYWC
Perca fluviatilis                   CRSGDWSSCLLTGSDGSYEDTSVAISDDRTRTFTITLKKLQMRDTGWYWC
Perca flavescens                    CRSGDWSSCLLTGSDRSYEDTSVAISDDRTRTFTITLKKLKMRDTGWYWC
Etheostoma spectabile               CRSGDWSSCLLTDSDGRYEDTSVAISDDRTRTLTITLKKLQMRDTGWYLC
Etheostoma cragini                  CRSGDWSSCLPTGSDGRYEDTSVAISDDRTRTLTITLKKLQMRDTGWYLC
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Epinephelus lanceolatus             CRSGDWSSCLLTGSEGNYEDTSVAISDDRTRTFTITLKKLQMRDTGWYWC
Plectropomus leopardus              CRSGDWSSCLLIDSEGSYEDTSVAISDDRTRTFTVTLKKLQMRDTGWYWC
Sebastes umbrosus                   CRSGDWSSCLLTGSEGSYEDTSVAIRDDRTRTFTITLKKLQMRDNGWYWC
Pungitius pungitius                 CRIGDWSSCLLTGSEGSYDDTSVAIRDDRTRTFTVTLKKLQMKDTGWYWC
Anarrhichthys ocellatus             CRSGDWSSCLLTGSEGSYEDTSVAISDDRTRAFTVTLKKLQMSDSGWYWC
Cyclopterus lumpus                  CRSGDWSSCLLTGSEGSYEDTSVALRDDRTRTFTITLKKLRMRDSGWHWC
Liparis tanakae
Gasterosteus aculeatus              CRTGDWSSCLLTGSEGSYNDTSVAIRDDGSRTFTVTLKNLQMKDTGWYWC

                                                  /EMPD
Trematomus bernacchii               SAGLQKMPVHVQVVPRPMTT-VS---VTTQPQTVANPLPPKPITKESWNG
Trematomus loennbergii              SAGLQKMPVHVQVVPRPM
Dissostichus eleginoides            SAGLQKMPVHVQVKPRPMTTAVS---VTSQPQT-ANPLPPKPITKESWSG
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Harpagifer antarcticus              SAGLQKMPVHVQVKPRPM
Gymnodraco acuticeps                SAGLQKMPVHVQVKPRPMTMS-----VTSQPQTVANPPPPKPITKESWSG
Pseudochaennichthys georgianus      SAGLQKMPVHVQVKPRPMTT-VS---VTSQPQTVANPLPPKPITKESWSG
Chionodraco myersi                  SAGLQKMPVHVQVKPRPM
Chaenocephalus aceratus             SAGLQKMPVHVQVKPRPM
Chionodraco hamatus                 SAGLQKMPVHVQVKPRPMTT-VS---VTSQPQTVANPLPPKPITKESWSG
Cottoperca gobio                    SAGQQKMPVHVQVTPRP-TTTVS---VTSPPQSIAYLPPPKPITKESGNN
Sander lucioperca                   SAGQQQIAVHVLVTPRP-TTAVSVTSTPTTSQSVAYLPPPKPITKESWNS
Perca fluviatilis                   SAGQQQIAVHVLVTPRPTTAAVSVTSTPKTSQSVAYLPPPKPITKESWNS
Perca flavescens                    SAGQQQIAVHVLVTSRPTT--VSVTSTPTTSQSVAYLPPPKPITKESWNS
Etheostoma spectabile               FAGRQQKDVHVLVTPRP-TTIASVTSTPTASQSVAYLPAPKPISKESWKS
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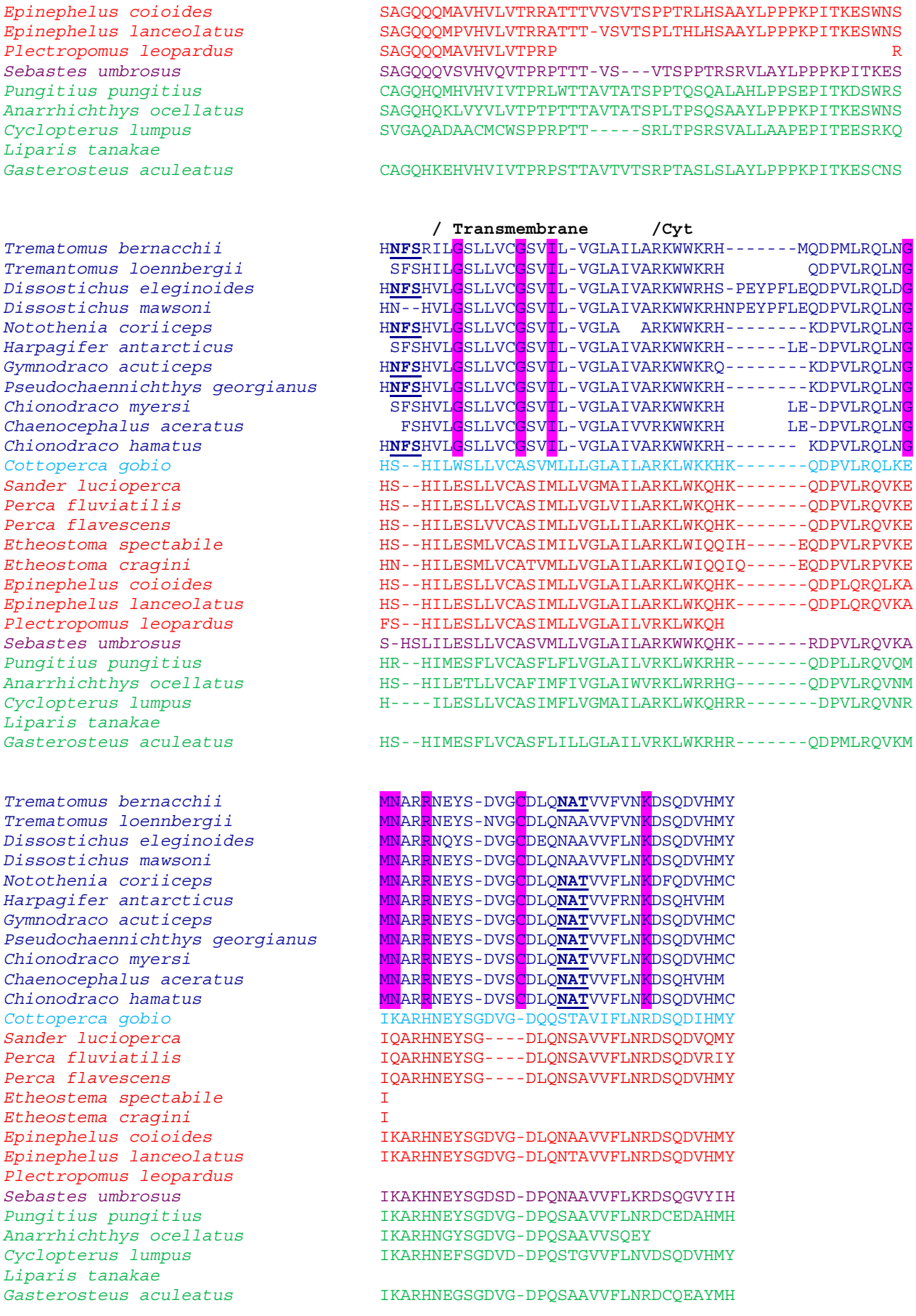

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Plectropomus leopardus SAGQQQMAVHVLVTPRP R
Sebastes umbrosus SAGQQQVSVHVQVTPRPTTT-VS---VTSPPTRSRVLAYLPPPKPITKES
Pungitius pungitius CAGQHQMHVHVIVTPRLWTTAVTATSPPTQSQALAHLPPSEPITKDSWRS
Anarrhichthys ocellatus SAGQHQKLVYVLVTPTPTTTAVTATSPLTPSQSAAYLPPPKPITKESWNS
Cyclopterus lumpus SVGAQADAACMCWSPPRPTT-----SRLTPSRSVALLAAPEPITEESRKQ
Liparis tanakae
Gasterosteus aculeatus CAGQHKEHVHVIVTPRPSTTAVTVTSRPTASLSLAYLPPPKPITKESCNS
/ Transmembrane /Cyt
Trematomus bernacchii HNFSRILGSLLVCGSVIL-VGLAILARKWWKRH-------MQDPMLRQLNG
Tremantomus loennbergii SFSHILGSLLVCGSVIL-VGLAIVARKWWKRH QDPVLRQLNG
Dissostichus eleginoides HNFSHVLGSLLVCGSVIL-VGLAIVARKWWRHS-PEYPFLEQDPVLRQLDG
Dissostichus mawsoni HN--HVLGSLLVCGSVIL-VGLAIVARKWWKRHNPEYPFLEQDPVLRQLNG
Notothenia coriiceps HNFSHVLGSLLVCGSVIL-VGLA ARKWWKRH--------KDPVLRQLNG
Harpagifer antarcticus SFSHVLGSLLVCGSVIL-VGLAIVARKWWKRH------LE-DPVLRQLNG
Gymnodraco acuticeps HNFSHVLGSLLVCGSVIL-VGLAIVARKWWKRQ--------KDPVLRQLNG
Pseudochaennichthys georgianus HNFSHVLGSLLVCGSVIL-VGLAIVARKWWKRH--------KDPVLRQLNG
Chionodraco myersi SFSHVLGSLLVCGSVIL-VGLAIVARKWWKRH LE-DPVLRQLNG
Chaenocephalus aceratus FSHVLGSLLVCGSVIL-VGLAIVVRKWWKRH LE-DPVLRQLNG
Chionodraco hamatus HNFSHVLGSLLVCGSVIL-VGLAIVARKWWKRH------- KDPVLRQLNG
Cottoperca gobio HS--HILWSLLVCASVMLLLGLAILARKLWKKHK-------QDPVLRQLKE
Sander lucioperca HS--HILESLLVCASIMLLVGMAILARKLWKQHK-------QDPVLRQVKE
Perca fluviatilis HS--HILESLLVCASIMLLVGLVILARKLWKQHK-------QDPVLRQVKE
Perca flavescens HS--HILESLVVCASIMLLVGLLILARKLWKQHK-------QDPVLRQVKE
Etheostoma spectabile HS--HILESMLVCASIMILVGLAILARKLWIQQIH-----EQDPVLRPVKE
Etheostoma cragini HN--HILESMLVCATVMLLVGLAILARKLWIQQIQ-----EQDPVLRPVKE
Epinephelus coioides HS--HILESLLVCASIMLLVGLAILARKLWKQHK-------QDPLQRQLKA
Epinephelus lanceolatus HS--HILESLLVCASIMLLVGLAILARKLWKQHK-------QDPLQRQVKA
Plectropomus leopardus FS--HILESLLVCASIMLLVGLAILVRKLWKQH
Sebastes umbrosus S-HSLILESLLVCASVMLLVGLAILARKWWKQHK-------RDPVLRQVKA
Pungitius pungitius HR--HIMESFLVCASFLFLVGLAILVRKLWKRHR-------QDPLLRQVQM
Anarrhichthys ocellatus HS--HILETLLVCAFIMFIVGLAIWVRKLWRRHG-------QDPVLRQVNM
Cyclopterus lumpus H----ILESLLVCASIMFLVGMAILARKLWKQHRR-------DPVLRQVNR
Liparis tanakae
Gasterosteus aculeatus HS--HIMESFLVCASFLILLGLAILVRKLWKRHR-------QDPMLRQVKM
Trematomus bernacchii MNARRNEYS-DVGCDLQNATVVFVNKDSQDVHMY
Trematomus loennbergii MNARRNEYS-NVGCDLQNAAVVFVNKDSQDVHMY
Dissostichus eleginoides MNARRNQYS-DVGCDEQNAAVVFLNKDSQDVHMY
Dissostichus mawsoni MNARRNEYS-DVGCDLQNAAVVFLNKDSQDVHMY
Notothenia coriiceps MNARRNEYS-DVGCDLQNATVVFLNKDFQDVHMC
Harpagifer antarcticus MNARRNEYS-DVGCDLQNATVVFRNKDSQHVHM
Gymnodraco acuticeps MNARRNEYS-DVGCDLQNATVVFLNKDSQDVHMC
Pseudochaennichthys georgianus MNARRNEYS-DVSCDLQNATVVFLNKDSQDVHMC
Chionodraco myersi MNARRNEYS-DVSCDLQNATVVFLNKDSQDVHMC
Chaenocephalus aceratus MNARRNEYS-DVSCDLQNATVVFLNKDSQHVHM
Chionodraco hamatus MNARRNEYS-DVSCDLQNATVVFLNKDSQDVHMC
Cottoperca gobio IKARHNEYSGDVG-DQQSTAVIFLNRDSQDIHMY
Sander lucioperca IQARHNEYSG----DLQNSAVVFLNRDSQDVQMY
Perca fluviatilis IQARHNEYSG----DLQNSAVVFLNRDSQDVRIY
Perca flavescens IQARHNEYSG----DLQNSAVVFLNRDSQDVHMY
Etheostema spectabile I
Etheostema cragini I
Epinephelus coioides IKARHNEYSGDVG-DLQNAAVVFLNRDSQDVHMY
Epinephelus lanceolatus IKARHNEYSGDVG-DLQNTAVVFLNRDSQDVHMY
Plectropomus leopardus
Sebastes umbrosus IKAKHNEYSGDSD-DPQNAAVVFLKRDSQGVYIH
Pungitius pungitius IKARHNEYSGDVG-DPQSAAVVFLNRDCEDAHMH
Anarrhichthys ocellatus IKARHNGYSGDVG-DPQSAAVVSQEY
Cyclopterus lumpus IKARHNEFSGDVD-DPQSTGVVFLNVDSQDVHMY
Liparis tanakae
Gasterosteus aculeatus IKARHNEGSGDVG-DPQSAAVVFLNRDCQEAYMH

Figure S3. Multiple alignment of the deduced amino acid sequences of pIgRs available from Notothenioidei (Antarctic species in blue; non-Antarctic species in light blue) and from representative species of the perciform suborders Percoidei (in brown), Serranoidei (in red), Scorpaenoidei (in purple), and Cottoidei (in green). Notothenioid specific residues are highlighted in magenta. Putative N-glycosylation sites are reported in bold and underlined. Gaps are indicated by dashes.

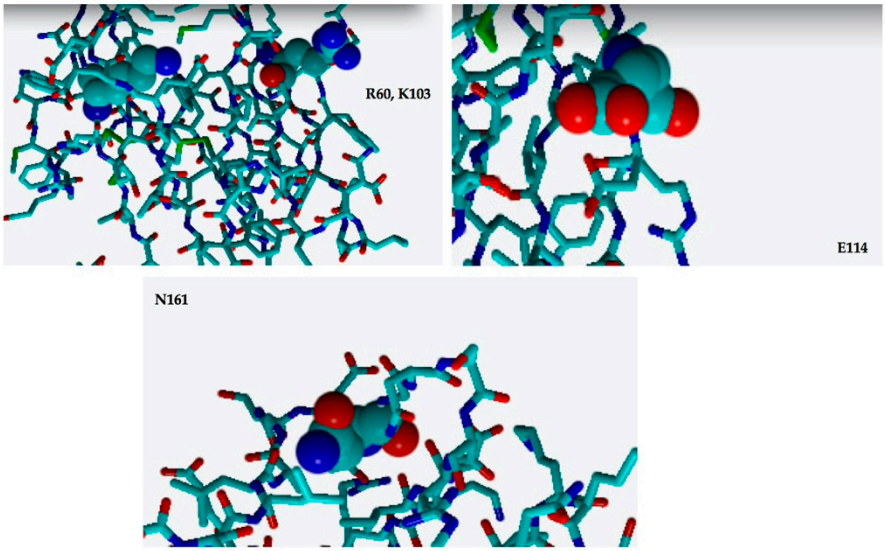


Figure S4. Detail of R60, K103, E114, and N161 residues in the 3D molecular model built for the secretory component of *T. bernacchii* pIgR. For each residue, the side chain exposed to solvent is shown.

Table S1. Predicted transcription factor-binding sites in the 5′-flanking region, and in the second and third introns of *T. bernacchii* polymeric Ig receptor (*pIgR)* gene.

***pIgR* genomic region**	**Site**	**Length**	**Position (nt)**	**Score (Gaps)**	**Occurrence**	**E-value**
5′-flanking region	IFN-A2-B	12	340	9 (0)	1	4.78e-03
	IFN-A4-B	12	340	9 (0)	1	4.78e-03
	IL10-CEBP2′	14	410	11 (0)	1	3.47e-03
	Elf-1-IL-2Rα	12	744	9 (0)	1	4.78e-03
2nd intron	IRF-3 CS	12	227	11 (0)	1	3.48e-03
	IFN-A11-A	10	521	10 (0)	1	1.74e-03
	IFN-A2-A	10	521	10 (0)	1	1.74e-03
	TCR-Vbeta	12	541	12 (0)	1	1.04e-04
3rd intron	NF-IL6-erk1	9	8	9 (0)	1	4.11e-03
	NF-IL6-vimentin	10	109	10 (0)	1	1.03e-03
	NF-IL2-A-RS′	10	198	10 (0)	1	1.03e-03
	IFN-A11-A	10	430	10 (0)	1	1.03e-03
	IFN-A2-A	10	430	10 (0)	1	1.03e-03

Table S2. Amino acid composition of *T. bernacchii* pIgR and the respective regions SC (Secretory Component), EMPD (Extracellular Membrane Proximal Domain), TM (Transmembrane domain), Cyt (Cytoplasmic tail).

	pIgR	SC	EMPD	TM	Cyt
Percentage of amino acid residues	Ala (A): 3.8% Arg (R): 5.6% Asn (N): 4.1% Asp (D): 4.7% Cys (C): 3.3% Gln (Q): 4.1% Glu (E): 6.2% Gly (G): 6.8% His (H): 2.4% Ile (I): 3.3% **Leu (L): 8.3%** Lys (K): 4.7% Met (M): 3.8% Phe (F): 2.7% Pro (P): 4.7% **Ser (S):10.7%** Thr (T): 5.9% Trp (W): 3.0% Tyr (Y): 3.0% **Val (V): 8.9%**	Ala (A): 3.7% Arg (R): 5.7% Asn (N): 3.7% Asp (D): 4.5% Cys (C): 3.3% Gln (Q): 4.1% **Glu (E): 8.2%** Gly (G): 6.9% His (H): 2.4% Ile (I): 2.9% Leu (L): 4.9% Lys (K): 4.9% Met (M): 3.3% Phe (F): 2.4% Pro (P): 4.9% **Ser (S):12.7%** Thr (T): 6.9% Trp (W): 2.9% Tyr (Y): 3.3% **Val (V): 8.6%**	Ala (A): 5.1% Arg (R): 5.1% Asn (N): 7.7% Asp (D): 0.0% Cys (C): 0.0% Gln (Q): 5.1% Glu (E): 2.6% Gly (G): 2.6% His (H): 2.6% Ile (I): 2.6% Leu (L): 2.6% Lys (K): 5.1% Met (M): 2.6% Phe (F): 2.6% **Pro (P):17.9%** **Ser (S):10.3%** **Thr (T):12.8%** Trp (W): 2.6% Tyr (Y): 0.0% **Val (V):10.3%**	**Ala (A):10.0%** Arg (R): 0.0% Asn (N): 0.0% Asp (D): 0.0% Cys (C): 5.0% Gln (Q): 0.0% Glu (E): 0.0% **Gly (G):15.0%** His (H): 0.0% **Ile (I):15.0%** **Leu (L):30.0%** Lys (K): 0.0% Met (M): 0.0% Phe (F): 0.0% Pro (P): 0.0% **Ser (S):10.0%** Thr (T): 0.0% Trp (W): 0.0% Tyr (Y): 0.0% **Val (V):15.0%**	Ala (A): 3.9% **Arg (R): 9.8%** **Asn (N): 9.8%** **Asp (D): 9.8%** Cys (C): 2.0% Gln (Q): 7.8% Glu (E): 2.0% Gly (G): 3.9% His (H): 3.9% Ile (I): 0.0% Leu (L): 5.9% Lys (K): 5.9% Met (M): 7.8% Phe (F): 2.0% Pro (P): 2.0% Ser (S): 3.9% Thr (T): 2.0% Trp (W): 3.9% Tyr (Y): 3.9% **Val (V): 9.8%**
Theoretical pI	**6.46**	**5.73**	**11.0**	**5.52**	**9.04**

Table S3. Splice-site prediction for the region encompassing the 3′ end of the fourth intron and the 5′ end of the EMPD exon of *T. bernacchii pIgR*.

Position (bp)	Putative splice site	Sequence	Score	Intron GC	Alternative/ Cryptic	Constitutive	Confidence
70	**Constitutive acceptor**	ctttctttagCAGCAGTGTC	8.677	0.357	0.355	0.631	0.437
73	Alt. isoform/cryptic acceptor	tctttagcagCAGTGTCTGT	9.865	0.371	0.619	0.373	0.398
76	Alt. isoform/cryptic acceptor	ttagcagcagTGTCTGTGAC	5.559	0.371	0.886	0.108	0.878

Table S4. List of primers used in PCR experiments.

Primer name	Sequence	pIgR domain
pIGR1Fwd forward	5′- TTACGAGCCTCAGTATGCCAGC -3′	*E. coioides* D1
pIGR1Rev reverse	5′- TGCAGAACACCAGTACCAGCC -3′	*E. coioides* D2
pIGRII forward	5′- AGGGGGATTCTGGGTGGTA -3′	*E. coioides* D1
pIGRIIr reverse	5′- CTTAGTGATGGGTTTGGGTGG -3′	*E. coioides* EMPD
AAP[1]	5′- GGCCACGCGTCGACTAGTACGGGGGGGGGG -3′	
AP[1]	5′- GGCCACGCGTCGACTAGTACTTTTTTTTTTTTTTTT -3′	
AUAP[1]	5′- GGCCACGCGTCGACTAGTAC -3′	
TbrtpIgRFwd forward	5′- AAGAAGTGGTGTCGGAGTGG -3′	*T. bernacchii* D1
TbrtpIgRRev reverse	5′- ACCAGCCTGTATCCCTCATC -3′	*T. bernacchii* D1
TbBACTfw[2]	5′- CCCAGATCATGTTCGAGACC -3′	
TbBACTrev[2]	5′- CATAGATGGGCACTGTGTGG -3′	

[1]AAP, AP and AUAP are the Adaptor Primers used in 5′ and 3′ RACE.
[2]TbBACTfw and TbBACTrev are the primers designed on *β-actin* gene, used as housekeeping gene in qPCR.

Table S5. List of perciform suborders and respective species investigated for the *pIgR* genomic and transcript sequences available.

Suborder	Species	Transcript accession number	Genomic scaffold accession number
Notothenioidei	*Trematomus bernacchii*	MZ540772; XM_034138155.1; XM_034138156.1	NW_022987689.1
	Trematomus loennbergii	JAAOOA010000028.1	N/A
	Dissostichus eleginoides	GHKE01202443	N/A
	Dissostichus mawsoni	JAAKFY010000004	N/A
	Notothenia coriiceps	XM_010780285.1	N/A
	Harpagifer antarcticus	CADEHL010001073.1	N/A
	Gymnodraco acuticeps	XM_034231973.1XM_034231974.1; XM_034231975.1	NW_022990743.1
	Pseudochaenichthys georgianus	XM_034104980.1; XM_034104981.1	NC_047519.1
	Chionodraco myersi	RQJG01055183.1	N/A
	Chaenocephalus aceratus	OMOC01081144.1	N/A
	Chionodraco hamatus	GFMN01023039.1	N/A
	Cottoperca gobio	XM_029454169.1	NC_041371.1
Percoidei	*Sander lucioperca*	XM_036004850.1	NC_050181.1
	Perca fluviatilis	XM_039816568.1	NC_053122.1
	Perca flavescens	XM_028593228.1	NC_041342.1
	Etheostoma spectabile	XM_032532220.1	NC_045744.1
	Etheostoma cragini	XM_034887523.1	NC_048418.1
Serranoidei	*Epinephelus coioides*	FJ803367.1	N/A
	Epinephelus lanceolatus	XM_033651131.1	NC_047009.1
	Plectropomus leopardus	XM_042597661.1	NC_056474.1
Scorpaenoidei	*Sebastes umbrosus*	XM_037788606.1	NC_051280.1
Cottoidei	*Pingitius pungitius*	XM_037459474.1	NW_023616457.1
	Anarrhichthys ocellatus	XM_031855165.1	NW_022280045.1

Cyclopterus lumpus	XM_034544233.1	N/A
Liparis tanakae	SRLO01000113.1	N/A
Gasterosteus aculeatus	XM_040171583.1	NC_053214.1

Table S6. Specific primers used for RT-PCR and sense and anti-sense probes.

ISH	**Sequences**
RT-PCR forward	5′ - GTCACAGTTGAACGCCAAT - 3′
RT-PCR reverse	5′ - ACAAGGATTACAGAACCAC - 3′
Sense probe forward	5′ - TAATACGACTCACTATAGGG - 3′
Sense probe reverse	5′ - ACAAGGATTACAGAACCAC - 3′
Anti-sense probe forward	5′ - GTCACAGTTGAACGCCAAT - 3′
Anti-sense probe reverse	5′ - GCATTTAGGTGACACTATAGAATAG - 3′